Seeing the future through Aesthetics:

Sustainable design strategy to tackle poverty in Egypt

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Dedicated to Mam and Dad, who taught me to respect and appreciate gaining Knowledge

“Like slavery and apartheid, poverty is not natural. It is man-made and it can be overcome and eradicated by the actions of human beings.”

Nelson Mandela

Declaration

I certify herewith that the content of this thesis is the result of original work, which has been carried out by the author since the official commencement date of the approved research program, and that the work of this thesis has not been submitted previously to qualify for a high degree or for any other academic award.

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Zusammenfassung

Die Auseinandersetzung mit der Armut in Ägypten stellt eine große Herausforderung dar, denn Armut ist ein komplexes und dynamisches Phänomen, das viele verschiedene Disziplinen mit einbezieht. Derartige Probleme, die in der realen Welt angesiedelt sind, dürfen nicht vereinfacht werden; sie verlangen von uns, dass wir ein umfassendes Wissen über ihre entscheidenden Charakteristika besitzen und in die Analyse und vorgeschlagenen Problemlösungen einbringen können. Was Design angeht, so sieht ein beträchtlicher Teil der Fachliteratur das traditionelle Denken in diesem Fach – oft als ‚Methodologie der ersten Generation' bezeichnet – als Hindernis für die Designerinnen und Designer, die sich mit realen Problemen befassen wollen. Der traditionelle Designdiskurs ist auf formale Aspekte fokussiert und beschäftigt sich in der Regel mit einem einzelnen isolierten Problem, z. B. dem Entwurf eines Stuhls, eine Tisches oder einer Lampe für einen ganz bestimmten Zweck. Hier besitzt die Designerin oder der Designer alle dazu notwendigen Informationen; umgekehrt ist der Designprozess dann aber umso mehr von jedem soziohistorischen Kontext abgeschnitten. Wenn aber die Designerinnen und Designer tatsächlich vorhaben, sich mit der Lösung von komplexen – oder, wie Rittel sie nennt, „wicked" (sprich bösen oder schlimmen) – Problemen zu befassen, müssen sie sich auf eine ganz neue Mission vorbereiten, eine Mission, die mitten in der Gesellschaft verwurzelt ist, für die und in der sie arbeiten.

In dieser Hinsicht zielt meine Dissertation darauf, das Potenzial des Designdenkens (oder besser, eines neuen Designdenkens) als zuverlässiges Disziplin vorzustellen, in Verbindung mit anderen Disziplinen und Organisationen, die eine nachhaltige Entwicklung unterstützen, im Kampf gegen die Armut in Ägypten vorzugehen. Die vorliegende Doktorarbeit erforscht die Rolle von Design im Entwicklungsdiskurs und die Verantwortung von Designerinnen und Designer im Kampf gegen die Armut. Zugleich beschäftigt sich die Arbeit mit der damit verbundenen Frage, wie man Fachleute in die Lage versetzen kann, die neu auf sie zukommende Rolle effektiv zu erfüllen. Aus diesem Grund werden zusätzliche Fach- und methodologische Kompetenzen untersucht, die Designer erlernen sollten, um das eigene Denken und Handeln nachhaltig zu verändern.

Als empirische Fallstudie wurde das ‚Al-Darb Al-Ahmar Revitalization Project' (ADAA) in Ägypten gewählt. Da sich dessen ‚Local-Crafts-Development-Program' (ein Programm zur Entwicklung des Handwerks vor Ort) für eine strategische Intervention gut eignet, wurde anhand von Jahresberichten einerseits und von Experteninterviews mit offenen Fragestellungen andererseits Daten erstellt, um Einsichten in die verschiedenen Projektaktivitäten zu gewinnen. Die von den Daten aufgeworfenen Fragen legten eine gemischte Vorgehensweise in Bezug auf die Methoden nahe; um der qualitativen Herangehensweise Priorität zu gewähren, wurde diese durch ein dynamisch-methodologisches Konzept spezifiziert.

Die Arbeit präsentiert drei Schlüsselergebnisse: (1) eine theoretische Grundlage in Form einer klaren Definition der Rolle von Design im Entwicklungsdiskurs in Bezug auf den Kampf gegen Armut (Wissen *was*); (2) die Entwicklung eines operativen Rahmens für die Datenverarbeitung, der Methoden aus verschiedenen Disziplinen benutzt, in denen Systemdenken, Szenarienbildung und strategische Planung und Umsetzung wichtige methodologischen Komponenten sind (Wissen *wie*); und schließlich (3) die bildliche Darstellung des vorgeschlagenen Designprozesses, um Probleme in der realen Welt anhand einer Fallstudie zu konkretisieren, die dann zu einer Prototyp-Lösung in Form eines sozialen Geschäftsmodells von Design führt.

Abstract

Tackling poverty in Egypt is a challenging task, since poverty is highly complex and dynamic and cuts across different disciplines. Dealing with such real-world problems requires a comprehensive awareness of their distinctive characteristics, in order to avoid falling into the trap of oversimplification. When it comes to the role of design, a considerable body of literature has referred to traditional design thinking – conceived as first generation methods – as an obstacle that failed to let designers deal with such complex problems. The traditional discourse of design, which focuses on formal aspects and usually deals with a specific problem, where all the necessary information is provided for the designer (e.g. designing a chair, a table or a lamp for a special purpose), tends to isolate the design process from the socio-cultural context. But if designers are going to be involved in solving complex – or, using Rittel's term, "wicked" – problems, they have to prepare themselves for a new mission that is rooted in the society in and for which they are working.

In this respect, the main objective of my thesis is to show the potential of design thinking (after upgrading it) as a reliable discipline for tackling poverty in Egypt, collaboratively with other disciplines and organizations that seek sustainable development. This research is an attempt to explore the role of design in the development discourse and the kind of responsibility designers must take in order to tackle poverty in Egypt. The thesis also addresses the issue of empowering designers to accomplish their new tasks effectively by exploring additional skills and methods they should learn to change their way of thinking and acting.

The Al-Darb Al-Ahmar Revitalization Project (ADAA) in Egypt has been chosen as an empirical case study. 'Local Crafts development' is one particular program that has been chosen as a strategic intervention point, and data has been collected through project annual reports and expert interviews, using open-ended questions to get more insights into the project's different activities. Answering study questions has required a mixed methods approach. A dynamic mixed methods design has been developed with regard to prioritizing the qualitative approach.

Three key results are presented in this thesis: Proposing a clear vision (theoretical foundation) that defines the design role in development discourse for tackling poverty (know-what); developing an operational framework to guide data processing, using methods from different backgrounds, where systems thinking, scenario building, and strategic planning and acting are important methodological components (know-how); finally, visualizing the proposed design process for solving real-world problems through the case study, which leads to a prototype solution in the form of a social business design model.

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Chapter 1: Introduction

1-1 Background

Egypt is a rich country if we consider its valuable natural and touristic resources, and its young workforce. The geographical location of the country, for example, with the Mediterranean Sea in the north, the Red Sea in the east, and the Suez Canal linking both of them, is a key economic and historical as well as geopolitical factor. The Suez Canal is considered the most important international waterway as well as an important source of hard currency for Egypt. The River Nile flows through the entire length of the country, slightly to the east of central Egypt, coming from the south, through Sudan, into Egypt and issuing in a large delta into the Mediterranean Sea. This is the longest river in the world and has been the most important resource for agriculture since the Pharaohs. The Pyramids and Temples represent Pharaonic culture, in addition to many museums, mosques, and churches that represent Islamic and Coptic culture. All these monuments attract tourists and people interested in seeing the art and ancient culture of Egypt, which ranks among the world's oldest. Considering its workforce, on the other hand, Egypt is described as a young country because nearly a quarter of the Egyptian population (around 20 million people) is, according to the Egypt Human Development Report of 2010, between 18 and 29. All these facts led to say that Egypt has enough wealth amounted to be a developed country, if this wealth is well managed.

Unfortunately, however, Egypt remains classified as what is called a 'Third World Country' that suffers from overlapping problems – the "wicked" problems mentioned above – of poverty, unemployment, bad education, bad health services, bad use of natural resources, and unequal distribution of wealth. The last problem has led to a widening gap between rich and poor and is considered one of the operative mechanisms in establishing poverty as a social life cycle benefitting certain groups in society. Changing this cycle –the issue of "rotating" poverty, developed further below – and the potential role of design in that process is the main background concern of this thesis. For example, instead of channeling state-subsidized electricity toward the poor, the government offers it to factories. Instead of supplying water networks for homes in slums, water has been supplied to golf playgrounds and swimming pools in tourist villages. The painful reality is that most of the poor in Egypt suffer from miserable life conditions, especially in the slums where they suffer from insecure places of residence, undrinkable water, inedible subsidized bread, carcinogenic foods and continuous outages of electricity.

After two revolutions in Egypt on January 25, 2011 and June 30, 2013, poverty reduction is still one of the most challenging problems facing the country. There, as elsewhere, it is a complex socio-economic issue with multi-dimensional, overlapping challenges. There, as in other developing countries, people suffer from exploitation, illiteracy, sickness and hunger. These are the most significant tools of social suffocation and suppression and they have cumulative roll-on effects. Mechanisms to rotate poverty into a social life cycle will be described and explained in detail later in this research.

It will become clear through this thesis that, under the banner of combating poverty and despite the many efforts that have been done with regard to this matter, the scale of global poverty and inequity is evidently still growing (see *Development conceptual timeline*). It is important to point out in this context that, on the international level, the intention behind the publication of the United Nations

Development Program's (UNDP) Human Development Reports since 1990 has been to support decision-making in developing countries to combat poverty, as well as to encourage the approach to human development there. On the local level in Egypt, different suggested frameworks, action plans and strategies for alleviating poverty were established in the second Egypt Human Development Report (EHDR 1996). In the Human Development Report of 2011, Egypt is ranked 113th and the Occupied Palestinian Territory 114th; Norway comes first, and the Democratic Republic of Congo 187th, at the end of the list.

This demonstrates that the gap between theoretical efforts and reality is still huge and still obvious. Therefore, many efforts must be collaboratively taken to support the Government and NGOs in Egypt in their assault on poverty and their quest for sustainable development. In its call for social responsibility in design, and its concomitant request to the Government to open the door for designers to be actively engaged in the process of achieving sustainable development, this research claims to have a place among these efforts.

The thesis focuses on a particular design perspective that prepares people and society for desirable change and a desirable future. However, the starting point in the preparation of designers for this collaboration is necessarily close to the society in which the problems arise, for it aims to satisfy people's demands and needs. The first task, then, is to determine these two factors. Designers must prepare themselves to operate in a complex context, where it is absolutely crucial to predict the future or even to operate in the near future, but without appropriate instruments or methods that might really do justice to the complexity of the context. Against such a background, it is evident that designers will need additional skills and methods to enable them to cope with the permanently changing world.

1-2 Research problem and questions

Despite the fact that the first *Egypt Human Development Report* (EHDR) was published in 1995, the role of design as a partner in the process of achieving sustainable development has not yet been recognized. More recent EHDRs have recognized particular academic disciplines, segments, or specific sectors as partners in the development process: EHDR 2007 focused on "Business Solutions for Human Development"; EHDR 2008 spotlighted the role of civil society in "Egypt's Social Contract"; EHDR 2010 focused on "Youth in Egypt" as a resource for change and for building the future.

Unfortunately, local design discourse focuses on design as a 'form-giving activity' and as a synonym for styling and luxury products. Thus the potential of design thinking as a discipline for generating sustainable development is not yet available in local design discourse. Consequently, the designer in Egypt is not well prepared to participate actively in the development process. However, such participation is greatly needed, especially, after the Egyptian revolutions of January 25, 2011 and June 30, 2013. Comparing design in Egypt with the international scene in recent years, we can state that international design has mirrored activist movements (Cooper 2005) from green design, consumerism, responsible design and sustainability, to ethical consuming, eco design, and feminist design etc. Therefore, it will become clear through this thesis that, the time has come for a local design revolution in Egypt to participate effectively as a partner in the development process. The

Egyptian design compass must be redirected towards the achievement of the Egypt's revolutionary values: "bread, freedom, human dignity, and social justice".

In this respect, the goal of the thesis is twofold: On the one hand, to present the kind of social responsibility that designers need to adopt in local design discourse in order to address and tackle poverty as a real-world problem (know-what). On the other hand, it focuses on applying additional skills and methods that designers should learn to change their way of thinking and acting in order to grasp the complex world in which they live (know-how). These methods will help them accomplish their new role and intervene in a sustainable way.

Aims, hypotheses and research questions:

The broader aim of my thesis is to link design research activities directly to social needs. The meta-hypothesis is that applying systems thinking, scenario building and strategic planning from a design perspective can lead to a better understanding of real-world problems and more flexible guidelines for the development of undetermined future solutions. The thesis argues that design can play a powerful role in contributing to ongoing efforts by many institutions and organizations in Egypt that seek to tackle poverty in order to achieve sustainable development.

The research will explore answers to the following questions:

- What kind of methods and tools do designers need to develop their skills for coping with the challenges they face; especially when addressing real-world problems?
- How can people's needs be translated into relevant products, services and systems in an affordable way?
- How can local peoples' skills and productivity be improved to increase their income?
- How can these products be efficiently connected with markets in order to avoid donor and NGO support and lead to a sustainable economic situation?
- What role should the designer play in supporting national policy towards sustainable development in Egypt and other developing countries?

Purpose statement

The purpose of this research is to explore the design perspectives/thinking we need to adopt in order to solve real-world problems effectively (to change the undesirable present, imagine the desirable future and improve societies). Through a case study, the intention is to understand/visualize how to apply these perspectives (in methods and tools) to tackle poverty in the Al-Darb Al-Ahmar Revitalization Project (ADAA) in Egypt.

In the most general sense, my purpose is to raise awareness among designers to support the fight against poverty in Egypt, and to fill the gap between theoretical concepts and practical experience by developing tangible solutions for applying these concepts.

1-3 Definition of Key Terms

1-3-1 Design and Aesthetics

Both terms, 'aesthetics' as well as 'design', are widely applied in different contexts; they encompass different meanings and present a wide range of interpretations. Both could be considered variable because they refer to diverse subjects and have historically referred to different ongoing arguments and had different semantics. For instance, 'aesthetics' is usually used as a synonym for beauty or styling in the context of design, and means sense perception in the context of the fine arts (Wagner 2008, p. 17). In order to avoid slipping into the first or second interpretation of aesthetics, design must be first defined as a constant, and then aesthetics can be defined according to the specific position taken in design.

Design, as an ambiguous word, has different directions, movements and practice. Historically, the definition of design has varied according to different schools that have struggled to make sense of design and to define its role in serving society. More recently, design has been subdivided according to the outcome of design thinking into product-, process-, or solution-oriented design. Drawing a distinction between these three outcomes will facilitate the task of defining design, and the related task of defining aesthetics, by tracing the path/mood of design as follows:

1→ If design can be defined as a form-giving activity (object-oriented) → then the expected outcome of design is clearly a tangible product (artifact) → accordingly, aesthetics refers to beautiful products that evoke aesthetic emotion and lead to aesthetic judgment.

Design, as a form-giving activity, has been adopted as a term by many historical design schools, e.g. the Arts and Crafts movement in England, Art Nouveau in France, the Deutcher Werkbund and Bauhaus in Germany. In these historical movements there was always a struggle between designers to theorize their activity between functionalism and formalism. The central issue was whether '*form follows function'* or '*form informs function'*. Accordingly, aesthetics was underestimated in 'functionalism' and overestimated in 'formalism'.

Giving an example of the 'formalist' assumption, where the focus is just on the formal attributes of design work, Clive Bell (1914), an English art critic and theorist, argued that all works of art have only one common attribute: "significant form". Form (shape, color and proportion) evokes a certain emotion in the user, and this is what leads to what Bell called "aesthetic emotion" (qtd. in Kleinman 2008, p. 171). This means that 'aesthetics' as a term in this example refers to beautiful products that evoke aesthetic emotion and might lead to aesthetic judgment as "*a specific reflection elicited by the nature of* an object" (Wagner 2008, p. 19).

2→ If design can be defined as a dynamic process aimed at enhancing the experience of human beings (process-oriented), → then the expected outcome of design is intangible product/activity (service).→ Accordingly, aesthetics refers to aesthetic experience or aesthetic judgment

Many designers nowadays reject the earlier idea of design as a form-giving activity. Richard Buchanan, for example, criticized this idea by stating "This is an outdated idea that no longer

matches our understanding of design" (Buchanan 2000, p. 22). He described this way of thinking as 'traditional design thinking' because it focuses only on the external perspective, whereas he distinguishes between two different types of form: static and dynamic. He explains this further:

> From an external perspective, form is often understood as shape or physical configuration. We ask, is the form suited to the function that the product must fulfill? Viewed from an internal perspective – inside the experience of human beings – form changes from a concept of static shape to a concept of dynamic process and performance. Dynamic form – the form of a product as it is experienced by a human being. (Ibid, p. 24)

In this respect, Mitchell (1993) published his book titled *Redefining Designing: From Form to Experience*, where he calls for a shift in the focus of design from the physical form of the product toward user experience, or (Buchanan's terms) from static form to dynamic form, a form that is experienced by the user. Mitchell introduces three categories: collaborative, contextual and intangible design, that focus on design as a participatory approach. All these concepts will be explained later in this research (see 'Design for Sustaining Human Development'), but the point is that aesthetics in this respect could be seen as a positive quality/value of user experience that refers to the aesthetic experience. This experience is, then, the main criterion of successful design.

3→ If design can be defined as an agent of (social) change that aims at anticipating a better future, (solving real-world problems/problem solving-oriented) → then the expected outcome of design is innovative solutions (in the form of new products, services and systems). → Accordingly, aesthetics here is twofold: aesthetics of anticipation as well as aesthetics of change

Mapping out design literatures in the third chapter will offer different definitions of design that embrace the multiple dimensions of design as 'problem-solving activities'. (See Design for Sustainable Development) Following Victor Papanek (1984), Herbert Simon (1996) and Richard Buchanan (2000), this thesis defines design as a problem-solving activity that focuses on responsible strategic action to change existing situations into preferred ones, in which human needs are satisfied by bringing established cultural values into the realm of concrete reality. Therefore, design in this research is seen as a springboard toward the desirable future.

At this point, calling on Ernst Bloch's work, '*The Principle of Hope,'* (1954 in Ger., 1986 in Eng.) is relevant because it encompasses all the aspects of design mentioned above, and at the same time challenges naïve utopian assumptions about the desirable future.

Bloch published his work in five complementary parts, where each part focuses on one aspect. Together, these parts could be seen as a systematic five-stage process to realize the dream of a better future, as follows:

Part 1: (Report) 'little daydreams' → to focus on people (man in the street) and their unregulated wishes, what is left to wish for in old age, the signs of change.

Part 2: (Foundation) 'Anticipatory consciousness' → to examine the anticipatory consciousness: the central task is the discovery of the 'Not-Yet-Conscious'.

Part 3: (Transition) 'wishful images in the mirror' → to show (Utopias): sketches, 'Happy End, seen through and yet still defended', by decoding traces of hope in everyday life and culture.

Part 4: (Construction) 'Outlines of a better World'→ to plan or outline Utopias: turning the previous sketch into a blueprint.

Part 5: (Identity) 'wishful images of the fulfilled moment' → to describe a 'homeland of identity' or the 'highest good' which can be anticipated in art through the experience of the 'fulfilled moment'.

Bloch's theories have been summarized by the German philosopher Siegfried Maser (2003) in his book *Zur Ästhetik Gestalteter Produkte* (Towards an Aesthetic of Designed Products) and the description that follows is based on Maser's account: Bloch, who follows the view of the neo-Marxist and Frankfurt schools, believed that change can be instigated by capitalizing on the duality of revolution and evolution. Bloch argued that the current moment is located in a dark area and accordingly there are two ways of thinking insightfully about a better world: forwards into the future (Utopia), or backwards into the past (history) (see Fig. 1-1). By adopting the first way of thinking, Bloch believed that all types of art would play a significant role in developing and changing societies in a positive way because, in his opinion, art has a social function. Accordingly, the good life is about a successful society where human desires, needs and consciousness develop from what is 'urgently needed' to what is positively 'striven for'. The value of Bloch's work is that it focuses on changing the misery of present reality by anticipating a desirable future. In so doing, Bloch called for insightful thinking about specific visions (Utopias) of a better future, anticipating the desirable future and then coming back to the present and starting to realize that future now, at this moment. This process is what Maser calls the "aesthetics of anticipation".

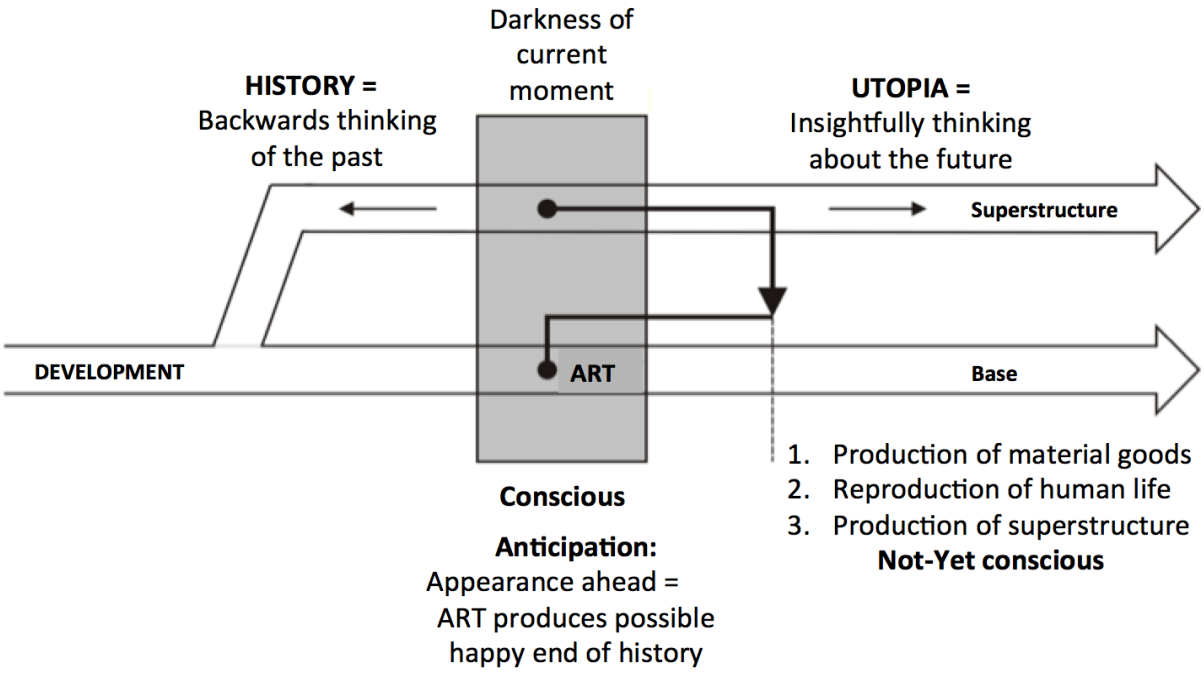


Figure 1- 1: E. Bloch: Aesthetics of anticipation: Utopian interpretation (Tran. to Eng. from Maser 2003, P. 174)

This process of imagination is in the first place a mental process. It is a kind of mind therapy: you need to train your mind to work separately from the current place and time. All that is needed is to adopt a new mode of perception. In the context and practice of therapy, the concept of an "aesthetics of change" was first coined by Keeney (1983) and refers to "aesthetic thinking approach to deal with complexity". It has also been described by Heinz von Foerster, "as a reflective style of

thought and a new mode of perception that plays with ideas involving self-referential logic, circular causality, and other factors of a cybernetics of cybernetics" (Wagner 2008, p.19).

Accordingly, aesthetics in this thesis refers to both types of aesthetics: the aesthetics of change and the aesthetics of anticipation. Both are required in a complex social context as a dynamic process of thinking and reflecting that arises from a new mode of perception. This mode aims at changing the status quo by anticipating the desirable future. It poses a potential for individual, social and cultural development, which in turn allows us to see the desirable future through a new lens.

1-3-2 Sustainable Development and Poverty

Merril Jackson (1977), an American anthropologist, defined development as "increasing attainment of one's own cultural values" (p. 9). This definition is significant because it respects the privacy and diversity of each culture as well as promoting the single cultural system of values that will move a nation forward. Accordingly, sustainable development in this thesis refers to a continuous searching process for a better life and situation-in-life, according to the socio-cultural determinants and constraints that support group of values. It aims at promoting human welfare in accordance with one's own culture, in order to *obtain a life worth living* with respect to three aspects: human, social, and industrial development. In this respect, growth refers to "the *increase of quality of life* far away from material society and measure humanity progress in terms of growth of *security, happiness, stability and sustainability"* (Meadows et al 2004, ch.7).

The definition of poverty in this thesis is thus not limited to the economic dimension of 'living on less than $1 a day', which is usually adopted from an outdated development perspective; rather this thesis has widened the narrow concept of 'income poverty' and sees poverty as "the lack of the basic capability to live in dignity" (Salama 2005 (in Arabic), p. 67). This research criticizes the first perspective mentioned above, and adopts a comprehensive definition that respects all the dimensions of human deprivation, material and immaterial, where the tension between human needs and human wishes is very clear.

In addition, "the vicious cycle of poverty" (VCP), according to Ragnar Nurkse (1953), refers to a country's growth status that remains at the same stage on the curve of economic growth and development. "Povertycratic" is a synonym for the downward spiral of poverty based on the opposite concept to human development. It refers to the bureaucratic administration – and by the same token reinforcement – of poverty: the operating mechanism that rotates poverty to become a social life-cycle in favor of certain groups in society. It is, in other words, a systematic mechanism and practice for sustaining poverty.

1-4 Thesis Outline

Chapter 1 introduces the background of the work presented in this thesis and presents key concepts: aesthetics and design, sustainable development and poverty. It outlines the basic structure of the chapters in this thesis.

Chapter 2 reviews the initial literature about sustainable development discourse and explores the national scene in Egypt regarding development efforts for tackling poverty.

Chapter 3 explores the connections between design capabilities and sustainable development efforts that aim at tackling poverty. It proposes a vision of 'design for sustainable development' by reviewing the literature around design and visualizing what kind of design responsibility should be adopted to make traditional design thinking and activity more comprehensively responsible. Design humanism and social responsibility raise the issue of reorienting design activities towards serving poor people. This chapter ends by raising research questions to explore appropriate methods that empower designers to accomplish their new tasks effectively.

Chapter 4 addresses design research. After stating the epistemological position of this research and adopting 'transdisciplinarity' as a new mode of knowledge production (Klein 1998), a case study is presented as a strategy of inquiry, and different methods are selected for gathering, analyzing and interpreting the relevant data. The dynamic mixed methods approach (Creswell and Clark. 2011) chosen for developing an appropriate methodology is explained.

Chapter 5 explains in greater depth the development of an operational framework to explore additional skills and methods that designers should learn in order to grasp the complexity of their world. System thinking, scenario building and strategic planning and acting are important methodological components presented in this chapter. Finally, related methods are collected and synthesized in an operational framework to process the data in the empirical study.

Chapter 6 visualizes the design thinking process needed for tackling poverty in the Al-Darb Al-Ahmar case study and what kind of solutions can be expected. It starts by presenting the project background and critical issues, and reflecting on the actual design intervention story described as traditional design thinking. Finally, applying the operational framework in three sequential phases highlights the different outcomes of each phase and sums up key findings.

Chapter 7 discusses different dimensions of expected interventions, roles, and skills that designer should adapt as a sustainable strategy to tackle poverty in Egypt. It starts with providing answers to research questions and discussing three significant contributions made through this research. It offers recommendations for three areas: design education, design practice, and design policy. This chapter ends by making suggestion for future studies and considering the implications of the thesis for social change in Egypt.

Chapter 8 summarizes the key findings of the thesis.

Conclusion

The reader of this dissertation will notice that each chapter deals with different parts of the same picture. Each chapter provides an appropriate understanding of diverse issues that are in fact different ways of seeing the same thing. All these parts are integrated into one big picture that facilitates the process of anticipating and seeing the desired future through a new mode of aesthetics.

The designer who understands the radical difference between the tools and methods of system thinking and strategic action proposed in this thesis and those of traditional design, which just focuses on form aspects, will be better able to transform and reorient design from the status of a form-giving-activity towards that of a more responsible and effective discipline. With that awareness/perception in mind, designers who seek to contribute positively to society may proceed to articulate their potential contributions in dealing with complex problems (i.e. tackling poverty) in a sustainable way.

This leads to the conclusion: it is first necessary for designers to be changed, and then they can change their societies. Designers' skills and insights must be exploited and employed for further understanding community needs and interpreting these needs properly in the form of products, services and systems, because the time has come for design to participate effectively as a partner in the development process.

Yet designers still need additional skills and methods that help them to cope with a continuously changing world and that offer a new kind of thinking, knowing and acting with the aim of seeking a better future, where 'life is worth living'.

Such awareness is crucial for the complex world in which we live, operate and intervene. In Victor Hugo's words, "When a man understands the art of seeing, [then] he can trace the spirit of an age and the features of a king even in the knocker on a door" (1862/2001, p. 126).

Operating as a designer requires nothing less.

Chapter 2: Literature Review

This chapter aims at understanding the development discourse and exploring the national scene in Egypt with regard to efforts to tackle poverty. It presents a discussion of key ideas and sustainable development debates from different theoretical backgrounds and literature that capture diverse definitions and ways of approaching poverty. This discussion is needed to properly elaborate and understand the complex context of sustainable development, especially because the area extends far beyond the author's original area of expertise in furniture and interior design. Entering the world of development thought and identifying the basic premises of development epistemology has required considerable background in the relevant literature. This will be outlined in the following pages.

Development philosophy is based on two different perceptions: Darwin's theory of evolution and Durkheim's notion of sociological perspective. *Development conceptual timeline* addresses the paradigm shift in development discourse since the 1960s through three successive UN development decades. Next, dealing with *Sustainable development and the United Nations Development Program (UNDP)* touches on many historical events that illustrate three modes of sustainable development. Then *Poverty and dualisms in development approaches* explains the issues and debates regarding the process of reducing poverty and speeding up development. This is characterized by clear dualisms: growth vs. distribution, agriculture vs. Industrial development, capital vs. labor-intensive technology, and modern vs. traditional methods. Finally *Egypt and the vicious circle of poverty*, explores the national scene in Egypt regarding development efforts to alleviate poverty.

2.1 Development, Sustainable Development and Poverty in Egypt

Sustainable development is a common central issue in the discourse of development, and is employed in other academic disciplines such as business, anthropology and political science, where each discipline and perspective enriches the term and holistically explores the relations between its economic, social and environmental dimensions. In order to avoid misunderstanding or misinterpretation it is impossible, therefore, to elaborate upon sustainable development without an appropriate understanding of its context and complexity. Entering the world of development thought is necessary to capture the vision and development debate as well as its approach to the alleviation of poverty. The challenge is to identify the basic premises of development epistemology.

2.1.1 Development philosophy/vision

In general, development means progress, enhancement, or improvement, but the term has various definitions and interpretations that are relevant to the notion of development discourse. Starting with the Oxford Dictionary's definition, development means "the process of developing or being developed. The reference here is to development as a process, which embraces two further concepts: "a specified state of growth or advancement", and "a new and advanced product or idea" (Development [Oxford Dictionary Online]). This definition emphasizes that development has two faces: the first implies a natural process of biological growth that ends up with a state of maturity, while the second could be interpreted as the product of a creative process incorporating ideas of improvement and progress in the form of innovative ideas.

A similar distinction between these two different concepts of development is gained by connecting them either to Darwin's theory of evolution or to Durkheim's notion of sociological perspective, as Lewis indicates:

> Development is often understood in Darwinian terms as a biological metaphor for organic growth and evolution, while in Durkheimian sense it can be associated with ideas about the increasing social, economic and political complexity in transitions from 'traditional' to 'modern' societies. (Lewis 2005, p. 4)

Following these two assumptions, development discourse calls on the Darwinian concept when it adopts "the idea that all peoples of the planet are moving along one single track towards some state of maturity, exemplified by the nations 'running in front'" (Sachs 1992, p. 3–4). Durkheim's insight, on the other hand, can be found in the discourse that promotes the modernization paradigm over the traditional and "considers development as a process by which traditional thoughts and structures are replaced by modern ones" (Misra 1985, p. 50).

In order to complete the process of development, Misra (1985) gathered many elements from different scholars. If one of these is achieved at the cost of others, it cannot, in his opinion, be considered a development. (p. 35). These elements are explicit and implicit in Misra's definition of development. For him development means:

> (a) increase in material welfare through increased productivity;
> (b) increase in social welfare through education, health programmes, and so on;
> (c) improvement in the social content of human life: rich family life, community feeling, art, music, and so on, depending on individual interests and preferences;
> (d) increased safety, freedom and opportunity and also sense of participation in local, regional and national affairs; and
> (c) an equitable distribution of the fruits of development among different groups of people and among different regions of the country. (Misra 1985, p. 2-3)

All these notions of development are succinctly, summarized by Merril Jackson (1977), an American anthropologist. For him, development is an "increasing attainment of one's own cultural values" (p. 9). This definition emphasizes the following assumptions: first, it pays a lot of respect to the privacy and diversity of each culture. Secondly, it realizes the importance of a single cultural system of values. Finally, it proposes that each nation should have its own independent style of development through promoting its own cultural model to move forward. This definition will be adopted in the present thesis, as, although it dates from 1977, it is still relevant for the design context in a country like Egypt, today.

2.1.2 Development conceptual timeline

In 1917 the term 'development' started to appear in the USSR, where it was used in planning the market economy (Misra 1985, p. 35). Then during the Second World War there was a wide consensus on development thinking as a linear theory of progress dominated by western culture and capitalism (Adams 1990, 2001, p. 6–7). In the post-war period attention in this context turned towards Asia, Africa and Latin America (Misra 1985, p. 35).

In the inaugural speech of US president Harry Truman in 1949, the southern hemisphere was labeled an "underdeveloped area", where he called for US intervention to "lighten the burden of the poor". He claimed that through "industrial progress", "more food, more clothing, more materials for housing and more mechanical power" would be produced in order "to raise the standard of living" there (Illich 1992, p. 91).

Sachs (1992) linked the role the US sought to play after the collapse of European colonialism with development orientation, arguing that after Europe had lost its power (European colonialism) the United State seized the opportunity to play a pivotal role consistent with its cultural myth of being a 'beacon on the hill' (p. 1). Sachs argues that

> They launched the idea of development with a call to every nation to follow in their footsteps. Since then, the relations between North and South have been cast in this mould: 'development' provided the fundamental frame of reference for good neighbourliness on the planet. (Sachs 1992 p. 1)

While the timing of Truman's speech was used by Wolfgang Sachs (1992) as a key to date what he called "the age of development" (p. 2), Truman's call for strengthening the industrialization process in what he called the "underdeveloped area" was put into practice by the United Nations when it announced the establishment of three development decades. It is important to trace these UN development decades in order to reveal the complexity of the notion of development and its different aims over time, as well as its various practices:

- *The First UN Development Decade* (1960-69) called for "international co-operation to strengthen the industrialization processes in the underdeveloped countries" (Misra 1985, p. 79). Under the motto "improving the quality of people's life", this decade invested a lot of attention and effort in the integration of social aspects with predominant economic concerns. In 1962, the First UN Development Decade Report Proposals for Action stated that "The problem of the underdeveloped countries is not just growth, but development […] Development is growth plus change. Change, in turn, is social and cultural as well as economic, and qualitative as well as quantitative" (qtd in Esteva 1992, p. 13).

Later, after failing to integrate the social aspect within the development process, there was a paradigm shift from 'social aspects' to 'social obstacles'. At the end of the decade, it was clear that development efforts did not lead to the alleviation of poverty: "The fact that development either leaves behind, or in some ways even creates, large areas of poverty, stagnation, marginality and actual exclusion from social and economic progress is too obvious and too urgent to be overlooked" (qtd in Esteva 1992, p. 13).

- Therefore, *the Second UN Development Decade* (1970-1979) called for "a direct attack on Poverty" (Misra 1985, p. 79) through what Robert S. McNamara, the president of the World Bank,

called the 'dethronement of GNP' – the prime quantitative indicator of economic growth was in other words considered irrelevant (Esteva 1992, p. 13)[1]. During this decade there was a paradigm shift that merged the social and economic aspects of development (Esteva 1992, p. 14), generating terms such as 'participative development', 'human-centered development', and 'endogenous development'. The latter term, promoted by UNESCO and referred to self-reliance development, was the most accepted of these concepts (Esteva 1992, p. 15): "It proposed taking due account of the particularities of each nation" (ibid). It implies the revocation not only of the necessity to mechanically imitate industrial societies, but also of the imposition of a single cultural model on the whole world (Esteva 1992, p. 16). However, little acknowledged was the claim that adopting the 'endogenous development' "leads to a dead end in the theory and practice of development", because according to this claim "it contains a contradiction in terms" where different cultures have different systems of values and not every system of values necessarily leads to development (p. 15-16). Later, this argument was turned on its head by recalling the positive experience of East Asian societies:

> Every society that was once poor has been castigated for being lazy and unworthy until its citizens became rich, at which [point] their new wealth was 'explained' by their industriousness. Japan is a case a point, a society that was viewed as doomed to poverty when foreigners first arrived in the 1870s. The foreign press in Japan […] cautioned that Japan would never be rich because of the indolence of the society. […] Similarly, [Max] Weber and his followers hypothesized that East Asian societies with Confucian values, notably China, would be unable to achieve economic progress. Later, when China and other countries of East Asia began to grow rapidly, 'Asian values' were invoked as the explanation for success, turning the argument on its head. (Sachs 2005, p. 315–316)

- The 1980s were *the Third UN Development Decade*, where "a series of international commissions both inside and outside the United Nations expanded the definition of development to include its ability to create human well-being and not just an economic infrastructure. The United Nations Development Program (UNDP) adopted the idea of human development, which considered issues of culture, social equality, health, nutrition, and education among others" (Margolin 2007, p. 111). Unfortunately, this decade was called "the lost decade for development" (Esteva 1992, p. 16) because it showed no better results than the previous decades had managed.

However, in the quarter of a century since the last UN development decade was launched, the scale of global poverty and inequity has grown, indicating an obvious failure in development. Since the 1960s developed countries have grown richer and developing countries poorer. Sachs (1992) illustrated in numbers the gap between developed and developing countries stating that "in 1960, the Northern countries were 20 times richer than the Southern, in 1980 46 times" (p. 3). In the light of this, Sachs declared that "the age of development is on the decline", explaining that "its four founding premises have been outdated by history" (Sachs 1992, p. 2). These premises were:

1. 'At the top of the social evolutionary scale' the 'superiority' of the US and industrialized nations due to their advanced technology has been 'shattered by the ecological predicament'. According to Sachs, we need five or six planets 'to serve as mines and waste dumps' (ibid, p. 2).

[1] Gross National Product is calculated by subtracting the value of goods imported into a country from the value of locally produced goods and services, called Gross Domestic Product or GDP (Misra 1985, p. 5-6).

2. Providing “a comforting vision of a world order”, the division of the world into a first, second and third world “has been turned upside down” (ibid, p. 2-3) by the collapse of the Soviet Union (the second world).
3. “[T]he campaign to turn traditional man into modern man [...] [is] not viable. [Unfortunately] people are caught in the deadlock of development; […] they are [...] like refugees who have been rejected and [...] shunned by the 'advanced' sector; […] they are forced to get by in the no-man’s-land between tradition and modernity.” (Ibid, p. 3)
4. The illusion of “catching up” with nations “running in front” represented “development's hidden agenda [...] the Westernization of the world” (ibid, pp. 3-4).

The failure of the UN development decades has led commentators to advocate a radical rethinking of the notion of development, and has provided fertile ground for “a new development ethos” (Esteva 1992, p. 16). The 1990s saw a call for ‘redevelopment’, in which Esteva (1992) distinguished two global paths, relating to North and South. In the North, the focus was on redeveloping “what was maldeveloped”, whereas in the south the focus was on the informal economic sector under the banner of combating poverty. In the author’s words:

> In the North, [...] attention is drawn by the speed and the conditions under which what was previously developed (socialized medicine, nuclear plants, steel production, pre-microchip manufacturing, polluting factories or poisonous pesticides) may be destroyed, dismantled, exported or substituted. […] In the South, however, [...] redevelopment implies the economic colonization of the so-called informal sector. In the name of modernization and under the banner of the war on poverty [...] redeveloping the South involves launching the last and definitive assault against organized resistance to development and the economy. (Esteva 1992, p. 16)

He explained the connection between development, redevelopment and sustainable development by stating that:

> Conceptually and politically, redevelopment is now taking the shape of sustainable development; [...] it is being actively promoted as green and democratic redevelopment; [...] sustainable development has been explicitly conceived as a strategy for sustaining 'development', not for supporting the flourishing and enduring of an infinitely diverse natural and social life. (Esteva 1992, p. 16)

Moreover, sustainable development is regarded as a vehicle for rapprochement between development thinkers and environmentalists after recognizing the impact of development on environmental degradation. Adams (2001) indicated “the literature on the global environment of the past twenty years has portrayed a second crisis, paralleling that of poverty, a crisis of environmental degradation” (p. 12). Therefore, the convergence of development thinkers and environmentalists is an urgent task for both groups to overcome the problems of the environmental impacts of development as well as poverty. This urgency was illustrated in the United Nations Conference on Environment and Development in Rio in 1992 (UNCED, or the 'Earth Summit') where sustainable development became the driving concept (Adams 2001, p. 2).

Adams (2001) explained that “environmentalists speak of 'sustainable development' in trying to demonstrate the relevance to development planners of their ideas about [the] proper management of natural ecosystems. The conviction behind works such as the *World Conservation Strategy* is [on

the one hand] that sustainable development is a concept that truly integrates environmental issues into development planning" (p. 5), while on the other hand

> The idea of sustainable development was welcomed by development thinkers and practitioners because it seemed to provide a way out of the impasse and away from past failure, a means of re-routing the lumbering juggernaut of development practice without endangering belief in the rightness and feasibility of its continued forward movement. (p. 12)

2.1.3 Sustainable Development and the United Nations Development Program (UNDP)

Theoretically, the 'post-development' age in the discourse of development started in the 1990s with the promotion of the concept of 'sustainable development'. However, the term 'sustainable' can be traced back to 1972, when it was introduced in "The Limits to Growth", a report for the Club of Rome's project on the predicament of mankind (Meadows et al 1972). The aim of this project was to systematically analyze and identify global problems, or in the author's words

> to examine the complex of problems troubling men of all nations: poverty in the midst of plenty; degradation of the environment; loss of faith in institutions; uncontrolled urban spread; insecurity of employment; alienation of youth; rejection of traditional values; and inflation and other monetary and economic disruptions. (qtd. in Margolin 2002, p. 80)

Initial debate arose in the context of expanding populations, economic growth and limited resources. Twelve possible future scenarios from 1972 until 2100 were explored in order to draw attention to different "choices open to society to reconcile sustainable progress within environmental constraints" (The Story of the Club of Rome [online]).

In 2004, this report was updated in the form of a book whose fundamental message was that global political-decisions must act faster than hitherto, in order to prevent global "overshooting" – i.e. exceeding limited resources. The book called for a new concept of growth that respected the *increase of quality of life* as opposed to purely material values and measured humanity's progress in terms of the growth of *security, happiness, stability and sustainability* (Meadows et al 2004, ch.7).

In addition to the efforts of the Club of Rome towards a sustainable world, considerable contributions of different United Nations international commissions and conferences on "sustainable development" took place on the international level; most literature refers this back to 1972. The significance of these global events was to formulate the idea of "sustainable development" and to promote this concept further. Three important historical events were held between 1972and 1992 that cannot be ignored when talking about sustainable development (SD) in general. They reflect three modes of SD:

1. The 1972 UN International Conference on the Human Environment in Stockholm is considered the first milestone, despite the fact that this term was not clearly introduced at this conference. But the significance of the event is twofold: it was the first meeting for stakeholders from the environment sector, who called, in the "Stockholm Declaration on Human Environment", for a connection to be made between environmental issues and development discourse; the second factor was the establishment of a United Nations Environment Program (UNEP) that focused on

environment and development (Stokholm+40 – History and background [online]). Thus the first mode of sustainable development was about joining development and environmental issues.

2. In 1987, the Brundtland report of the World Commission on Environment and Development (WCED) sponsored by the UN, entitled "Our Common Future", introduced the term "sustainable development" under the classical definition that has been used until recently: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development 1987, p. 37). This report focused on the "needs of the world's poor" and called for "a new era of economic growth – growth that is forceful and at the same time socially and environmentally sustainable" (ibid, p. 7). This illustrates the second mode of SD that led to the expansion of its limited scope around environmental issues to the integration of economic and social dimensions.
3. In Rio de Janeiro, sustainable development became a driving concept behind "the earth summit" conference held in 1992 that ended up with "Agenda 21: the Earth Summit Strategy to Save Our Planet". This agenda was promoted as "a global agenda for change" that developed a set of guiding principles to support strategies for change (Adams 2009, p. 2). Simultaneously, a considerable contribution to this event was an emergent *culture of sustainability* fueled by capturing attention in various spheres of the media, as well as governments and non-governmental organizations (Margolin 2002, p. 97).

Afterwards, many international conferences were held in order to follow up the achievement of previous conference outcomes and recommendations, as well as to report challenges and obstacles, and there were some c*alls for another high-leve*l meeting to overcome these obstacles. Unfortunately, these meetings and many subsequent efforts just accumulated in the form of good words, reports and documents, whose intentions paled in front of the scale of the problem at issue.

Moreover, to ensure that different countries would adopt the goals of sustainable development and be willing to participate actively in pushing SD efforts forward, eight Millennium Development Goals (MDGs) were developed in the 2000 UN Millennium Development Declaration as an international development framework to be achieved by 2015. These goals were:

> halving extreme poverty, halting the spread of HIV/AIDS, providing universal primary education, eliminating gender disparity in education, reducing the under-five mortality rate, reducing the maternal mortality rate and achieving universal access to reproductive health, developing a global partnership to address the needs of the poorest countries, to further an open non-discriminatory trade system, and to deal with developing country debt; and ensuring environmental sustainability by integrating sustainable development into country policies and programs, reducing biodiversity loss, improving access to safe drinking water and sanitation, and improving the lives of slum dwellers. (United Nations Headquarters 2010, p. 9)

Figure 2- 1: Millennium goals, (source: http://www.jolkona.org/wp-content/uploads/2011/07/millenniumgoals.gif)

The intention of MDGs is to facilitate the implementation of sustainable development principles on the country level by integrating them into different country policies and programs. However, in the 2002 report on implementation Agenda 21, Kofi Annan, the United Nation Secretary General, stated that "progress towards reaching the goals set at Rio has been slower than anticipated" and "there is undoubtedly a gap in implementation" (qtd. in United Nations Headquarters 2010, p. 8).

The need to deal with emerging challenges and gaps in implementation has called for a new paradigm of sustainable development. **"**A new model could chart a development path that truly is concerned with equity, poverty alleviation, reducing resource use, and integrating economic, environmental, and social issues in decision making. The opportunity is ripe to move beyond incrementalism to real systemic change" (United Nations Headquarters 2010, p. 3).

In 2012 two international conferences were held to promote sustainable development and action:

- *"Stockholm +40"* was convoked to commemorate the first UN conference held 40 years earlier in Stockholm. The intention of this conference was to put a holistic view of sustainable development from different fields and sectors together in practical solutions. Therefore, the focus of this conference was to gather promising examples for sustainable development in three categories: sustainable innovation, sustainable production and sustainable living. The outcomes and recommendations of this conference were published and used as clear messages for young people, civil society organizations, businesses and other stakeholders, as well as politicians and decision-makers at "Rio+20" (Stockholm+40, [Online]).

- *"Rio +20",* held in 2012 in Rio de Janeiro, aimed to develop strategies for the eradication of poverty, the promotion of social equity, the creation of an institutional framework for sustainable development, and the promotion of the green economy approach to environmental protection (Rio+20 [Online]; General Assembly 2012, p. 21). Green economy here refers to economic growth based on friendly environmental investments that respect the social dimension – or in UNEP words "growth in income and employment […] driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services" (UNEP-Green Economy, [Online]).

While the three UN development decades presented above failed to reduce poverty, they did promote the concept of 'sustainable development', described as "a new bureaucratic exercise to give development another lease of life" (Esteva 1992, p. 16). In 1990 the United Nations Development Program (UNDP – the economic development arm of UN according to Jeffrey Sachs) published the first Human Development Report, which adopted the idea of putting people at the heart of the development process. The focus of Human development Reports released since 1990 has been that "People are the real wealth of a nation" (UNDP Human Development Reports [online]).

The primary intention of the Human Development Reports since 1990 has been to encourage a human development approach towards achieving MDGs around the world. This has included raising awareness about human development especially among policy makers in order to promote a national political agenda, engaging national partners, and measuring progress on the country level (UNDP Human Development Report [online]).

However, since publishing the first Egypt Human Development Report (EHDR) in 1995, the role of design in sustainable development has not yet been recognized in local design discourse. Different frameworks, action plans and strategies were suggested and/or established in the following report (EHDR 1996) to support decision-making in combating poverty, but the gap between theoretical efforts and reality is still unfortunately large. Poverty reduction is still one of the most challenging problems facing Egypt; it blatantly reflects the gap between theoretical efforts and reality.

Recent Egypt Human Development Reports (EHDR) have recognized particular academic disciplines, particular segments or specific sectors as partners in the ongoing process to achieve sustainable development: EHDR 2007 focused on "Business Solutions for Human Development", EHDR 2008 put a spotlight on the role of civil society in "Egypt's Social Contract", and EHDR 2010 focused on "Youth in Egypt" as a power resource for change and building the future. These partnerships, however, did not include design or even mention the potential of design thinking as a reliable discipline for supporting the development process. These issues will be discussed later in detail (see Design for Development).

2.1.4 Poverty and Dualisms in Development Approaches

Lack, deficiency, and deprivation are synonyms of poverty and reflect a common perception of suffering conditions. According to Egypt Human Development Report (1996), "poverty can be seen as a multidimensional phenomenon that might be expressed within two complementary concepts: namely, income poverty and capability poverty" (p. 1). To the former concept belong such definitions as "non-availability of the minimum […] required for economic or biological survival, as defined by one's particular culture; also, all other forms of deprivation, destitution, hunger, malnutrition, homelessness, ill health, and exclusion from educational possibilities etc." (Majid 1992, p. 160). To the latter belong other aspects such as the "inability to meet one's goals, lack of good fortune or self-confidence, not being respected or loved by others, being neglected or abandoned etc." (ibid).

These notions of lack, deficiency and deprivation reflect physiological and psychological needs that were first explored and explained by Abraham Maslow, the American psychologist who introduced the concept of a 'hierarchy of needs' in his 1943 paper "A Theory of Human Motivation". According to him, human needs can be ordered in five sequential levels that start from basic needs (bottom of the pyramid), then move on towards more advanced needs (top of the pyramid). These levels are:

1. Physiological needs: water, air, food, sleep
2. Security needs: shelter, employment, health insurance
3. Social needs: love, belonging, family, friendships
4. Esteem needs: social recognition, respect, personal worth
5. Self-actualizing needs: personal growth, self-awareness, fulfilling self-potential

The first four needs are described by Maslow as 'deficiency' needs (D-needs), which must be fulfilled to affect human behavior in a positive way; the last level comprises growth or 'being' needs (B-needs), as they refer to personal growth (Cherry [Online]). Maslow's notion of needs is in close conformity with the following UNDP definition of human poverty:

> Human poverty [… means] more than a lack of what is necessary for material well-being, poverty can also mean the denial of opportunities and choices most basic to human development. To lead a long, healthy, creative life. To have a decent standard of living. To enjoy dignity, self-esteem, the respect of others and the things that people value in life. Human poverty thus looks at more than a lack of income. Since income is not the sum total of human lives, the lack of it cannot be the sum total of human deprivation. (UNDP 1998, p. 25)

Maslow's 'hierarchy of needs' refers to the common ground of all human beings, but human needs are perceived differently according to the culture to which they belong. In underdeveloped countries, particularly, human needs are different from those in developed countries. Poor people in underdeveloped countries seek good food, clean water and shelter for survival, whereas in developed countries air and water pollution and the degradation of the environment – the direct result of producing cars, weapons, plastics and using chemical fertilizers and pesticides – are high on the list of factors detrimental to human needs (Kattel 2005, p. 260). This argument led to the adoption of a basic minimum needs (BMN) approach in 1972 development discourse in relation to developing countries (Misra 1985, p.37). BMN highlighted the importance of meeting basic needs as opposed to investing resources in industries:

> Arguments in favour of this approach ran something like this. If development means the improved welfare of the people, especially the poor, it should be directed towards meeting the basic needs such as food, clothing, shelter, education, health, and so on of the people on a priority basis. Instead of investing resources in industries which produce armaments, electric motors, tractors, we should use labour intensive technology which employs more hands. All this would also mean a change in production patterns, ownership of the means of production, and access to resources and employment. The rural areas where the majority of the poor lived would therefore get more attention, and so on. (Misra 1985, p. 40)

Later, this approach was criticized as setting wrong priorities:

> By 1972 came the panacea of Basic Minimum Needs (BMN) which in essence sought priority for consumption over production and distribution over growth. As the 1970s rolled over we stood confused about what development really meant. It was neither growth without distribution nor distribution without growth. It included satisfaction of basic needs, but in a poverty stricken society even the satisfaction of basic needs required economic growth. If it was the welfare of man, which should be the goal of development, then which man? If it was the poor man, then development would have to involve a direct attack on poverty. But a direct attack on poverty did not necessarily mean a BMN approach to development. Nor did it mean a zero growth economy. (Misra 1985, p. 37)

Going back to Brundtland's definition of sustainable development, it becomes clear that the term "needs" was being used in this discourse without elaborating an accurate definition. Rather it pointed to 2 different dimensions of need: 'needs of the present' versus 'future generation […] needs'. This implied that human needs are not just perceived differently according to the culture, they are also perceived differently over time.

In economic contexts the concept of 'deficiency' needs is favored in the description of poverty: "poverty became a measure of a person's lack in terms of 'needed' goods, and even more of 'needed services': the poor were defined as those who lacked what money could buy for them to make them 'fully human'" (Illich 1992, p. 94). In marketing contexts, on the other hand, the perception of real needs is converted into serving the demands of mass production instead of satisfying those needs. Through the media needs are intensified and misinterpreted into products that sometimes abuse the poor's low level of awareness; Illich (1971) illustrated this as "the translation of thirst into the need for a Coke" (qtd. In Gomez 1977, p. 40). These notions of fabricated needs were well explained by Fry (1999), when he distinguished two forms of need: real needs and fabricated needs. The latter is the primary operative task of the market economy: "the creation of an ability to manufacture 'wants' within mass markets. These 'wants' are felt and treated as if they were 'needs'. The dichotomy, for instance, between what [an] individual can be shown to actually *need* and the manufacture and marketing of products they *want and desire* […] is stark" (p. 110). Illich used the example of the junk food business to criticize the misuse of poor people as a marketing target group. This food is cheap and affordable, but combining fats, calories, sugar and proteins in one meal, it is unhealthy and leads to different diseases. One of these diseases is obesity, which thanks to junk food, is nowadays a symptom of poverty (p.111). For him, poverty is 'a slippery fish'. He continued to make a distinction between abject poverty and other forms of poverty: "Abject poverty is unambiguously the lack of the means to basically subsist – not having access to water, food, the fuel to cook it, shelter, clothing and warmth in a cold climate. All other forms of poverty exist as a tension between needs, wants and the significance of lacks" (p. 111).

In developing countries however, a common dominator for poverty remains the misery of basic living condition measured in terms of unmet needs. The 'needs assessment' of the poor is, therefore, the primary step for national governments to design any poverty alleviation program; yet the challenging issue remains to consider their real needs, in relation – or contradistinction – to what 'the poor perceive as their needs' (Majid 1992, p. 164). Jones (1977) admitted this conflict in considering people's real needs, explaining that 'a man's desires may conflict with what someone else thinks he needs'. He follows Marx here in describing 'desire' or 'want' as the outer expression of 'need', and need as the inner reality. He concluded that need is "an abstract deduction or inference from a consensus of desires or wants […] it conceals a moral judgment behind the apparently purely factual facade" (p. 92).

A clear challenge facing national governments regarding poverty alleviation is, therefore, to focus equally upon satisfying different dimensions of human need, mental, spiritual and physical, rather than just economic. As Misra put it:

> The issue of poverty ought to have been central to the development process. But the national governments did not go beyond recognizing it as a problem whose lasting solution (they ought) lay in a rapid increase in the Gross Domestic Product (GDP). (Misra 1985, p. 37)

But, he argued,

> Real development upholds the supremacy of man as a member of the human community and aims at promoting his welfare by way of creating conditions in which his mental, spiritual and physical potential can be realized to the best advantage of the society as a whole. (Ibid, p. 36)

And:

> Man is the measure of all things. […] it is the happiness of man that ultimately counts. The development of a country must, therefore, be seen as the sum total of the satisfying lives of millions of men and women who constitute its citizenry. The final goal of development is to obtain a life worth living. (Ibid, p. 66)

The question, then, is how to orient the practice of development to improve the real quality of life in developing countries and what kind of process is necessary in order to speed up development and slow down poverty? Accordingly, the major policy debate in developing countries is characterized by dualisms such as growth vs. distribution, agricultural vs. industrial development, capital vs. labor-intensive technologies, centralization vs. decentralization, and modern vs. traditional. Choosing between these alternatives can, however, lead to confusion. In fact, the issues involved must be explored and analyzed if the development process is to be rerouted onto a better path and speeded up. The following paragraphs draw attention to some of these debates.

- **Growth versus distribution**. Growth in the development discourse usually refers to economic growth and is typically measured by Gross National Product (GNP) or per capita income, both of which criteria aim at increasing productivity. In contrast, distribution refers to equal distribution of income and wealth, since distributive justice aims at the reduction of inequity among people.

'Growth first and distribution next' is the policy attitude of developed countries that support rapid economic growth in developing countries despite its negative impact on the poor:

> They depended on what is popularly known as the trickle-down process of development. The so-called Kuznet's hypothesis suggesting that in the initial stages of development income disparities between the rich and the poor would increase, but in the long run [their] decrease provided the rationale for concentrated development. The message was that the poor must endure the growing pains of development and accept increasing poverty in the hope that in the ultimate analysis their incomes were bound to rise. In the short run there was nothing that anyone could do about them! (Misra 1985, p. 43)

However, the Human Development Report (UNDP 1996, p. 1) stated that "human development is the end – economic growth is a means" (qtd. In Adams 2009, p. 10). This statement still supports the claim that the lasting solution to poverty lies in economic growth, although this was clearly invalid in light of past negative experience. After all, "by the mid-1960s it became clear that high rates of growth did not guarantee the well-being of the poor and marginalized" (Misra 1985, p. 37). In fact the opposite happened.

Therefore, Misra (1985) concluded that growth and distribution must go hand in hand in order to effectively solve the complex problems of developing countries. He stated that:

> The developing countries […] need rapid economic growth as they need equally rapid social transformation. They have to create a strong industrial and technological base to protect

> themselves and to develop their latent resources. While doing this they have to lay adequate emphasis on equity and justice to ensure rapid improvement in the economic and social well-being of the poor. […] both have to go hand-in-hand. (Misra 1985, p. 41)

Brazil and India are cited as good examples of this two- pronged development strategy: increasing productivity and the reduction of inequalities (ibid, p. 39). Unfortunately, Egyptian politicians and economists have failed to apply such strategies, as will be further elaborated in the next points (and see also Egypt and the Vicious Circle of Poverty).

- **Agricultural versus industrial development.** The question of 'what should come first agriculture or industry' has been raised since the 1950s. The logic of giving primacy to agriculture was that most developing countries suffered from both shortages of food and overpopulation, so investment in this sector, it was thought, would lead to more productivity that would increase people's earning capacities. Moreover, foreign aid in this sector would be in the form of technical know-how to boost agricultural production. The counter argument was that giving primacy to industrialization was the successful experience of developed countries and must therefore also be followed by developing countries. "Massive investments in basic industries, power, projects, machine tool industries" were all that was needed. Foreign aid on a massive scale could be restored wherever there was shortfall in investment resources or savings failed (Misra 1985, pp. 41-42).

The controversy was related to balanced vs. unbalanced growth, where the imbalance referred to investment in selected sectors that guaranteed a high capital output ratio. Resources generated from these sectors could, it was argued, be directed to boost other sectors. The counter argument for this approach was that 'only a few sectors were able to absorb modern technology' in a way that the remaining sectors 'which formed the major component of the national economy, would act like millstones around the necks of the leading sectors'. In addition to the fact that it is difficult to separate the interdependence between the sectors in order to lift one sector while neglecting the others (ibid, p. 42).

Sekem in Egypt is considered a leading example of a real-life solution to this controversy. It is an agriculture-based business, grown from a single individual vision to a multi-business "that generates the profits necessary to sponsor […] social and cultural projects. […] Sekem is now a significant exporter of high quality cotton products, as well as dried fruit and herbs, at highly competitive prices. […] It has also established a non-profit NGO, the Egyptian Society for cultural Development (SCD). SCD allows Sekem to access funds from international foundations, […] as well as much-needed know-how and hands-on expertise" (Seelos 2004, p. 13). "In 2003 this Egyptian social enterprise received the 'Right Livelihood award', also known as the 'Alternative Nobel Prize', in recognition of its achievements in integrating commercial success with social and cultural development. The jury saw in Sekem a business model for the 21st century" (Seelos 2004, p. 1).

This is confirmed by Misra's conviction regarding action in specific circumstances, avoiding dogma-based judgments. According to Misra (1985)

> experience shows […] that classical economies cannot offer solutions for non-classical development problems. […] The developing countries needed both […] approaches depending on the specificity of circumstances. None of these either singly or joint[ly] could be adopted as a matter of principle because there is nothing like a single development situation in the world. The relative importance given to a particular sector, region or group must change through time. It would, therefore, be useful to debate and understand the

potentialities of each sector at each stage of development rather than to base judgment on dogmas. (Ibid, p. 43).

- **Modern versus traditional.** Modernity refers to the replacement of traditional thought and structures with modern ones and considers traditionalism the main cause of underdevelopment, while traditionalists abhor modernity and attempt to take developing countries back to their distant past. Thus, "'Tradition' is often associated with something old and irrelevant to modern society – something which is inward-looking and which retards progress"; whereas "'[m]odernity' is antitraditional, outward-looking and changing" (Misra 1985, p. 50). Real modernization, however, means that a society is going ahead in a transformational process based on positive accumulated experience through time to replace old thoughts with new ones (ibid, p. 51).

Hassan Fathy is a good example of real modernization in the Egyptian context, with his successful experience in developing rural areas in Upper Egypt. His message was: we need to return to traditional construction methods using appropriate technology instead of expensive materials like steel and concrete imported from abroad. In his book *Architecture for the Poor* (1976) he advocated utilizing traditional crafts and skills: building with stones, sandy brick and mud brick and following ancient Nubian techniques in building the dome and vault. His philosophy focused on houses for poor that were aesthetic, affordable, and respected human needs for healthy housing (using natural ventilation methods), as well as the local desert environment. One of the notable projects mentioned in his book, El Gourna village in Luxor, illustrates his philosophy and has made him well known on the national as well as international level. For him, "Culture is the outcome of the interaction between human intelligence and the natural environment in which people live, to satisfy their spiritual and material needs."

- **Capital versus labor-intensive technologies.** The major point of debate here is that developing countries should adopt modern technology from developed countries in order to skip over technological research and development. Another line of thought advocates that developing countries should acquire advanced scientific and technical knowledge instead of advanced machines, as this knowledge will be used in promoting and developing local machines that are more appropriate to the skills and needs of the local people. This means that the latest technological knowhow is necessary for developing countries to 'harness their latent resources' and improve the traditional technology. A third school argues that technology must fit local human skills, which means respecting the context of an 'unskilled, illiterate and poverty-stricken population'. Simple tools promote simple living and small-scale industries (Misra 1985, p. 46).

"The point here is to understand that less technology is not necessarily anti-technology. We are already technological beings. Technology is like food – we cannot survive without it but equally cannot survive with too much of it" (Fry 2009, p. 187). Therefore, we need to be more critical in confronting these questions: What kind of technology do we need? Who will use this technology? And for what purpose?

> It is important that traditional technology is promoted for [local] benefit. That, however, does not mean that modern technology should be neglected. Technology is not a static phenomenon; it is something which is always evolving. The new technology, about which many have objections, is part of the achievement of man. We should not try to throw it away. We should make use of it for the benefit of man. (Ibid. p. 47)

On the other hand,

> To leapfrog a society needs an adequate pool of scientists, technicians and engineers. And none of these can be produced readily without a sound technological base. [Therefore] developing countries have to create a good foundation for science and technology through institutions of scientific research and research and development. (Ibid. p. 46)

Generally, both aspects, capital-intensive and labor-intensive technologies are important. Each has its own benefits, but developing countries should adopt goal-oriented thinking in choosing between them: “which of the two is better for which activity and in which context? It is not a question of either this or that; it is rather a question of which one for which purpose and situation? If our objective is to generate mass employment, we should use labour-intensive technologies. [But] we should not reject technology because it does not provide employment for the masses" (Misra 1985, p. 47).

2.1.5 Egypt and the Vicious Cycle of Poverty

Up to this point, it has been important to explore the international scene regarding development efforts to alleviate poverty and to mention some successful examples from Egypt, but here the focus will be entirely on Egypt.

The problem of poverty in Egypt does not lie in resources; or to be more accurate, Egypt is not suffering from poor resources but from poor governance and corruption. Egypt has a problem in the political system, where decision-making is oriented towards managing resources in favor of enriching a few people to the cost of others. In addition, the intention of previous strategies for impoverishment (or better ‘sustaining poverty’) adapted by the Mubarak regime was to get huge amounts of money under the banner of ‘combating poverty in Egypt’ then to claim that over-population was the main reason for the country’s poverty problems.

Of course there is a relationship between poverty and overpopulation. From a neo-liberal perspective, the assumption that overpopulation leads to poverty is convincing, and the conclusion is that poor people are responsible for their poverty because they do not respond to birth-control programs. From the biological-sociological perspective, however, poverty is the active factor raising the growth rate of the population. Given the weak performance of social safety nets in Egypt, poor people are motivated to produce more children and, likewise, to impel them early onto the work market. They regard a child as a successful investment, as well as a future insurance for the time when the parents get older without any social insurance umbrella (Lakosha in Arabic 2004, pp. 34-35).

Ḥasanayn Kishk (2004), a researcher in the National Center for Social Research, conducted an important study that confirmed this biological-sociological perspective in considering overpopulation to be a result of poverty and not vice versa. He states that producing a big family is one way to cope with poverty: lacking a reliable system of health or social insurance, poor people try to cover themselves by producing many children both as a source of income (helping at work), and as a source of security when they are aged (taking care of them) (Kishk 2004 in Arabic, p. 236). In his source book about deliberate policies of peasant impoverishment in Egypt, Kishk (2004) mentioned the following tools that support existing class relations and reproduce poverty: policy, law, religion,

media (TV, radio, press), and education (p. 13). But he focused especially on three mechanisms that lead to impoverishment: political, economic and religious mechanisms.

- According to Kishk (2004), the political mechanism lies in the absence of democracy, which has led to an authoritarian social mold, despite the slogans and restricted elements of democracy that have been available since 1976. Among the authoritarian traditions are restrictions on party pluralism, falsification of elections, abuse of the election's integrity, the existence of an emergency law since 1952, stark restrictions on civil society organizations (CSOs), various forms of repression against workers' protest movements that have deprived the working class of parties or even syndicates (ibid., pp. 163-166), thus reinforcing the idea that poverty can be seen as "the lack of basic capabilities to live in dignity" (Salama 2005 in Arabic, p. 67).

Hamzawy (2013), professor of political science at the University of Cairo and human rights activist, discussed current political trends in his article titled *Authoritarian Rule and a Fund Loan* (with reference to the International Monetary Fund), which can be summed up in the following points: limited circulation of information related to the president's decisions and his government's policy, absence of transparency, absence of accountability for elected or appointed politicians and executives, absence of public and media debate on crucial issues, marginalization and exclusion of the opposition from the circle of political and social decision-making [ibid, Press release]. This means that the current government [15 April 2013] does not take into account or respect Egypt's social contract launched in 2005 and 2008 (*Egypt Human Development Report* 2005 and 2008), which stipulates that the state must promote democratic practices and encourage civil society's participation as a key partner in the development process. Hamzawy's criticism reveals the threadbare nature of the country's democratic systems and undermines the credibility of governmental efforts to combat poverty.

The direct impact of the absence of transparency and accountability is political corruption, whereas the indirect impact is mirrored in a poor community. Salama (2005) argues that if political corruption grows by numerical progression then the corruption of the community grows by geometric progression. Every political spoiler is followed by dozens and perhaps hundreds of spoilers at the social level, and social corruption flourishes exponentially. This in turn leads to a poor community represented by poor institutions, poor services and poor people. According to Salama, poor institutions eradicate chances of career promotion and kill professional ambition for the competent through expelling good elements and keeping on bad ones, while, poor services consist in farming out state-subsidized services into the pockets of non-targeted private groups (Salama 2005, pp. 81-82).

- Considering the religious mechanism, it is important to spotlight the Islamic perception of poverty. In Islam, poverty is seen as a serious disaster that must be fought; and it is the reason for further disasters. Islam offers many instructions and directions concerning possible ways to alleviate poverty. Islam rejects the perspective that regards poverty as something sacred, a fate to be accepted as such, and stresses that money is an important element for the establishment of the good life and the practice of religion (Alshargaby in Arabic [online], 02.05.2013). Hence getting rid of poverty is part of the inbuilt moral code of Islam.

Generally in Egypt, people – both Muslim and Coptic – are quite religious, and the governments have realized that religion plays a major role in their life. Therefore, all governments employ religion in a way that empowers them and enables them to control people's minds and shape their religious

awareness consistently with their own interests. According to Kishk (2004), the political and cultural recruitment of religion aims to support state power by shaping public awareness on the one hand to legitimize state policies, and on the other to justify the status quo and the defense of class differentiation. Kishk (2004) explains two paths further (in Arabic, pp. 167-176):

> 1. Employing the authority of official religious institutions for the maintenance and continuation of the capitalist social structure. These institutions support the official political discourse in its components and goals and legitimize it. In so doing, the religious institutions play an indirect role in strengthening the hierarchy and patron-client relations. Thus Elshikh El Shaarawy, the minister of endowments and Azhar affairs in the 1970s, devoted his intellectual efforts to defending class differentiation. According to him, the people's livelihood is in God's hands and there is no relation between livelihood and the quest for a better life. Muslims have to accept existing conditions with their severe disparity in wealth distribution, because this is divine wisdom. The poor man should ask God to help him to be patient in his poverty; the rich man should thank God for the blessings bestowed on him. In the philosophy of Shaarawy, faith is half patience and half thanks and this is the wisdom of wealth and poverty (Ibid).
>
> 2. Recruiting the activities of religious NGOs (Islamic and Christian) as part of the religious and political policy that aims to control and dominate the class struggle. This is evident in the way the logic of social reform is directed to alleviating the class conflict caused by exploitation, as well as to strengthening the habit of charity. This logic leads to the maintenance of the established socio-economic order by mitigating its economic, social and political contradictions and effects – or rather by camouflaging contradictions that cannot be altogether bypassed (Ibid).

- In the economic policies context, the Egyptian government has imposed a lot of legislative and institutional changes within its general policy since the 1970s with the aim of liberalizing the Egyptian economy in favor of the global economic system. This is stated clearly in the Egypt Human Development Report 2008:

> Starting in 1971, a new political current began to favor a limited degree of political pluralism, and a more liberal economic system was introduced, adopting an 'open-door' policy that increasingly saw over a twenty year period a gradual insertion of many of the political, economic, and technical features of a globalizing world. (Handoussa 2008, p. 65)

The objectives of 'open' economic policies in the 1970s and 1980s were to transfer technology and increase production capacity in a so-called 'open productive economy'. Unfortunately, the wrong application of these polices led to an increase in imported luxury goods and to what later became known as the 'open consumer economy'. In effect, this policy promoted consumption over production in Egyptian society, affecting both production and consumption habits and lifestyle in a way that was difficult to abandon once it had become established (Awad 2009, p. 30).

Kishk (2004) criticized these economic reform policies because they were designed to support the privatization of all sectors and to facilitate foreign capital flows at the expense of the workers and underclass. They were reinforced by other practices such as controlling (and manipulating) market prices (abolition of subsidy on production requirements and loan interest rates), reducing real wages through inflationary mechanisms (raising the prices of goods and services), and orienting market condition to promote foreign investment (ibid. pp. 141-142).

The economic development practice of the last twenty years of the 20th century, which called for what is known as 'structural adjustment', was also criticized by Jeffery Sachs (2004), Special Advisor to UN Secretary-General Kofi Annan, in his book *The End of Poverty*. Referring to the prescription of IMF and World Bank structural adjustment programs, he argued that the structural adjustment era had gone seriously wrong:

> This era […] was based on a simplistic, even simple-minded, view of the challenge of poverty. The rich countries told the poor countries: Poverty is your own fault. Be like us (or what we imagine ourselves to be-free market oriented, entrepreneurial, fiscally responsible) and you, too, can enjoy the riches of private-sector-led economic development. (Sachs 2005, p. 81)

The assumption on which this era had been based was, he continued,

> to address the four maladies assumed to underlie all economic ills: poor government, excessive government intervention in the market, excessive government spending and too much state ownership. Belt tightening, privatization, liberalization, and good governance became the order of the day. (Sachs 2005, p. 81)

According to Kishk (2004), the capitalist mode of growth in Egypt was, under the banner of 'structural adjustment', subjected to the requirements of capital accumulation in 'rich countries' (p. 151). Economic funds and foreign debt are tools of this 'structural adjustment', which Kishk (2004) referred to as ways of 'external looting'. He illustrated his idea with the example of the USAIDS fund for Egypt which from 1974 to 1984 was spent on supporting the US private sector by buying products for billions of dollars in order to sell these in the Egyptian market. This amounted to a twofold self-serving, because much of this funding (58%) returned to the US, and at the same time Egypt was transformed into a 'future market' for American products. Instead of orienting these funds toward national production they were used to create impoverishment through imports. Furthermore, the huge amount of foreign debt opened the door to foreign intervention in economic, social and political decision-making (Kishk 2004, pp. 151-153).

In accordance with the measures of the United Nation Development Program, economic reform policy was, then, associated with achieving high rates of economic growth in some areas and periods, but with little improvement in human development (Awad 2009, p. 20). This 'unbalanced development' continued until 1980. Then during the period 1981-2001 Egypt moved from 'unbalanced development' in favor of economic growth to bad performance in both directions: economic growth *and* human development. This is what Gustav Ranis et al. (2006) have called a 'vicious circle', where the country is caught in the trap of low economic growth and low improvement in human development with a negative feedback relationship (qtd. In

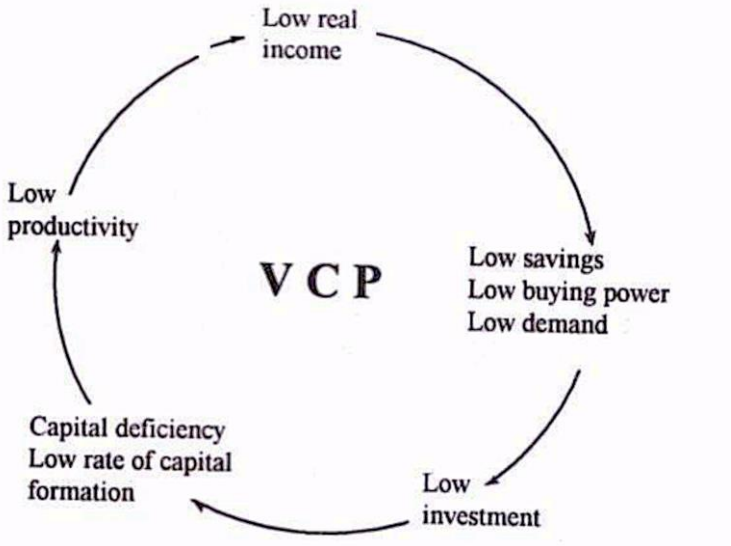


Figure 2- 2**:** Nurkse's Vicious Cycle of Poverty, (source: economicsconcepts.com)

Awad 2009, p. 22-23).

Writing in 1953, the Norwegian economist Ragnar Nurkse coined the term the vicious cycle of poverty (VCP), referring to a country's growth status that remain at the same stage on the curve of economic growth and development. Low income leads to low savings, low investment, capital deficiency, and low productivity (see Fig. 2-2). To break this vicious circle, according to Nurkse, investment should be directed in a new pattern that allows production rates to grow and creates added value (Awad 2009, p.32).

'Povertycratic' is another term used to describe the same condition. Referring to the bureaucratic institutionalization of poverty and the term highlights the operating mechanisms that rotate poverty, creating a social life cycle in favor of certain groups in society. 'Povertycratic' is a synonym for the downward spiral of poverty; it widens the narrow concept of 'income poverty' to include the converse notion of human development with all its dimensions and indicators (Salama 2005, p. 67). The focus here is on systematic mechanisms and practices of sustaining poverty by further impoverishing the poor and enriching the rich. Two of these ways stand out: Acquisition of the country's wealth, and monopolization of the fruits of development. In additions to Increase the burden on the poor to finance the public budget by overloading strategies or by depriving them of essential social services (Salama 2005, p. 82).

Conclusion

This chapter has reviewed the literature on development discourse. Different development approaches have been identified and literature relevant to sustainable development has been presented. Answers have been proposed to the following questions: What is sustainable development and what are its key debates? Is approaching sustainable development in a developed country different from approaching it in a developing country, and if so how? What is the relationship between sustainable development and poverty? What processes are involved in the attempt to achieve sustainable development?

Addressing the three UN Development Decades since the 1960s illustrates the paradigm shift in the notion of development discourse from strengthening industrialization, through improving quality of life, to combating poverty through merging the social and economic aspects of development, and finally focusing on human development. It is clear that the only common denominator is the declared desire to improve the quality of people's lives by combating poverty in developing countries, regardless of any hidden agenda. However, since the UN development decades were launched, the scale of global poverty and inequity has grown massively, indicating an equally massive 'failure of development'. This failure instigated a radical rethinking of the notion of development, which ended up in the 1990s and the subsequent two decades with the concept of sustainable development as a strategy to give development a last chance to survive.

In this chapter it has been argued that approaching sustainable development in developed countries is different from approaching it in a developing country, because human needs are perceived differently according to the culture and they are perceived differently over time. For instance, sustainable development in developed countries focuses on ecological improvement and progress compatible with economic well-being, while sustainable development in developing countries focuses on getting out of poverty and achieving human well-being.

Regarding poverty in Egypt, the chapter has argued that Egypt does not suffer from poor resources but from poor governance, which is reflected in the form of poor people, poor communities and poor economy. Poverty is rotated to become a social life cycle. The example of the interface between politics and religion was cited in this context, entailing the distortion of the basic attitude of Islam to poverty. It was argued that Egypt is suffering from a 'vicious cycle of poverty' where the state has fallen into the trap of low economic growth and low improvement in human development with a negative feedback relation.

Different development policies in developing countries have been addressed in this chapter to visualize the major issues and debates on development such as growth vs. distribution, agricultural vs. industrial development, capital vs. labor-intensive technologies, and modern vs. traditional. These polarities apply not only to the differences between countries and cultures, but also within each (developing) country. The discussion presented above has shown the complexity of the issues at stake and provided an outline of the solutions proposed over the past half century, without suggesting that any of them could be the final word on the subject.

Chapter 3: Theoretical Foundations

This chapter aims at building bridges between design, sustainable development and poverty. In doing so, it explores answers to the following questions: What do sustainable development and design have in common? What kind of design perspective do we need to adopt in developing countries to tackle poverty? What is the relationship between design, sustainable development and poverty?

The first section is about finding out the connection between design capabilities and activities on the one hand and sustainable development efforts on the other, by creating a specific theoretical framework. It proposes a vision of design for sustainable development. This vision aims at changing traditional design thinking and doing that focuses only on form-giving activity towards a more responsible and comprehensive vision. This comprehensive vision will seek to build direct connections with three distinct development aspects: human, social, and industrial development.

The second section explores the relationship between design and poverty. It starts by presenting distinctive characteristics of poverty as a 'wicked problem' in order to prevent falling into the trap of oversimplification. Design humanism and social responsibility raise the issue of reorienting design activities towards poor people as a disadvantaged social group. Different design movements from design history are traced in order to visualize what kind of design responsibility should be adopted in this respect.

Finally, the chapter ends by raising research questions that seek to reorient design practice in developing countries towards socially responsible design, in order to deal with local peoples' problems, and that explore appropriate ways to empower designers to accomplish their new tasks.

Introduction

As explained in the previous chapter, the focus of the First UN Development decade in the 1960s was mainly upon economic advancement. This implies the conviction that the economic welfare of developing countries would be attained only through "international co-operation to strengthen the industrialization processes in these countries" (Misra 1985, p. 79). This in turn explains what prevailed in industrial design discourse in the 1950s and 1960s. Design historians have demonstrated that industrial design was recognized as an activity through which business promotion and economic development would be achieved (Bonsiepe 1977; Pulos 1988). The result was production and even overproduction, which is perceived today as an unsustainable attitude.

In the 1970s, the shift in the development paradigm occurred in the Second UN Development decade towards a direct attack on poverty. It was argued that merging social and economic aspects of development would be the right way to achieve the new goal. This paradigm shift clarifies what happened in design discourse. Simultaneously, the shift was mirrored in design discourse towards Papanek's (1984) 'design for the real world', which led to the emergence of design for solving real-world problems of developing countries. It also witnessed the increase in designers' awareness of their social role, which led to 'the responsible' design movement or the 'socially useful product' debate (Whiteley 1993, Amir 2004). However, by the end of 1970s, the United Nations had understood design 'to be part of the process of industrial development' rather than 'a partner in the humanitarian effort to alleviate poverty' (Margolin 2007, p. 112).

In the 1980s and 1990s there were many efforts to bring design, ecology and the environment together, among them “Green design, green architecture, environmental design, ecodesign, sustainable design, sustainable products, eco-efficiency and sustainable consumption” (Fry 2009, p. 183). Designers sought to link design activities with other disciplines in what Whiteley called an ‘outward-looking’ way - i.e. focused on the context of a product rather than solely on its form. For instance, ‘sustainable consumption’ emerged simultaneously with 'sustainable development', “having its high point as a major agenda item of the 2002 World Summit on Sustainable Development” (Fry 2009, p. 191).

All these notions and perspectives from design history illustrate the role design has long played in the development process. Unfortunately, however, this has not generated a stable image of design at either the national or international level (Margoline 2002). Answering the question about the connection between design and sustainable development will help form such an image.

3.1 Design for Sustainable Development (a Vision of Design)

Development in a general sense means ‘increasing the quality of life’, and sustainable development is about increasing human, economic and social well-being in a way that respects and conserves available resources. According to Seelos and Mair (2004), the main players in this area fall into 3 categories: 1) governments, non-governmental organizations (NGOs), and international organizations [IOs], which target broad policy areas using a multitude of instruments, as well as enforcing legal structures to protect human and labor rights or the environment; 2) corporate social responsibility, defined by the European Commission as a "business contribution to sustainable development"; and 3) social entrepreneurship, defined as the contribution of individual entrepreneurs to sustainable development (p. 7).

However, these categories were articulated from a social entrepreneurship perspective, which seeks to stress its own role. Another categorization is from a design perspective for social wellbeing that “generally operates in three capacities: 1) Commercial product/service development for low-income markets through social enterprise; 2) Technical assistance and capacity building with local artisans or micro-enterprises; 3) Product, service and infrastructure development assistance for communities and organizations” (Weis 2010, p. 2 [Online]).

Development sectors could, however, also be categorized according to service, product and/or system provider as follows: 1) the public sector, represented by governments and NGOs, which offer different public services to citizens through developing community-enabling infrastructures and systems; 2) the private sector, represented by corporations and business companies, which target economic growth by offering products and services, as well as participating in sustainable development through corporate social responsibility (CSR); 3) international organizations (IOs), which design, promote and fund different programs and reports focusing on human development and aiming to achieve sustainable development. Diagram 3-1 represents these three categories in relation to relevant development aspects.

Developing a specific framework as a vision of what is often written as ‘Design 4 Sustainable Development’ will be achieved by creating a connection between different design activities and the three objectives of sustainable development: Design 4 Sustaining *Human* Development, which seeks increasing human capability; Design 4 Sustaining *Community* Development, which seeks to improve

living conditions and create positive human interactions; Design 4 Sustaining *Industrial* development, which aims at promoting production in order to increase income and generate wealth. Diagram 3-2 illustrates this vision.

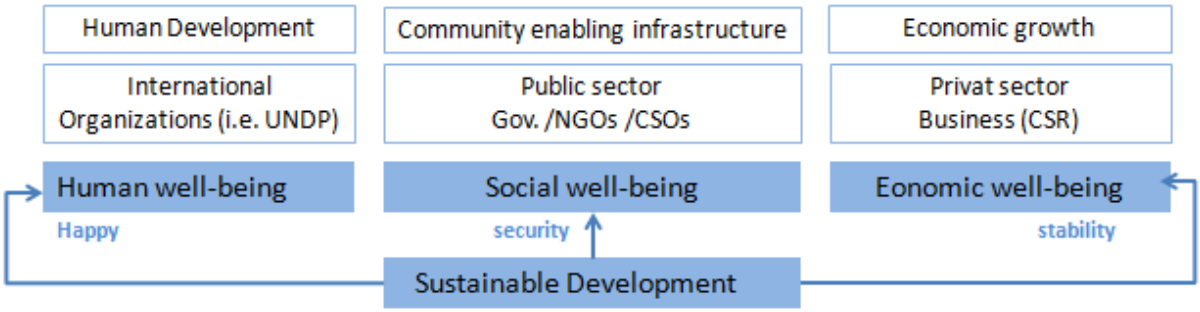


Diagram 3- 1 Three categories of sustainable development

Design 4 Sustainable Development (D4SD) is a vision that builds on the design commitment to realize three sustainable development objectives. The vision adopts a clear definition of design. Following Papanek (1984), Herbert Simon (1996) and Richard Buchanan (2000), this research defines design as a problem-solving activity that focuses on responsible strategic action to change existing situations into preferred ones, in which human needs are satisfied by bringing their own cultural values into concrete reality. Hence, design becomes a service to satisfy human needs by solving their problems in a tangible way; and if we extend the idea of human needs to a more general sense of well-being, then design, in turn, aims at improving well-being at the human, social and economic level.

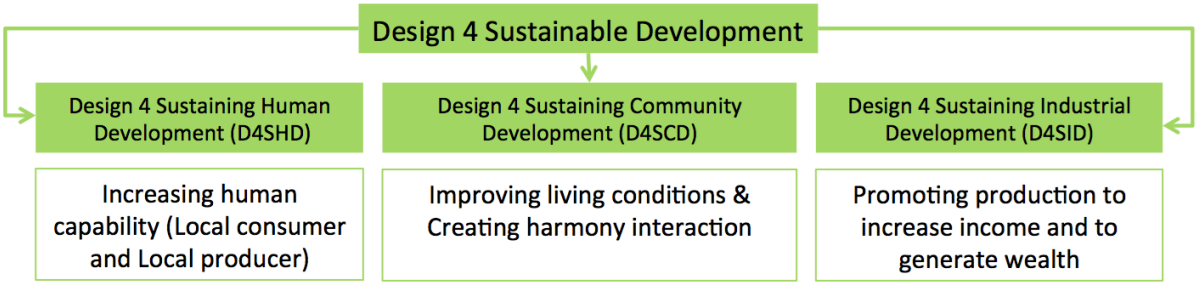


Diagram 3- 2 Design for Sustainable Development

But how can this be done? The next step in the vision is to draw on the historical roots of design, exploring different design activities with regard to the categories concerned. Design activities should be distinguished by their impact towards purposeful, impact-oriented action. For example, Papanek's notion of design as a 'problem solving-activity' can be considered a stepping-stone for responsible design, while Simon's definition of design as "courses of action aimed at changing existing situations into preferred ones" (Simon 1996, p. 111), articulates the big picture of design as an agent for changing the world for the better. Buchanan's 'human-centered design' seeks to put the human being in a central position in design thinking. For him, "[d]esign is not merely an adornment of cultural life but one of the practical disciplines of responsible action for bringing the high values of a country or a culture into concrete reality, allowing us to transform abstract ideas into specific manageable form" (Buchanan 2001, p. 38).

The following subsections provide examples of design work to express these different focuses in a tangible way.

3.1.1 Design for Sustaining Human Development

It is important to state that designers have the ability to respond to human needs because they are "grounded in specific social and cultural frameworks, and that every design process will necessarily require certain assumptions about the needs of users" (Herling 2008, p. 267). In this context, the approach of 'user-centered design' recently emerged in design research to fulfill human needs. 'User-centered design', originally, emerged from marketing studies to which designers made a considerable contribution. In the context of industrial design, the concept 'user-centered design' is widely used in relation to usability, a concept whose perception must be extended beyond ergonomic aspects of the human body to include "psychological, sociological and anthropological studies of what fits the human body and mind" (Buchanan 2001, p. 37).

On the other hand, the term user is also often related to consumption, where it elaborates how users interact with products. In this context, 'user-center design' is used as a tool to develop more attractive products in order to motivate users to buy more products and at the same time to promote the consumption culture. Papanek is well known for his criticism of designing for the consumer economy: "Papanek's pitch was straightforward – designers needed to take responsible decisions, spend less time designing ephemeral goods for the consumer economy, and spend more creative time on generating solutions to the real needs of the disadvantaged 80 per cent population of the planet" (Fuad-Luke 2009, p. 44).

Despite Papanek's criticism of design for marketing and consumption, other commentators observe that it is possible to redirect consumption for human benefit. The user-centered design model is de facto mainly a tool used to feed consumerism, and hence to serve primarily commercial purposes, but it could, they argue, be redirected towards social benefit, where it would add value in the context of humanitarian design, fulfilling real human needs rather than market needs. Pilloton (2009), for example, has suggested a two-fold path exploiting consumerism as a tool in support of humanitarian design: "While it is easy to dismiss consumerism as a force opposed to humanitarian design, it is actually a tool we can use to implement human-centered design solutions into a mainstream market while we work to make systematic changes in social practices and group mindsets" (p. 35). This is, however, a long process that must start by answering the following questions: "'What is the problem and how can I best approach it?' and 'What are the most basic needs that design can serve?' […] That idea, of designing for needs first, should serve as a viable business and design model for maximizing social impact and long-term usability" (Pilloton 2009, p. 35).

Recent trends in design focus on design as a creative process for solving real-world problems. In the wake of John Chris Jones' books *Design Methods* (1992) and *Designing Designing (*1991), Mitchell (1993) distinguished three interrelated design trends: collaborative design, contextual design, and intangible design. These new trends emphasize that the focus for design activity is not just physical objects but also people's experience.

> Collaborative design does not simply constitute the participation of users in a designer's process, [...] rather it is a means through which designers and non-designers alike may participate as equal partners in the design process, shaping not only the outcomes but the aims of designing as well. [...] Contextual design is the design not of objects themselves but

> rather of contexts – dynamic conditions or situations. [It] is [...] a catalyst to user experience, usually aesthetic experience. (Mitchell 1997, pp. 68–69)

According to Jones (1992)

> what is needed now in design: a change from the specifying of geometry, physical form, to the making of a context, a situation, in which it is possible for others, for us all as users, makers, imaginers, to determine the geometry ourselves. It requires a new tradition, a new sensitivity, and much learning by everyone. (Quoted in Mitchell 1997)

The third approach, intangible design, refers to "design in space and time of experience itself. [...] with intangible design users' experience becomes the focus of the design process. Objects may be part of an intangible design, but they are secondary to it. Intangible design is particularly relevant to the emerging postindustrial design tasks" (ibid.).

All these trends in design could be put under one umbrella called 'integrated design'. The term was, in fact, originally used by Papanek (1984), who stated that

> A more durable kind of design thinking entails seeing the product [...] as a meaningful link between man and environment. We must see man, his tools, environment, and ways of thinking and planning, as a nonlinear, simultaneous, integrated, comprehensive whole. [...] it deals with the *specialized* extensions of man that make it possible for him to remain a *generalist*. (Papanek 1984, p. 293)

The "extensions of man" referred to here are the tools and instruments that extend man's capability to remain productive. For example, an affordable radio for illiterate poor people is one significant product that extends their ability to gain different information and raise their awareness. This was Papanek's idea behind designing a Tin Can Radio in 1965. He explained:

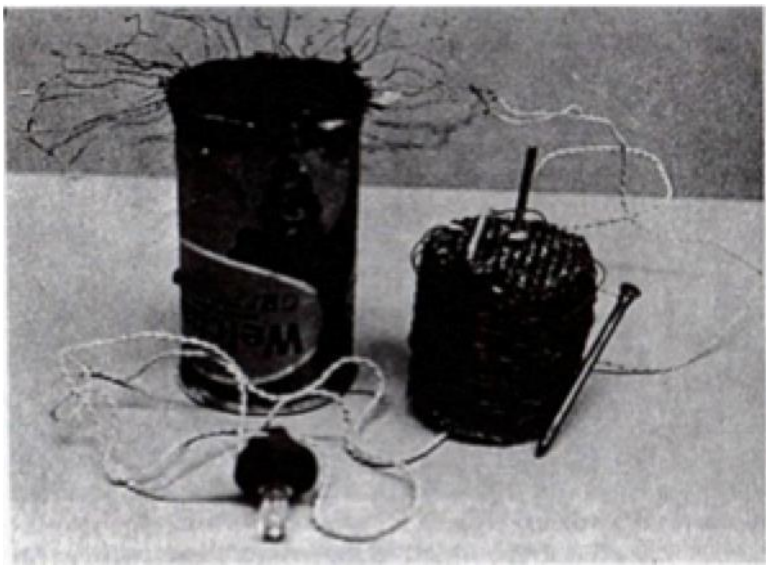


Figure 3- 1: Papanek's original radio receiver (Papanek 1986, p. 225)

> The entire unit was made for just below 9 cents (1966 dollars). […] The most important intervention is to make information of all kinds freely accessible to people […] it was manufactured as a cottage industry product. […] Of course the radio was ugly […] But painting it would have been wrong: I felt that ethically I had no right to make aesthetic or good taste decisions that would affect millions of people in Indonesia, members of a different culture. […] The people in Indonesia decorated their tin-can radios […] In this way it has been possible to bypass "good taste" and to design directly for the needs of the people by "building in" a chance for them to make the radio truly their own through design participation. (Ibid. pp. 226–227)

Of course, there have been a lot of criticisms and attack on Papanek's Radio from different industrial designers all over the world who only focus on form. In their opinion, Papanek's radio was ugly and is not acceptable as an industrial product. This is a question of education. Traditional design education focuses on form-giving-activity, as expressed by Pilloton (2009): "As product designers, we're trained to design things that work and things that are beautiful." She added, "both function and beauty are short-term […] Impact, on the other hand, is a longer-term goal. To design for impact means looking beyond how something works to what it enables the user to do" (loc. cit. p. 31).

Papanek clearly explained the impact of his radio, stating that "The radio […] seemed a benign device to deliver news or health information to more than 120 million people, many of whom were illiterate […] The original Indonesian radio is no longer used. […] However, the original radio served a need for a time, as a transitory device bringing people from a pre-literate to a post-literate level" (Papanek 1986, pp. 44–45). He admitted that the radio was ugly, but at the same time he reasoned that people from every different culture that used it had the opportunity to decorate the radio in their own way, with their own ornamentation (what is now called 'participatory design'). This would give them a certain pride in their participation and would give the product a kind of individuality and privacy (now known as customization). In actual use, then, the ugly form of the original radio paled before its impact (see Papanek 1984, p. 226).

Figure 3- 2: Papanek's radio receiver after decoration (Papanek 1986, p. 225)

Recently, the insights of integrated design have been both implicitly and explicitly implemented in the 'capability approach'. Developed by Amartya Sen and Martha Nussbaum, this refers to the human capabilities that are satisfied by the pusuit of 'valuable being and doing':

> These beings and doings are called "functionings" by Sen. Functionings "together constitute what makes a life valuable" and are "constitutive of a person's being." Examples of functionings are such diverse things as working, resting, being literate, being healthy, being part of a community, being able to travel, and being confident. (Oosterlaken 2009, pp. 91–92)

The bicycle is an example often cited by the capability approach:

> Take a bicycle… Having a bike gives a person the ability to move about in a certain way that he may not be able to do without the bike. So the transportation characteristic of the bike gives the person the capability of moving in a certain way. That capability may give the person utility or happiness if he seeks such movement or finds it pleasurable. So there is, as it were, a sequence from a commodity (in this case, a bike), to characteristics (in this case, transportation), to capability, to function (in this case, the ability to move), to utility (in this case, pleasure from moving). (Oosterlaken 2009, p. 94)

And Oosterlaken continues:

> One of the crucial insights of the capability approach is that the conversion of goods and services into functionings is influenced by personal, social, and environmental conversion factors; and that it should not be taken for granted that resource provision leads to increased capabilities or functionings. (Oosterlaken 2009, p. 92)

Integrated design and the capability approach therefore have the same goal: to expand human capability. What Oosterlaken calls the "conversion of goods and services into functionings" means that any product or service is seen as an instrument that has specific potential for expanding human capability. In this respect, we must extend our perception as designers to consider the conversion of a product or a service into enhancing human capabilities. In order to give a fair product assessment, we should answer two questions: (1) how does the designer extend human capability through use of the product; (2) what kind of utility does the product offer with respect to a human need in a specific social context.

3.1.1.1 Design for increasing human capability contributes to human well-being

An article in *Design Issues* titled *Rethinking Design Policy in the Third World* (Amir 2004) is relevant here because the author called for a human-centered design policy for the third world, in other words for a reorientation of design policy in developing countries to cope with local problems with respect to both social and cultural aspects. He argued that the outcomes of this policy would be more effective if all stakeholders were included in a participatory design approach, because local problems, frequently originating in an insufficient infrastructure, invariably have to be treated as a special case. For Amir, "design is treated as a social and cultural tool for creating a better life for Third World societies in accordance with their social and cultural infrastructures" (p. 74).

'Human-centered sustainability' is another term for the same concept. Pilloton (2009) has used this term to call for reprioritizing our objectives during the design process and focusing on *what* we are going to design in the first place, then *how* to realize the idea in the form of a sustainable product using environmentally friendly materials. It is about thinking WHAT before HOW. She explains the concept further:

> We must reprioritize the objects that make up our redefined sustainability based on what we are producing in *the* first place, rather than simply the means by which those things are made. We must evaluate the 'what' and only then use responsible 'how' decisions to bring those ideas to fruition. (Pilloton 2009, p. 28)

The dramatic situation in many developing countries has motivated many designers to pay attention to local human needs. The following examples deal with the needs of poor people in developing countries who suffer from insufficient electrical services, inadequate medical (especially vision care) services, and no access to tap water or even clean water. Under such critical conditions, designers are motivated to participate in solving real human needs irrespective of profit-oriented thinking. And profit here means that designers will not make money at the cost of needy people.

The concept of appropriate technology (AT) is described by Whiteley (1993) in the following terms: "Originating from Schumacher's seminal work '*Small is Beautiful*' […] Appropriate Technologies

aimed to achieve low capital costs, use local labour and materials and create jobs, as well as be controlled by local people and be appropriate to their needs" (qtd. in Davey et al 2005, p. 3).

The first example of such a technology focuses on insufficient electricity services, continuous power-cuts, or even living in off-the-grid locations. The "Portable Light" project creates new ways to provide renewable power in solar textiles that can be adapted to meet the needs of people in different cultures and regions. Portable Light textiles with flexible solar materials and solid state lighting enable the world's poorest people to create and own energy harvesting bags, blankets, and clothing, using local materials and traditional weaving and sewing techniques in an open-source model. Portable Light enables people in the developing world to benefit from flexible solar nano-technology and accelerates the movement towards clean energy worldwide (see Portable Light [online]).

Pilloton describes how the "Portable Light" project combines traditional craft skills and solar power to enable people in off-grid locations to read, and thus educate themselves, in the evening and at night:

> Appropriate technology engineering makes the case for craft as a viable business model for empowering communities, rather than merely a cultural expression. The Portable Light Project relies on traditional textile skills and integrates a training program to teach the technological integration of the solar panels, bringing added value to local skills. The program also trains weavers and creates jobs to support the production and distribution of the lights. This is the moment in which appropriate technologies and design become solutions, not just products. By capitalizing on existing skill sets and building training and support into design and enterprises, we give users not just a product (a solar-powered, portable light in a locally made textile), but also a solution (the ability to learn, read, or work in the evening, and even earn income from the production process). (Pilloton 2009, p. 37)

This example illustrates Bonsiepe's insight about "designing equipment fitting into the constraints of poverty and suitable for genuine development. The list of desirable features includes: low cost, use of local materials, creation of jobs, employing local skills and labor, [and] freedom from patents" (Bonsiepe 1991, p. 262). The example stresses the significant role that could be played by the concept of 'craft revitalization' in emerging economies. It could become a springboard to the future. Following Dennis Doordan, Buchanan (2000) stated that "craft is not the repository of traditional form; it is the repository of indigenous cultural knowledge. [It could be] innovative and evolving. Efforts at craft revitalization are not directed toward the past but toward the future" (p. 12).

Figure 3- 3: The Portable Light Unit, [Online] (http://www.core77.com/blog/object_culture/bucky_fuller_challenge_semi-finalist_the_portable_light_project_18872.asp)

'Adaptive eyecare glasses' is another example of an appropriate technology (AT) for the developing world. The British physicist Joshua Silver developed an innovative concept to correct vision on-site in developing countries, where people suffer from inadequate vision care services. Adaptive Eyecare glasses have fluid-filled lenses that can be produced and fitted inexpensively and efficiently almost everywhere:

> In virtually all markets, affordable, adaptable tools for vision correction are a necessity, particularly in developing countries where many children and elderly citizens do not have access to proper vision care. […] In Silver's design, each lens consists of two flexible membranes with liquid between them. The lenses are sealed for water-tightness within a sturdy frame, and the amount of fluid is adjusted to suit the individual's needs: the more fluid, the more the membranes flex, which produces a greater curvature and a stronger prescription. (Pilloton 2009, p. 89)

Figure 3- 4: Adaptive Eyecare glasses, [online] (http://www.adaptive-eyecare.org/)

Water pollution in developing countries is considered a major challenge for both governments and local people. Poor people suffer from waterborne diseases and cannot afford mineral water, which is a luxury. The right to drink clean water is missing from the complex infrastructure problems faced by governments. In order to address this problem, the Danish company Vestrgaard Frandsen designed 'The LifeStraw Personal', "a portable water purifier that works as a straw to transform potentially contaminated water into potable water by the time the liquid hits a user's lips" (Pilloton 2009, p. 72).

Figure 3- 5: The LifeStraw Personal, [Online] (http://vestergaard-frandsen.com/lifestraw/lifestraw/usage)

Figure 3- 6: the Hipporoller, [Online] (<http://www.hipporoller.org/>)

Water transportation is another significant issue because of the lack of water supply infrastructure in urban communities. The problem is that "More than a billion people worldwide do not enjoy water on tap in or near their homes. Predominantly women and children are confronted with the daily task of collecting water, often having to walk long distances. Traditional collection methods [carrying 20 Liter-bucket on the head] cause long-term spinal injuries and limit economic opportunities" (Hipporoller [Online]).

The *Hipporoller* aims to improve access to water "by rolling 90 liters (24 gal) along the ground. The roller enables more water to be transported more efficiently than traditional methods. With the Hippo roller people can get almost five times the amount of water, without having to carry 20 kilograms on their heads. […] The effective weight on level ground is just 10kg (22 pounds)" (Hipporoller [Online]).

For Buchanan, “design is fundamentally grounded in human dignity and human rights” (Buchanan 2000, p. 4). Following Kader Asmal, ex-minister of education in South Africa, he stated that “Human-centered design is fundamentally an affirmation of human dignity. It is an ongoing search for what can be done to support and strengthen the dignity of human beings as they act out their lives in varied social, economic, political, and cultural circumstances” (Buchanan 2001, p. 37). He sees this as a two-way process, inasmuch as “human dignity and human rights provide a new perspective for exploring the many moral and ethical problems that lie at the core of the design professions” (Buchanan 2000, p. 4-5). The breadth of Buchanan’s vision is evident when he calls for a reshaping of a nation by design, through “supporting the value of human beings interacting with other human beings and discovering new kinds of interactions among people and their cultural and natural environment, with a goal of enhancing human dignity and supporting human rights” (ibid. p. 8).

In this context, the first example, combining traditional craft and solar power highlights the impact of design not only on traditional crafts goods but also, and most significantly, on local people as participants, producers and users. “The revitalization of craft”, according to Buchanan (2000), “enhances human dignity and contributes to the fulfillment of human rights – civil, economic, and cultural” (ibid. p. 11). And he stresses the strength of adopting this design perspective: “It provides employment in depressed areas. It enhances the skills and disciplines of work. It strengthens the cultural foundations of 'making' or production. It restores cultural traditions and diverse cultural expression” (p. 11).

To sum up, design as a human service contributes to human well-being by supporting the productive life with a comprehensive solution. The examples given illustrate how design can support the quality of life and at the same time sustain human development: not only through designing meaningful products that meet real needs but also through empowering people. These products empower people to play their role in society in a more efficient and healthy way, and simultaneously strengthen their skills, their creativity, and their dignity. Dignity here refers to self-esteem based on the ability to depend on yourself and not rely on other people to satisfy your own needs and those of your family and society.

The following table illustrates the examples mentioned above under concrete criteria to explain the sequences of expected design thinking that intends to expand human capability and respect human dignity while serving human needs.

Table 3- 1: Design thinking that serves human needs

Product	Characteristics	Function	Capability/impact on human level	Utility/impact on social level
Papanek's Tin Can Radio	Broadcasting sound programs	Deliver news and health information	Bringing people from a pre-literate to a post-literate level and gaining pleasure from decorating it	Raising health awareness among 120 million people (first step towards a healthy society)
Bicycle	Transportation means	Moving around in a faster way	Mobility with sporty movement	Participating in health & society (no air pollution)
Portable Light (in locally made textile)	Illumination unit	Producing renewable power in solar textiles Production & distribution of light in off-grid locations	Flexibility to learn, read or work in the evening Generating income for producers Added- value for local skills	Empowering local crafts and people (training programs) Creating jobs Environment friendly (clean energy)
Adaptive Eyecare glasses	Medical eye care tools	Correcting vision with affordable, on-site adaptable glasses	Seeing accurately through having access to proper vision care.	Empower local people to expand their economic opportunities (work effectively)
Hipporoller	Water transportation means	Rolling 90 liter of water along the ground using a simple technique (appropriate technology)	Collecting large amount of water with minimal body effort (burden) Flexibility to access water	Empower local people to get access to water for their daily needs in an affordable way
LifeStraw a portable water purifier	Water Filtering tools	Cleaning polluted water instantly by drinking	Drinking/access to clean water	Participate in healthy society

3.1.2 Design for Sustaining Community Development

In general, the idea behind establishing communities and societies is to provide a strong infrastructure to satisfy the needs of its members. The governments of developed countries present a successful example of structures that have led to the establishment of social security and welfare

systems (Seelos 2004, p. 12). These governments have also at times recognized the potential of design thinking to become 'more responsive to society'. Ex-prime Minister of the UK Tony Blair stated that "used strategically to help in the development, delivery, and communication of policies and services, design can help to deliver important benefits across government" (qtd. in Cooper 2005, p. 13).

In developing countries, on the other hand, governments struggle to meet basic human survival needs, not to mention enabling structures. Within in each governorate in Egypt, domestic councils are the executive power responsible for delivering public services directly to citizens; these include street lighting, domestic water and electricity, transportation systems, and paved roads. However, because of a lack of accountability, there is a lot of corruption in these domestic councils that prevents the citizen from getting a good service. It is not even possible to voice a complaint about the quality of any delivered service.

There is, then a "need for communities and societies to provide enabling structures and a fair distribution of limited resources" that does not just allow "individuals to act in their own best interest but also enables the collective to sustain and improve structures and resources for themselves and everyone else" (Seelos 2004, p. 12). An 'enabling structure' in this sense and a 'strong infrastructure' are two sides of the same coin, where infrastructure refers to "the physical components of interrelated systems" and plays an important role in "providing commodities and services essential to enable, sustain, or enhance societal living conditions". However, although "interrelated systems and physical components are essential infrastructure traits, […] these two characteristics by themselves do not adequately define the term. To be characterized as infrastructure, the networked assets must be designed to address a societal need" (Fulmer 2009, [Online]). Such needs "are especially pronounced in emerging economies whose citizens struggle to gain access to even the most basic life-supporting commodities and services. […] [T]hese countries need to build systems to initiate service in rural areas and vastly expand service in their growing urban communities" (Fulmer 2009, [Online]).

Correlative to the discussion of infrastructure and other needs and values is the discussion about the nature of progress in fulfilling these needs. Simon's examination of 'progress in human societies' is useful here as a guideline to approach sustainable communities. Simon (1996) distinguished between three different kinds of progress according to material and immaterial values. He stated that:

> Increasing success in meeting basic human needs for food, shelter, and health is one kind of definition that most people would agree upon. Another would be an average increase in human happiness, [but] there is no reason to suppose that a modern industrial society is more conducive to it. A third way of measuring progress is in terms of intentions rather than outcomes – what might called moral progress. Moral progress has always been associated with the capacity to respond to universal values – to grant equal weight to the needs and claims of all mankind, present and future. (p. 160)

Maslow's concept of a 'hierarchy of needs', introduced earlier in this research, with its distinction between physiological and psychological needs – also stated in terms of 'deficiency-needs' and 'being-needs' – is significant here in connection with Simon's multi-faceted notion of progress. For human needs are to be fulfilled in a societal context, then a substantive connection must be established in ascending order between what individuals need and what society offers its members by designing efficient infrastructure systems. Social problems arise from the tension between what society offers and what individuals need as members of society.

It was for this reason that Papanek called for *Integrated Design*, or design for an integrated living environment – in other words connecting the human environment effectively with growing human needs through design. He explained this in the following terms:

> If we wish to relate the human environment to the psychophysical wholeness of the human being, our goal will be to replan and redesign both function and structure of all the tools, products, shelters, and settlements of man into [an] integrated living environment, an environment capable of growth, change, mutation, adaptation, regeneration, in response to man's needs. […] If we speak of integrated design, of design-as-a-whole, of unity, we need designers able to deal with the design process comprehensively. […] Integrated design […] should be thought of as a series of functions occurring simultaneously rather than in a linear sequence. […] integrated design must place the problem in its social perspective. (Papanek 1984, pp. 294–297)

Today this approach has been developed under the heading of 'system thinking', a concept that will be explained later. But stressing Papanek's notion of 'system design for sustaining human life under marginal conditions' seems to offer a promising insight, where design for human living systems is significant (Papanek 1984, p. 247).

System design has been successfully approached by Wolfgang Jonas in a series of publications about connecting design theory to systems theory. In one of these, Jonas (2001) followed Niklas Luhmann's theory of social systems, where the concept of living systems extended to the distinction between mental and social systems that refer to consciousness and communication. Jonas explained Luhmann's theory as follows:

> Living systems act in the medium [of] life, mental systems in consciousness, and social systems in communication. Both mental and social systems operate with language and meaning. Communication cannot take place without presupposing consciousness, and vice versa. The purpose of this distinction is the creation of separated regions which allow the system to record and process the complexity of the world. Systems establish a difference between inside and outside, acting as a sense-making, symbolically mediated interface between delivered and processable complexity. Thus a system defines, for itself, the boundary which allows it to create its own identity according to internally produced and processed rules, and to maintain it against an external reality. (p. 71)

In widening the reception of social systems theory in design, Jonas (2001) used the system/environment distinction as a starting point, where system refers to the system of problems at issue and environment refers to the context where the problem at issue is rooted (p. 70). He stated that "Any observation is based on the dualism of self-reference [internal reference] and external reference. Both types of reference imply each other, [and] every observation is a unity of a distinction and indication" (p. 70).

As a reflection of social systems theory in design, Jonas stressed that "scenario building is a central concept in design, shifting the focus from the object to the process of communication and interaction, and covering all phases of the design process: [analysis, projection, and synthesis]." This will be explained later in detail (see Ch. 5 & 6). He added: "[Design] [s]olutions emerge in the field of tension between the system (analytical scenario) and its environment (context scenario). On this level, service and user scenarios play an important role in developing solution concepts. Solutions have to take into account the strengths and weaknesses of the system, and the opportunities and

threats of the contexts (SWOT analysis)" (Jonas 2001, p. 77). The user scenario is, according to Jonas, an interface (solution space) between analytic scenarios (system) and context scenarios (environment) (see Jonas 2001, p. 76).

In addition, the designer's role is not just to act or react to the community's need; he or she has a proactive role to play, by extending their activities and methods to cope with anticipated challenges as well as to optimize choices. In Buchanan's words, according to his fourth domain of design, where the focus is shifted from communication, product, service design towards complex systems, designers have to be "more and more concerned with exploring the role of design in sustaining developing, and integrating human beings into broader ecological and cultural environments, shaping these environments when desirable and possible or adapting to them when necessary" (qtd. in Margolin 2002, p. 80). Margolin (2002) reflected on Buchanan's four domains of design and went on to relate them to the designer's committed role in social life especially in social development agendas. He differentiated two agendas for social development: the 'sustainability model' and what he called the 'expansion model', which refers to business-as-usual (pp. 82-83). Central to Margolin's argument for overcoming the conflicting values between these two agendas is his conviction that design "occupies a strategic position between the sphere of dispositional ethics and the sphere of social change" (88). He called for "more proactive involvement" with the world situation in order to "make an important contribution to the fruitful continuance of life on Planet Earth" (Margolin 2002, pp. 88-89).

Tony Fry (2009) visualized this proactive role in the context of community, in order to cope with an ever-changing world:

> The revitalization of community is essential in order to cope with the demands of adaptive change, including the provision of social care when state systems fail. Revitalization here has to be deeply and structurally (habitus) embedded in a culture – it has to be that which the children of the future are born into. It has to be the culture that carries people to the future – and in so doing provides the structure that structures people's lives sustainably. (p. 115)

A counter-position was taken by Jones (1977) in an article titled '*Designing for need - Radio talk*'. Jones criticized social designers who try to solve social problems according to their own perception. He referred to such designers as

> a particular group of designers who reject the idea that design should be […] 'a secondary activity responding to the needs of governmental and industrial organisations […]'. They claim that many human needs, even some of the most important ones, are ignored by industry and government alike. The problems they want to solve simply never turn up in the briefs they are given. These designers, who see themselves as itinerant problem-solvers to society at large, feel that designers themselves must initiate design activity in direct response to their own perception of human needs. (Jones 1977, p. 91)

Recently, this critique has been rejected because it is irrelevant in the modern design discourse. Indeed, there are three massive absences: first, designers nowadays are ripe and mature enough to write their own briefs rather than wait for somebody to do this for them. Secondly, everyone, not just designers, responds to a problem according to her/his perception of it. Because a problem is not just given; it is the way designers formulate and frame a problem that determines the way to solve it. Thirdly, the complex nature of real-world problems requires more than one opinion, whether from a

designer or somebody else, so designers call for a collaborative approach where all stakeholders are involved in the problem-solving process.

Briefly, design cannot be abstracted from society; it does not operate in a vacuum. It is “an activity which influences and is influenced by the balance of interests between the different social groups which participate in the design process […] Design is not merely an activity dealing with objects or abstract systems, but is primarily a vehicle for social interaction” (Gomez 1977, p. 39). In this sense, design can be considered as an interactive interface between individuals and their society. The proactive role that designers play is about acting as an intermediary between society and the individual in a way that reduces the tension between what society offers and what the individual needs. Thus, in a social context, design aims at optimizing choices and creating harmony by positively affecting the individual’s behavior in the social context through system design, strategic design, service design and urban design.

3.1.2.1 Design for harmonious interaction contributes to social well-being

Design as an interface for social interaction – design as a human service

Social commitment has been an essential part of design discourse throughout its long history, from “design movements of the 19th century that sought to improve working conditions for craftspeople [to] designers critical of consumerist society in the 1970s and 80s who proposed alternative solutions to real world issues” (Whiteley, 1993, quoted in Cooper et al 2005 [online]).

In addition, there have been a lot of books, articles and actions in the design context that call for social design and support “the idea of using design to help generate improvements in social cohesion, to repair existing communities, or build new ones" (Fuad-Luke 2009, p. 121). Nigel Whiteley (1993), in his book *Design for Society,* examined the ideology of design in society, providing a reassessment of the social role of design, as well as a critique of the status quo (p. 1). He was clearly influenced by Papanek’s *Design for the Real World* where according to Whiteley

> the core [message] is that there is a direct (and inevitable) link between a society’s design and social health: design is a manifestation of the social, political and economic situation […] The strength […] is that design is firmly grounded in a relationship to society rather than being presented as an area of study which feeds only on itself. (p. vii)

According to Buchanan (2000), there are two ways of approaching design that are relevant to any society:

1. Design as a discipline for “molding passive clay to the will of a designer” and his or her sponsor.
2. Design as a discipline of “collective forethought, anticipating possibilities for individual and collective growth that are available in any environment” (p. 8).

The second path is more meaningful and effective, especially in the context of socially responsible design, because design solutions “simultaneously take account of the contexts in which they are created, and draw notice to the fact that the majority of design processes overlook or discount the needs of under-served communities” (Haslinger 2008, p. 368). With regard to the people that we seek to serve, shaping their communities by design "requires more than intuition and personal opinions about what is the best. It requires knowledge of the significant content […] and a willingness

to work together with all of the stakeholders. It requires that we take good care of each other as we work toward common goals that benefit everyone" (Buchanan 2000, p. 8).

Indeed, to be involved as a designer in the public sector has long been the wish of many social designers who understood their own potential to serve people and to respond to their needs. Referring to charity organizations and voluntary efforts as a source of short-term socially useful products for people in need, Whiteley (1993) stated that

> One honourable compromise for designers has been to work in the public sector, but this has become less effective as a strategy for two reasons: first, the public sector in most countries is decreasing as a result of 'privatization'; and, second, the remaining public sectors are having to adapt to 'enterprise culture' criteria in which use-value is superseded by exchange-value: goods and services produced by and in the public sector have, increasingly, to be financially viable. (p. 115)

However, there are a lot of examples in developed countries that assure that this wish is still relevant and appreciated. Governments and designers there have been co-operating to deliver public services in a more efficient way, and Papanek's notions of *Integrated Design* has been further developed and adapted. "Integrative design thinking has found applications in fields as diverse as healthcare, public policy, law enforcement, crime prevention, and community planning" (Mitrasinovic 2008, p. 222). The UK' Design Council sees design potential serving communities, often with innovative results, as a catalyst for positive social change. Thus The Designs of the Time 2007 (Dott 07) project, an initiative funded by the UK Design Council, was

> an exploration of how design could help society explore 'what life in a sustainable region could be like', through a year of community projects, events and exhibitions. The project focused on five aspects of daily life: movement, energy, school, health and food. […] Dott 07's Urban Farming Project and other projects […] clearly illustrate the catalytic potential of design to change urban landscape [and] encourage communities to take action. (Fuad-Luke 2009, p. 121)

Recently, a new model of socially responsible design (SRD) was published in *Design for the Surreal World.* In this paper, the concept of social responsibility in design has been developed further to focus on "products, environments, services and systems that can alleviate real world problems and improve quality of life" (Davey et al. 2005b, p. 1). The model identifies eight domains of design, visualized in Figure 3-3 in the form of eight tents of socially responsible design: Design for good governance, Design against crime, Design for effective education, Design for patient safety, Design for social inclusion, Design for ecology, Design for fair trade, and Design for economic policy (Davey et al. 2005b, p. 7).

Other good examples are published in the ninth annual issue of *I.D. Forty*, a design magazine focused on socially conscious design (Mount 2001). Samina Quraeshi, one of these 40 social designers and a former director of design at the U.S. National Endowment for the Arts calls for the use of design as a catalyst for change, a "resource for overcoming challenges faced by urban communities". She explains:

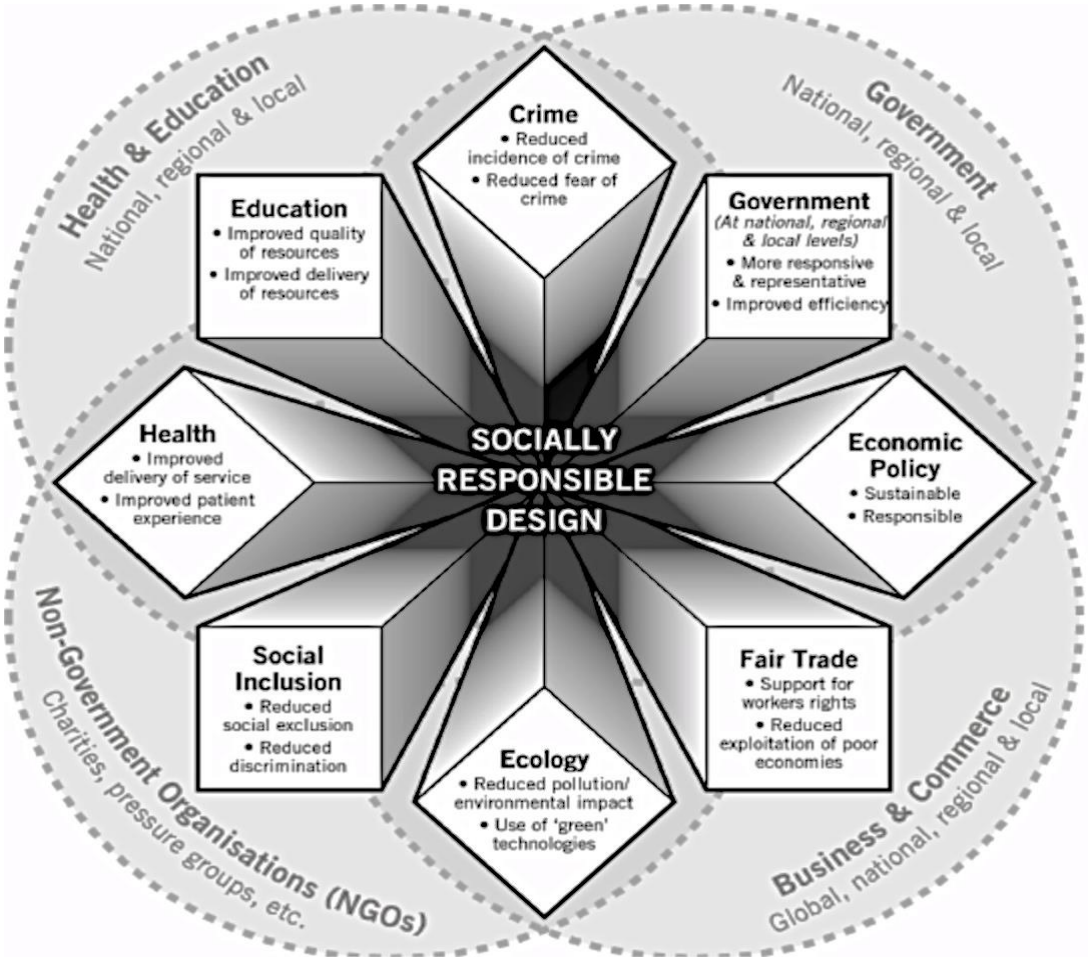


Figure 3- 7: The eight tents of Socially Responsible Design (source: Davey et al. 2005b, p. 7)

> Designers can help these places chart a course for making homes, work places, neighborhood spaces and community art that improve their social stability and economic prospects. […] The key to community stability and environment health is understanding the history and culture of each place, so that the design agenda expresses the relationships between urban systems, cultural patterns and natural processes. […] It's about helping people know where they are, decide where they want to go, and make partnerships that help them get there." (qtd. in Mount 2001, p. 76)

What is clear is that the complex problems of developing countries cannot be solved with traditional design approaches, because these do not touch the social, economic and political dimensions implicit in such problems. As Amir puts it, these problems

> cannot be solved solely through the materiality of design, such as creating low-cost products using local material, charity design, and the like. What underlies the problem is a structural condition that needs to be solved through a structural solution. This […] involves political factors in its implementation. (Amir 2004, p. 74)

To sum up: design shapes our everyday life in both tangible and intangible ways. The tangible side is clearly recognizable in the form of products, buildings, bridges, transportation vehicles, etc., while the intangible side can be seen in healthcare, education, and transportation systems etc. Together these elements form "the conditions of our everyday life" (Hjelm 2004, p. 1); they are the "counterpart of […] development" (Margolin 2002, p. 120). Design, according to Hjelm, "is a social

activity, taking place in a social context"; it has an impact on our behavior "by providing possibilities for some actions and […] inhibiting other actions" (Hjelm 2004, p. 98).

3.1.3 Design for Sustaining Industrial Development

Gui Bonsiepe (1991) quoted a critical Indian observer on the different contexts of practicing design in developed and developing countries in the following terms: "in the design magazines of the developed world, […] two major concerns of designers […] are in finding new ways of sitting and of lighting up a given space. […] The basic needs in India are quite different; […] in a developing economy like India's, designers can make a very meaningful contribution to the development process" (p. 267).

However, rather than dealing with problems arising in their own immediate environment, designers in developing countries unfortunately tend to follow in the footsteps of designers in developed countries, without reflecting or thinking critically about their task. Hence design "becomes associated with high price tags and luxury goods. Design is advertised as "name." As a media event, design occasionally supplies material for the cultural […] section of the daily press, which reports what is most obvious: the visual peculiarities of a product, its appearance" (Bonsiepe 1991, p. 259). This design philosophy focuses attention on "catering for the needs of the higher income classes, limiting itself mainly to the perfection of the glamourised micro-environment of the homes of those who can pay for [it]" (Bonsiepe 1977, p. 15). Designers fail to see that in this way they are participating in widening the gap between an affluent minority and the poor majority.

This is also a matter of education. Conventional design discourse and practice in developing countries usually focuses on drawing and sketching activity as the only expected competence from designers, avoiding the political implications of design and focusing only on subjects related to form, function, usability etc. Thus designers are traditionally educated as passive citizens: not to act or react in any way that might be related to politics. Nevertheless, few designers nowadays are convinced that accepting this passive (political) role has become impossible and that their political awareness of their work will enable them to participate more effectively in their society.

In this regard, Gui Bonsiepe is one of the pioneer designers who have got the big picture and have rejected the passive political role of design. He is famous for analyzing design from a political perspective. He stresses the political implications of design practice and the expected role of designers to shape their daily life culture. Bonsiepe is a German designer, well known in Latin America where he spent most of his career as a designer and later as a consultant for the government. He has documented his experience and his philosophy in many publications related to design in developing countries (see Papanek 1986, p. 45).

Bonsiepe's philosophy depends on a political perspective. Approaching design from dependency theory led him to stress the unequal relationship between developing and developed countries in the form of a periphery/center model.

> According to this view, underdevelopment in peripheral (poor) countries is a consequence of development in the central (wealthy) countries. Economic, cultural and psychological pressures force a dependent relationship between the center and periphery. […] Dependency is also reflected in the process of industrialization whereby the center would establish a production base in the periphery which exploited cheap labour and resources, required

> expensive imported inputs and did not reinvest its profits or transfer knowledge into the local economy. (Rapley 2007, p. 25)

A technological dependency also exists if most of a country's technology comes from foreign sources, for example through reliance on imported capital equipment, one-way technology flows, and low numbers of patents (see Stewart 1978, p. 116; Weis 2010, [Online] p. 8). According to Bonsiepe, "Depending on intentions, design leans more to one pole or the other, more to autonomy or more to heteronomy" (Bonsiepe 2006, p. 31). It may be concluded, with Mitchell, that "a central theme for the new definition of design is awareness – the awareness of the processes, implications, and outcomes of designing – design users and contexts included" (Mitchell 1997, p. 68).

This awareness could start with asking critical questions related to mass production, technology, product development and industrialization. For example

> In a society of market economy [sic] we can ask ourselves what patterns are being materialised through mass production? What meanings are objectified and turned into a reified reality? It is rather clear that most product development takes place within the system world where economic interests are the first concern rather than human well-being. (Hjelm 2004, p. 105)

Bonsiepe considerably extends the list of such questions:

> Technology implies hardware and software- and software implies the notion of design as a facet of technology that cannot be dispensed with. [...] a reductionistic interpretation of technology [raises] the question of what is done with technology. […] The motives for industrialization include the wish to diversify exports, and not to remain an exporting economy of commodities without added value, [in addition to] democratizing consumption to provide for a broad sector of the population access to the world of products and services in the different areas of everyday life: health, housing, education, sports, transport, and work [...]. (Bonsiepe 2006, p. 32)

Following Bonsiepe, designers must be aware of their task to provide access to socially relevant products and to deliver appropriate services to local people in order to serve their society in a more effective way. Design transfer must, then, be oriented towards satisfying people's needs:

> There is only one form of effective design transfer that is in the interests of dependent countries: design transfer that helps to uncover and stimulate local design capacity, without paternalism. […] 'Design <u>for</u> dependent countries', should read 'Design <u>in</u> dependent countries' or 'Design <u>by</u> dependent countries'. (Bonsiepe 1977, p. 18)

The challenge for future industrial designers is that they "do not see the world in terms of things but in terms of needs to be satisfied" (ibid.). The task of industrial design in dependent countries must be to deal with local problems and not just to follow the footprint of industrial design in central economies because "the central needs of the peripheral countries are the opposite of the peripheral needs of the central countries" (Bonsiepe 1977, p. 14).

In one of his publications, Bonsiepe analyzed design orientation and content in "peripheral countries." He criticized adopting the logic of designing luxury products in developing countries, stressing that "In dependent countries the problem is not to add spice or interest or whatever to a mode of living but to make survival possible, to provide a life support structure" (Bonsiepe 1977, p.

14). He observed that at the periphery, design discourse had unfortunately no role to play in forming "the background of the daily life of a culture" (Bonsiepe 1991, p. 252).

Avoiding the trap of a parochial vision, Bonsiepe (1991) was not reducing the dissimilarities of design context in developed and developing countries to the technological gap, lack of design expertise or lack of sophisticated thinking about design. Although all these factors have a negative influence on design discourse and practice in developing country, they are not the major concerns (p. 252). From his perspective, there are two reasons that explain the difference in design contexts:

> First of all, glaring disparities of income […] [that] place a continuous strain on the social fabric, and bring the ethical implications of design to the surface. […] Secondly, the no less crippling burden of foreign debt that represents a continuous drain of capital from less industrialized countries and places a mortgage on their future. (Bonsiepe 1991, p. 252)

Against this background he has suggested approaching design in developing countries with a different standard of measurement: "It is the dissimilarity of context that obliges us to approach peripheral design with other yardsticks than 'good design' or 'design for fun'" (ibid.).

For Papanek (1986), "design in developing countries can be seen as a constant search for new solutions to autonomous, decentralized problems" (p. 44). Papanek's notion of autonomy here is consistent with Bonsiepe's perspective; in fact the two approaches are complementary. Indeed, when Bonsiepe (1977) proposed applying these notions in practice in order to prepare a friendly environment for design interventions he stressed two factors: nationalism and an autonomous industrialization policy. These factors would facilitate the orientation of the design profession towards reducing underdevelopment and dependence, as well as satisfying the needs of local people. In Bonsiepe's words:

> Nationalism […] is the only way for dependent countries to defend their interests and to substitute autonomy and interdependence for a state of being repeatedly sacked. Nationalism should be […] understood as […] a crystallizing point for identity [and] as a basis for non-violent communication. […] Economic planners should […] insist on a pattern of industrialization that promotes a self-centered or autonomous economy as against an outer-directed or dependent economy. With the backing of this kind of policy, industrial design can contribute to the satisfaction of local needs preferably with local materials and locally developed technology. [The designer] would not only design but would also help to distribute knowledge to people so that they can produce the things they need themselves. (Bonsiepe 1977, pp. 16–17)

Conversely, Margolin (2007) focused on creating products in developing countries for export in order to compete in the global economy and strengthen the national economy. He called for widening the scope of "design for development" to participate more effectively, explaining that:

> what is […] needed is a strengthening of the national economies in developing nations that can help them better compete in global markets. Design for development needs to broaden its brief from an emphasis on poverty alleviation to include the strategic creation of products for export. […] my call […] is to rethink the scope of design for development so that it can address the needs of developing countries in the most effective way. [That is] to address the full range of complex factors that determine the possibilities of design for development within the global economy. (Margolin 2007, p. 115)

Indeed, Margolin's notions of creating and promoting industrial products arose from his desire to strengthen the national economy. But this could be misleading, especially if serving industry's needs overlooks the needs of local people. Moreover, this means that local producers in developing countries tie themselves to the economy and the trends of the developed countries, which will lead to a resurgence of the periphery/center model explained above.

Bonsiepe's and Papanek's approach, on the other hand, agreed in orienting industrial design policy to adequately serving local people's needs by using local material and local technology and at the same time strengthening the national economy. To visualize his concept of promoting design in developing countries, Bonsiepe constructed a comprehensive model of development in the form of a matrix across six domains of design. This will be explained in the following section.

3.1.3.1 Design for promoting production contributes to economic well-being

Generally, the idea behind promoting production in order to increase income and generate wealth is not new in development discourse (see Development conceptual timeline). Moreover, industrial design was recognized as an activity through which the industrialization process, and with it economic development, would be strengthened. This meant "integrating products, visual identities, and marketing, and exporting this local design and production to world markets" (Marshall 2008, p. 110). As a consequence, an increasing number of countries "invested vigorously and enthusiastically in design education, because design [was] seen as such a critical dimension of economic competitiveness" (ibid.). Marshall outlined the rationale of such policies as follows:

> Governments in many countries have promoted design as [an] integral dimension of economic growth and social policy. In emerging economics such as India and China, and before them Japan and Korea, design has been identified as an essential means for economies to emerge from their positions as sources of cheap goods, designed by and manufactured for foreign companies, to one where they develop indigenous brands competing in global markets. (Marshall 2008, p. 110)

However, "the history of industrial design in each [case] is different and depends on the degree of industrialization that has been attained. In a few countries the craft sector has had a significant share of the culture of the product and might be taken as a starting point for industrial design" (Bonsiepe 1991, p. 263). India is a good example in this respect: the National Institute of Design of Ahmadabad is a successful design organization for developing countries. Papanek fills in the background:

> Industrial design in India began with the establishment of the National Institute of Design in 1961, with help from the late Charles Eames. Training began formally in 1970, the first classes graduated in 1975. In 1979 the Institute acted as host to the ICSID/UNIDO Conference – the *Ahmedabad Declaration*, published in January 1979 is a major landmark in design for the peripheral nations. (Papanek 1986, p. 45)

This declaration revitalized arguments that had already been voiced in the 1973 UNIDO meeting in Vienna. It discussed the promotion of industrial design in developing countries and "urged governments to create opportunities for design" (Bonsiepe 1991, p. 260). The idea was that "design could make a valuable contribution to a nation's economic development and that […] design in developing countries had to utilize 'indigenous skills, materials and traditions'". It also stated that

design had to absorb “the extraordinary power that science and technology can make available to it” (Margolin 2007, p. 113).

Papanek (1986) attributed the success of the Indian design school to the following grounds:

> The school is excellently equipped and manages to get its pick of young people in India, restricting the intake quite radically. It has strong links with the Indian Institute of Technology in Bombay. What makes the work of the National Institute of Design most important is their direct involvement with Indian villages, the crafts-centered cottage industry, and the willingness of the students to move into poor villages and help with design expertise and technical know-how. (p. 45)

A further significant contribution to reading the history of industrial design in developing countries was made by Bonsiepe in 1991, when he presented a five-stage model of development (see Table 3-2 below). This comprehensive model could be considered a framework to trace the history of industrial design in peripheral countries. It took the form of a matrix across six different domains of design (columns) and five development stages (rows). Design domains included the following points:

- Management: design management in companies reveals that design takes care of three different areas: product conception, quality control including manufacturing, finishing and ‘built-in’ aesthetic quality, and finally looking at the ecological impact of design work.
- Practice: to spread beyond traditional fields of action, searching for other activities linked to the discipline and creating institutions and organizations for the profession.
- Policy: integrating design wit government policy through industrial development programs.
- Education: planning for new careers in the university’s curricula and its implementation of specific programs to meet the new demand
- Research: forming a body of knowledge to build future professional action and provide a critical mass for design practice
- Publications: creating discussion of design through specialized journals in order to raise design awareness. (Bonsiepe 1991, pp. 254- 256)

The five stages of development started with a ‘proto-design’ phase that referred to the preliminary stage when industrial design has no clear standards of modernity. The embryonic phase is the second stage that refers to the experimental workshops from avant-grade artists or architects concerned with industrial products. The following stage is the mushroom phase where education institutions were established. Finally the two advanced stages were the spider’s-web phase followed by the sovereignty phase, which may not have been reached yet by most developing countries (ibid, pp. 255-257).

According to Margolin, this matrix “demonstrates that design has an important role to play in the industrial development of peripheral countries. […] The implication of his matrix is that design and its milieu can and should mature just as a nation’s economy, administration, and services develop (Margolin 2007, p. 113).

In another context, Bonsiepe (2006) criticized the role of government in developing countries that led to de-industrialization and poverty. Giving the example of Argentina, he correlated the policy of relentless privatization of public resources to enable the government to repay its debt and the

unconditional opening of the economy for imports. According to him, these two reasons led directly to de-industrialization and poverty in Argentina. In Bonsiepe's words:

> If we look at the recent history of Argentina—a country that, until a few years ago, followed in subservient manner the impositions of the International Monetary Fund, and that, in a moment of delirium, enthusiastically praised its "carnal relationships" with the leading military and economic power—then we see that this country didn't fare very well with this policy of relentless privatization and reduction of government presence. This process plunged a great part of the population into a state of poverty unknown until then, and led to an income concentration with the corresponding bipolarization of society into two groups: the excluded and the included. […] Relentless privatization and the reduction of the role of government—the unconditional opening of the economy for imports—initiated the de-industrialization of Argentina, thus destroying the foundations for productive work, including work for industrial designers. (Bonsiepe 2006, pp. 32–33)

Bonsiepe's explanation is consistent with what was described earlier in this research in relation to the economic policies that led to impoverishment in Egypt. Under the banner of 'economic reform policy', consumption was promoted over production, and foreign investment at the cost of the workers and underclass (see Egypt and the vicious circle of poverty).

Table 3- 2: Bonsiepe's Matrix of Design (column) and stages of development (rows) (source: Bonsiepe 1991, p. 252)

	Category 1 Design management. Product categories open to design interventions	**Category 2** Professionalization	**Category 3** Governmental design policy. Design promotion	**Category 4** Industrial design education	**Category 5** Design research	**Category 6** Discussion of design (publications)
Phase 1 Proto-design research	No distinction of ID. Products designed by engineers, inventors, craftsmen, decorators	None	None	Design skills taught at craft schools	None	None
Phase 2 Embryonic phase Gestation period	Furniture for home and office use	Self-taught artist-designer. Outside industry. Design seen as cultural mission	Conferences by specialists usually invited from industrially advanced countries	Design courses based on experimental workshops with loose program structure. First generation teachers with background in art, architecture or engineering	Nonexistent	Articles on design as a cultural phenomenon appear in avant-garde art journals
Phase 3 Mushroom phase Incipient institutionalization	Household appliances and consumer goods. Occasionally capital goods such as machine tools and agricultural or medical equipment receive a design input	Search for identity and definition of services that are characteristic of industrial design	Design Centers created. Product design groups incorporated into government institutes. "Symbolic" competitions (i.e. little or no financial reward)	Courses created either as extensions of architecture or engineering programs or as full 4-5 year programs. Faculty staff are designers with professional experience usually trained at foreign universities	Research done in design-related disciplines like ergonomics, focussing mainly on anthropometric data collection	Special sections dealing with industrial design created in journals of architecture, interior design, and graphic design. In popular understanding design associated with decoration
Phase 4 Spider web phase Expansion and incipient consolidation	Scientific instruments, medical equipment and installations Capital goods	In-house design teams. Profession recognized	Special thematic exhibitions. Fully fledged up- to-date documentation services run by professionals. Competitions with full funding	Specialization occurs within design, e.g. vehicle design, machinery design. Study programs get strong theoretical input	Studies on bionic design, methodology, color	Specialized magazines on industrial design published
Phase 5 Sovereignty phase	Multidisciplinary development teams, in-house or as consultants. In corporate structures design advances to vice-presidential level. Design becomes leading force in company strategy	Product development is practiced in all major branches of industry	International symposia. Design congresses are media events. International design competitions	Differentiated and demanding study programs in fully equipped institutions (computer labs, model workshops, libraries). Courses contain programs based on rigorously scientific foundations.	Design as object of scientific study. Research carried out in multidisciplinary teams including designers with scientific training	Books on industrial design published dealing with standard practices, history, theory

Bonsiepe's table visualizes the significance of the government's role in developing countries for promoting industrialization. It shapes the context of design activities, whether progressive or regressive.

Accordingly, there are two major trajectories: the first is about orienting design efforts and activity toward strengthening the industrialization process for an export-oriented economy that will compete in the global economy. The second trajectory is about orienting industrial design policy to promote production that serves local people's needs in the form of useful products that will at the same time strengthen the national economy. These trajectories are complex and at times opposed to each other, but they intersect at one point: promoting production and thereby strengthening the national economy.

The question, then, is not one of choosing between this or that; it is about which policy is better to start with, for what purpose and in what context? If our goal is to put local people first, both as producers and consumers, then the policy of design should be twofold: to generate income for them and to serve their needs. Depending on the level of industrialization, the government of each country or region should decide where to start. If the craft sector is promising, government should invest in this sector first, and can later (when industrial design is mature enough) switch to competing in the global economy. The major issue is to address the starting-point critically: What kind of policy do we need for industrial design in this country or region at this time, for what purpose, and for whom? Goal-oriented thinking is needed to choose the appropriate (design) policy.

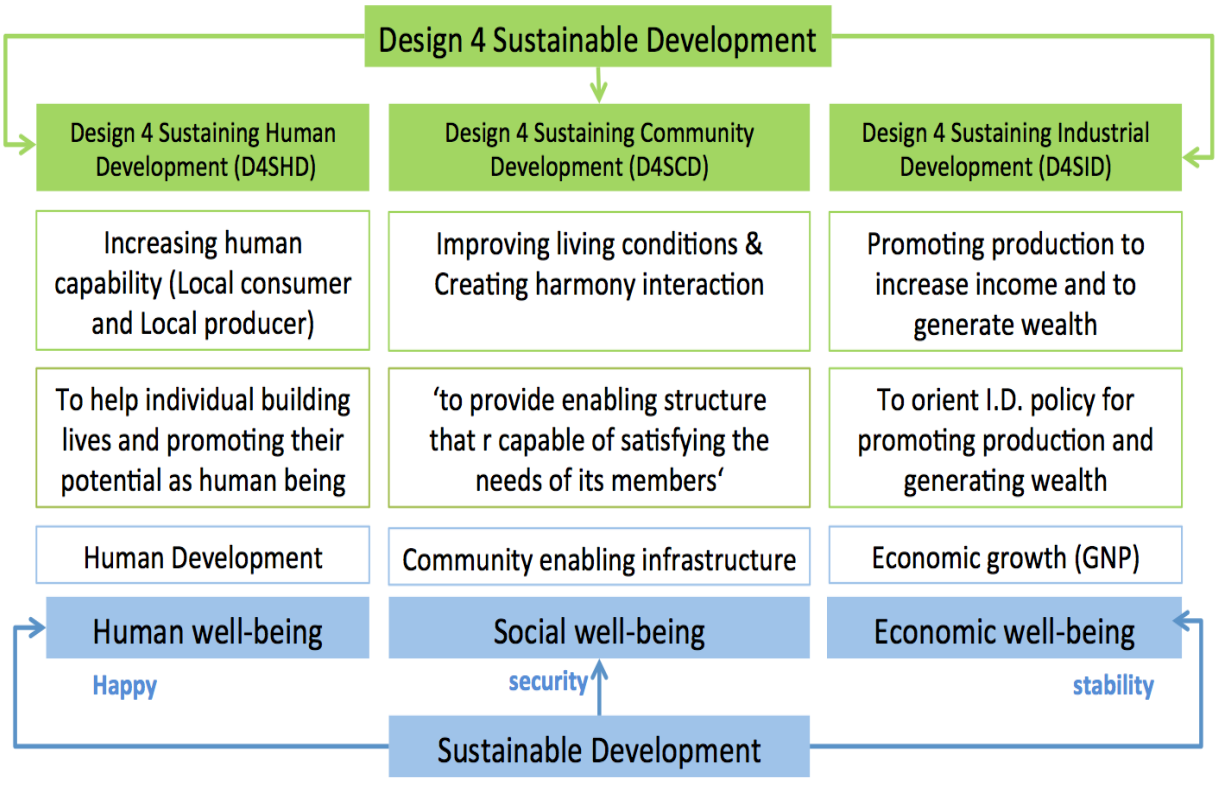


Diagram 3- 3 Design 4 Sustainable Development

3.2 Design and Poverty

Generally, people who deal with poverty fall into two groups: the pessimists and the optimists. The former see a definitive solution to the problem of poverty as impossible, so they focus more on the problem's containment than on finding integral solutions. The latter group agrees with Nelson Mandela that "Like slavery and apartheid, poverty is not natural. It is man-made, and it can be overcome and eradicated by the actions of human beings."

The present thesis follows the second perspective and accordingly seeks appropriate tools, creative methods and productive actions to explore the role of design in tackling poverty and sustaining development. According to Buchanan, designers who seek to participate effectively in tackling such problems must be "more and more concerned with exploring the role of design in sustaining developing, and integrating human beings into broader ecological and cultural environments, shaping these environments when desirable and possible or adapting to them when necessary" (qtd. in Margolin 2002, p. 80).

Due to the complex character of the poverty problem, it could be classified as a "wicked problem", a phrase coined by Horst Rittel in the 1960s. According to Rittel, wicked problems can be defined as a "class of social system problems which are ill-formulated, where the information is confusing, where there are many clients and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing" (qtd. in Margolin 2002, p. 80).

Dealing with such problems requires a comprehensive awareness of their complex and distinctive characteristics, in order to avoid falling into the trap of oversimplification. Rittel and Webber (1984) proposed 10 properties of planning for wicked problems:

> 1. There is no definitive formulation of a wicked problem […] 2. Wicked problems have no stopping rule […] 3. Solutions to wicked problems are not true-or-false, but good-or-bad […] 4. There is no immediate and no ultimate test of a solution to a wicked problem […] 5. Every solution to a wicked problem is a 'one-shot operation'; because there is no opportunity to learn by trial-and-error, every attempt counts significantly […] 6. Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan […] 7. Every wicked problem is essentially unique […] 8. Every wicked problem can be considered to be a symptom of another problem […] 9. The existence of a discrepancy representing a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution […] 10. The planner has no right to be wrong. (pp. 136-144)

If this is so, then the definition of a wicked problem is the first obstacle facing designers, because the problem depends on their way of understanding and framing it. In contrast, the traditional discourse of design usually deals with a set problem, where all the information needed is provided for the designer (e.g. designing a chair, a table or a lamp for special purpose). Accordingly, if designers are going to be involved in solving complex problems such as poverty, they will have to prepare themselves intellectually for this new mission. Rittel and Webber (1984) stated the dilemma succinctly:

> If we can formulate the problem by tracing it to some sort of sources – such that we can say, 'Aha! That's the locus of the difficulty', i.e. those are the root causes of the differences between the 'is' and the 'ought to be' conditions – then we have thereby also formulated a

> solution. To find the problem is thus the same thing as finding the solution; the problem cannot be defined until the solution has been found. (p. 137)

With this in mind, the present thesis will explore many obstacles facing designers in the context of social design and will propose some appropriate techniques for overcoming them (see Defining and representing 'Real-world Problem').

3.2.1. Design Humanism and Social Responsibility

As mentioned earlier, design as a "partner in the humanitarian effort to alleviate poverty" has been available in design discourse since the 1970s, but the miserable situation in developing countries demands a revival of this direction and visualizes a need for adopting what Bonsiepe, extending the literary scholar and philosopher Edward Said's interpretation of humanism to the field of design, called 'design humanism':

> Design humanism is the exercise of design activities in order to interpret the needs of social groups, and to develop viable emancipative proposals in the form of material and semiotic artifacts. […] In the field of design, [emancipative] means to focus on the excluded, the discriminated and economically less-favored groups. (Bonsiepe 2006, p. 30)

Design humanism raised the issue of social responsibility in design. It can be traced back to different design movements, e.g. 'the responsible' design movement or the 'socially useful product' debate. Victor Papanek advocated 'design for the real world' and, with other pioneer designers, 'design for need'. With regard to the developing world, the issue of approaching real human needs and redirecting the design profession towards greater responsibility was raised by Papanek's notion of design as 'problem-solving activities'. Likewise, Whiteley's book *Design for Society* published in 1993 criticized design magazines and books for not discussing design ideology effectively. For him, design ideology refers to "design's explicit and implicit values and priorities and what they tell us about ourselves and our society" (p. 5). Personal ideologies are also important in shaping participation in society:

> Some designers choose to reinforce the existing social order by adopting a strictly market-oriented approach, while others take it to the other extreme through methods like protest design and critical design. Yet others focus their attention on improving accessibility for disadvantaged social groups, like those with disabilities." (Haslinger 2008, p. 368)

The specific question of focusing on poor people as a target group for design activities was raised in an article published in *Design issues*: "Design, Poverty, and Sustainable Development" by Thomas (2006), which focused on developing countries. Based on two types of poor economy, Thomas divided her discussion into: "the *production* of goods that provide income and generate wealth for poor producers, and the *consumption* of goods in poor markets" (p. 54). Thomas had surveyed seven different initiatives related to poverty reduction in the south. Design sources in these initiatives involved either local design or imported design and the target market for production was either local or international. Afterwards, she analyzed the sustainable impact of these initiatives with regard to four aspects: economic, social, environmental, and institutional (p. 59). She concluded that "the design input is either from an external source or, if it is from a local source, is of low quality, since local design capabilities are not developed. This is because there is little design education or training

available in poor countries, and especially to the rural poor" (Thomas 2006, p. 59). The author described some challenges facing designers such as designing economically viable products and accessing information about target markets (essentially for export). Measuring institutional sustainability remained a challenge because it depended on the people involved in the process (p. 63).

This thesis acknowledges the valuable results published in that paper but differs from it in four key respects:

- First, Thomas's paper is settled on the fact that "Design in a poor context, or for the alleviation of poverty, has received little or no attention. An informal discourse analysis shows that design and poverty have not been linked, the two being seen as mutually exclusive" (Thomas 2006, p. 54). This claim contravenes the analysis presented above, quoted from the US design historian Victor Margolin, that "design as a partner in the humanitarian effort to alleviate poverty" has been available in design discourse since the 1970s.
- Second, Thomas limited the definition of poverty to the economic dimension of living on less than $1 dollar a day, which is usually adopted from an outdated development perspective. This thesis has criticized this perspective elsewhere (see Poverty and dualisms in development approaches) and adopts a comprehensive definition that respects all dimensions of human deprivation: material and immaterial, where the tension between human needs and wishes is very clear.
- Third, design in the context of Thomas's paper refers to product design (Thomas 2006, p. 54). She referred to design as a form-giving-activity, which takes in the traditional scope of design practice. But this restricted definition, according to Buchanan, represents the second domain of design: 'material objects'. In contrast, the present thesis defines design as a responsible strategic action to change existing situations into preferred ones, in which human needs are satisfied by bringing their own cultural values into concrete reality.
- Fourth, Thomas adopted a definition of sustainable development "that considers social, environmental, and economic factors together in a systemic way over a period of time" (p. 54). In contrast, the present thesis defines sustainable development as a development aiming at promoting human welfare according to the specific culture in order to *obtain a life worth living* with respect to three aspects: human, social, and industrial development (see Design for sustainable development).

Despite these differences, there are some interesting common results. For example, Thomas established that "under certain conditions, craft production can make a significant contribution to poverty alleviation" (Thomas 2006, p. 56). She demonstrated further that "designers, design academics, and design students can contribute to the well-being and income-generating capacity of poor people, and contribute to poverty alleviation if their involvement is managed in an appropriate way" (Thomas 2006, p. 57).

The following diagram connects the vision of 'Design 4 Sustainable Development' with poverty in Egypt:

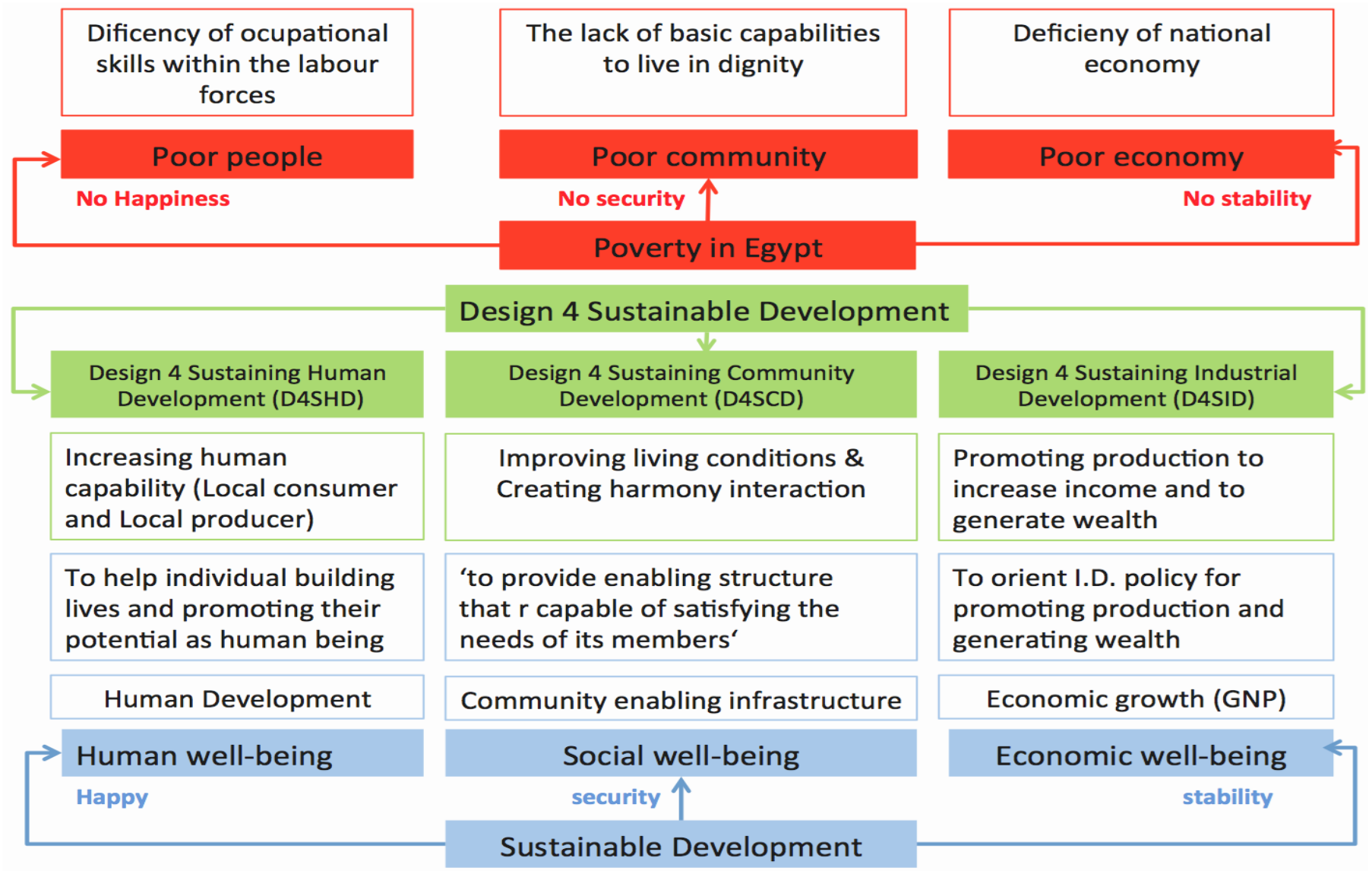


Diagram 3- 4: Design 4 Sustainable Development related to tackling poverty in Egypt

3.3 Initial Research Questions

From the literature review in the context of sustainable development, it is clear that the gap between theoretical efforts to alleviate poverty in developing countries and reality is huge. Poverty reduction in Egypt is still one of the most challenging problems facing the country. Although the alleviation of poverty has featured in design discourse in developed countries since the 1970s, the role of design as a partner in the development process has not yet been recognized in Egypt, despite the publication of the first Egypt Human Development Report in 1995. As observed in the previous chapter, traditional design discourse is the first obstacle, because of its limited perspective as an activity that focuses solely on form and appearance.

In contrast, the vision of design presented in this thesis has shown that design has a significant role to play within the context of sustainable development in developing countries. The principle of social responsibility can and should motivate the designer to realize the abstract values of development. Different examples from design history have rooted the proposed vision in the three dimensions of human, social and economic development. Long-term strategic planning is required to implement this vision. The first step in this process is to raise the following questions:

1. What kind of methods and tools do designers need to develop their skills for coping with the challenges they face, especially when addressing real-world problems? This question is grounded in the methodological background and aims to explore additional tools and methods. Answering this question will empower designers to accomplish their new task in a sustainable way.
2. How can people's needs be translated into relevant products, services and systems in an affordable way? This question engages with three phases: recognizing what people need, proposing a solution to satisfy this need, and then making this solution affordable. If one of these three components is missing, then the proposed solution is not sustainable and will sooner or later cause another problem.
3. How can local crafts people's skills and productivity be improved to increase their income? This question is concerned with connecting the skills, productivity and income of craftspeople and the role designers can play in this respect.
4. How can these products be efficiently connected with markets in order to avoid donor and NGO support and lead to a sustainable economic situation? This question is concerned with sustainable economic production and finding a way for local producers to market their products and avoid NGO support.
5. What role should the designer play to support national policy towards sustainable development in developing countries? This question aims at exploring the designer's ability to participate effectively in development efforts in developing countries.

Conclusion

A considerable body of literature about design history demonstrates that designers always try to link design activities with other disciplines in tangible way. Regarding sustainable development, the shift in the development paradigm has been mirrored in design discourse from recognizing design as an activity through which business promotion and economic development can be achieved, towards Papanek's 'Design for the Real World' that led to the emergence of design for solving real-world problems in developing countries. Sustainable development has been defined in this research as a development that aims at promoting human welfare according to the specific local culture in order to *obtain a life worth living.*

This chapter has proposed a vision of 'Design 4 Sustainable Development' by mapping out literature from the design discourse that deals with three development aspects: human, social, and industrial development. It has been argued that 'Design 4 Sustainable Development' aims to solve real-world problems by applying responsible strategic action to change existing situations into preferred ones. In this respect, human needs will be satisfied through converting cultural values into concrete reality. Hence, design becomes a service to satisfy human needs by solving real problems in a tangible way. If the idea of human needs is extended to a more general sense of well-being, then design, in turn, aims to improve well-being at the human, social and economic level.

The theoretical framework has been built upon the work of leading design thinkers. Focusing on three perspectives of design discourse, this framework has been categorized as: Design 4 Sustaining *Human*, *Community*, and *Industrial* Development. Each category has been filled with exemplary design work to visualize the role design can play to strengthen development efforts in each context. The connection between sustainable development and design has been established in this chapter in terms of promoting and realizing the idea of well-being in the form of better quality of life.

Addressing design and poverty has referred to the significance of promoting social responsibility in design and motivating designers to deal with poverty problems. It has identified the challenge of approaching such complex problems on the basis of traditional design methods and skills, referring to the initial obstacle – that of the starting point. Other obstacles will be elaborated later in this research. Bonsiepe's 'design humanism', 'design for the real world', 'design for need', and 'design for society' redirect the design profession towards a more responsible set of attitudes.

After proposing a clear vision that defines the role of design in development discourse (know-what), a number of research questions have been proposed in subsection 3.3, exploring ways of empowering designers to accomplish their new tasks effectively by raising issues that relate to appropriate methods (know-how). To answer these questions, the next chapter will focus on design research and its methods.

Chapter 4: Research Design

This chapter addresses the complex of issues related to research design and explains the process of developing an appropriate methodological approach in four stages:

Section 4.1 introduces the epistemological position and explains why this position has been chosen.

Section 4.2 reviews three modes of knowledge production: multidisciplinary, interdisciplinary and transdisciplinary. After a short introduction about each term, one of them will be chosen.

Section 4.3 illustrates three designerly modes of knowledge production: research *about, for,* and *through* design, one of which will be chosen.

Section 4.4 describes research design by explaining five different related issues: choosing a research paradigm, constructing an operational framework, choosing a methodological approach, choosing case studies as a strategy of inquiry, and choosing diverse methods for gathering, processing and interpreting data.

4.1 Epistemological Position

Cybernetics, 2nd order of cybernetics and system thinking

Generally, the term epistemology, the philosophy of knowledge, deals with our experience in recognizing reality through answering the question how we know what we think we know. In the context of philosophy, epistemology refers to “the theory of knowledge, especially with regard to its methods, validity, and scope, and the distinction between justified belief and opinion” (Oxford Dictionary of Philosophy [Online]). It also "refers to a set of analytical and critical techniques that defines boundaries for the process of knowing. […] In the sociocultural domain, epistemology becomes a study of how people or systems of people know things and how they think they know things" (Keeney 1983, p. 13).

In the context of family therapy, therapists refer to two distinct forms of epistemology: linear and nonlinear. According to Keeney (1983), “Traditional lineal epistemology is [...] atomistic, reductionistic, and anticontextual and follows an analytical logic concerned with combinations of discrete elements. […] [Whereas] nonlineal epistemology emphasizes ecology, relationship, and whole systems. In contrast to lineal epistemology, it is attuned to interrelation, complexity, and context” (p. 14). The latter is also called “systemic, ecological, ecosystemic, circular, recursive, or cybernetic epistemology” (ibid. p. 14).

Cybernetic epistemology, as a nonlinear epistemology, “is a process of knowing, constructing, and maintaining a world of experience” (Keeney 1983, p. 108). Therefore, it “directs us more toward the cognitive question "What is the structure of our experiential world?"” instead of asking: "What is the structure of the real world?" (ibid. p. 107). Moreover,

> cybernetic epistemology prescribes a way of discerning and knowing patterns that organize events. [...] This is distinct from a Newtonian epistemology concerned with knowing such matters as the nature of billiard balls and the forces that operate on them. What differentiates the work of cyberneticians is that they jump from the paradigm of things to the paradigm of pattern. (Keeney 1983, p. 95)

A new system approach has been developed from extending simple cybernetics to cybernetics of cybernetics. A significant shift in conceptualization between simple cybernetics (1st order cybernetics) and cybernetic of cybernetics (2nd order cybernetics) is, according to Heinz von Foerster, “observing systems in their interactions with the observed” (quoted in Jonas 1996, p. 2). This means that the observer participates in prioritizing the functions and relationships within and beyond the system (Joseph 2010, p. 237). Accordingly, the development of cybernetics of cybernetics (or system thinking) is considered a big shift towards subjective reality as opposed to the objective reality raised by simple cybernetics.

Cybernetic understanding, system thinking and pattern recognition are treated by Frederic Vester (2007) in his book *The Art of Interconnected Thinking*. Vester takes issue with traditional linear thinking. Using traditional linear cause-and-effect thinking has led to the habit of dividing reality into separate parts and dividing the world into compartments (p. 31). This, he argues, is due to a lack of cybernetic understanding. Vester elaborates this point by saying, "We are used to describing individual things in neat compartments, separated by the disciplines that govern them and the areas of life to which they relate; we are not used to describing the links that actually connect them" (pp. 40–41). For him, pattern-recognition is necessary “to grasp reality as a whole”, and in this process “data must be stripped down to key components, and those components must be interconnected” (pp. 54–55). Only in this way can the complexity of natural and human reality be respected in a sustainable manner (Vester 2007, pp. 19–20).

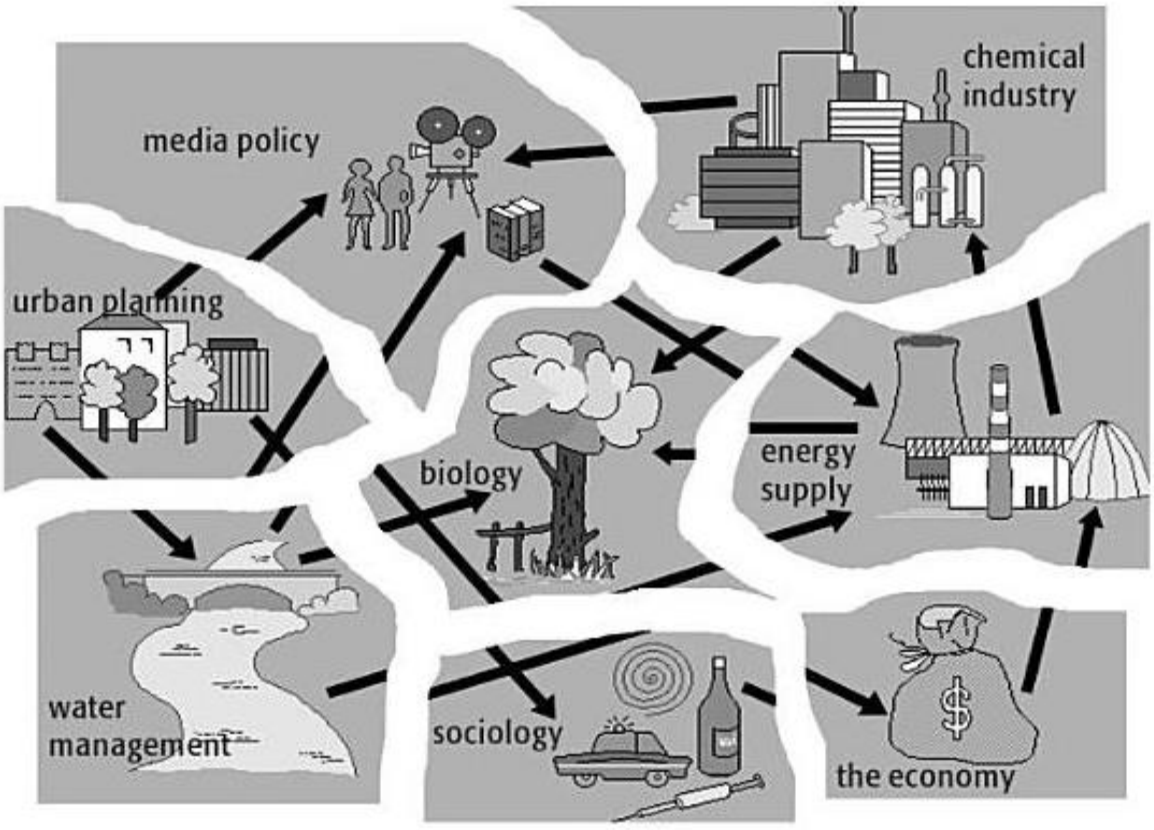


Figure 4-1: A fractured network (source: Vester 2007, p. 41)

In design research, thinking and acting in a sustainable manner has been recognized recently after failing to cope with complex real-world problems using traditional design methods (conceived as 1st generation design methods) as will be discussed in detail later (see Ch5 Design process and second-generation methods). Accordingly a system-thinking approach is increasingly appreciated and 2nd

generation design methods have emerged, acting “on the level of 2nd order cybernetics” (Jonas 1996, p. 3).

Research which, like the present thesis, deals with tackling poverty in Egypt, requires a comprehensive awareness of the distinctive characteristics of such a complex problem. Poverty cannot be solved through traditional design approaches that just focus on the materiality of design. It requires awareness of system-thinking as an epistemological position for generating knowledge.

4.2 Modes of Knowledge Production

Transdisciplinary

Three modes of knowledge production are relevant to the context of this research project: multi- (or pluri-) disciplinary, interdisciplinary and transdisciplinary. A short introduction to each category will be provided before one is selected for further analysis and application.

Multidisciplinary (also pluridisciplinary) approaches generally focus on studying a research topic in a plurality of disciplines. These approaches are not limited to the boundary of the disciplines in question, but seek to develop the home discipline by bringing “a plus to the discipline in question” (Nicolescu 2002 [online]). An interdisciplinary approach, on the other hand, does not seek this “plus” but seeks to transfer methods from one discipline to another (ibid.). Nicolescu distinguishes three degrees of interdisciplinary activity and illustrates these with the following examples:

1. *A degree of application*: e.g. transferring methods from nuclear physics to medicine leads to developing a new treatment of cancer.
2. *An epistemological degree*: e.g. transferring methods from formal logic to the area of general law leads to *interesting analyses of the epistemology of law.*
3. *A degree of the generation of new disciplines*: e.g. transferring methods from mathematics to physics leads to mathematical physics, which *contributes to the theory of the big bang*.

Transdisciplinary is an old term that has been revived and reused recently to describe a fourth mode of knowledge production. According to Nicolescu (2002),

> *Transdisciplinarity* first appeared three decades ago almost simultaneously in the works of such varied scholars as Jean Piaget, Edgar Morin, and Erich Jantsch. It was coined to give expression to a need that was perceived – especially in the area of education – to celebrate the transgression of disciplinary boundaries, an act that far surpassed the multidisciplinary and the interdisciplinary approaches.
>
> Today the transdisciplinary approach is being rediscovered, unveiled, and utilized rapidly to meet the unprecedented challenges of our troubled world. (Ibid, [online])

With reference to these challenges – e.g. complexity, non-linearity and heterogeneity – Klein (1998), following Gibbons et al (1994), observed a fundamental change taking place in knowledge production in scientific, social and cultural studies:

> The new mode of production is "transdisciplinary" in that it contributes theoretical structures, research methods, and modes of practice that are not located on current disciplinary or interdisciplinary maps. One of its effects is to replace or reform established institutions,

> practices, and policies. Problem contexts are transient and problem solvers mobile. Emerging out of wider societal and cognitive pressures, knowledge is dynamic. It is stimulated by continuous linking and relinking of influences across a dense communication network with feedback loops. As a result, new configurations are continuously generated. (Klein 1998 [online])

Accordingly, the old term is reused under a new definition to be classified as a new mode of knowledge production. “As the prefix "trans" indicates, transdisciplinarity concerns that which is at once between the disciplines, across the different disciplines, and beyond all disciplines. Its goal is the understanding of the present world, of which one of the imperatives is the unity of knowledge” (Nicolescu 2002 [online]).

In the present thesis, system thinking is recognized as a distinguishing feature for dealing with real-world problems. If design is going to be effectively involved in solving such complex problems, a transdisciplinary approach must be adopted in the quest for unity of knowledge. By transcending traditional academic disciplines, a transdisciplinary approach will empower design researchers to develop tangible alternative solutions that realize the potential of connecting different theoretical insights to address complexity and overcome related issues. Or, as Findeli et al. have it: “pluridisciplinarity branches out into interdisciplinarity when knowledge production is the aim […] and transdisciplinarity when user satisfaction is the aim” (Findeli et al. 2008, p. 82).

4.3 Designerly modes of Knowledge Production

Research through design

In his book *Designerly Ways of Knowing*, Cross (2006) identified five aspects of the way designers approach problems. The first aspect concerns the type of problems designers deal with: ‘ill-defined’ problems. The second aspect focuses on their mode of solving problems, which is ‘solution-focused’. The third aspect describes their mode of thinking as ‘constructive’. The fourth aspect is about translating ‘the abstract requirements into concrete objects’ using ‘codes’; and finally these codes, in turn, are used in ‘object languages’ as a way of communication (p. 12). Building upon these five aspects, Cross gave three reasons for applying designerly ways of knowing, which are different from the ways of knowing of science and art:

- Design develops innate abilities in solving real-world, ill-defined problems
- Design sustains cognitive development in the concrete/iconic modes of cognition
- Design offers opportunities for development of a wide range of abilities in nonverbal thought and communication (p. 12).

In the context of design research as a way of producing knowledge, Cross distinguished three approaches of design research (based on three sources of knowledge: people, processes and products): *epistemology*, *praxeology*, and *design phenomenology* as the following:

- Design epistemology [is] the study of designerly ways of knowing
- Design praxeology [is] the study of practices and processes of design
- Design phenomenology [is] the study of form or configuration of artefacts (p. 101).

Findeli et al. (2008) extended Cross’s ‘designerly ways of knowing’ as ‘a specific know-how’ to what they call “pragmatization” of knowledge by adopting project-grounded research. This means, according to them, the transformation of knowledge from knowing to acting, in that the outcome of

the design research is not only relevant to the scientific community but also to the end user, which "is what transdisciplinarity [is] about" (p. 81).

There is, in fact, much debate in the design research community about the conceptualization and categorization of design research using different terminologies: "research *in, for, about* and *through* design" (Frayling 1993, Archer 1995, Findeli 1998, Jonas 2007/2008). According to Findeli and his colleagues (2008), research *for* design is relevant for design practice, where its purpose is to inform design projects; research *about* design is not relevant for design but for other disciplines to be more informed about diverse design practices or design outputs in order to develop their own disciplines; research *through* design is *"a kind of research about design [that is] relevant for design, or […] a kind of research for design that produces original knowledge with as rigorous standards as research about design"* (pp. 70-73). Research through design could be also called "practice-based research", "action research", or "project-grounded research".

Following Archer's (1995) and Findeli's (1998) models, Jonas (2007/2008) identified a paradigmatic cluster in design research underpinned by second order cybernetics: "The concepts of research for/through/ about design – related to the cybernetic concept of observer positions with respect to the design system (where design activities take place)" (Jonas 2007/2008, unpaged). "Jonas's approach is also underpinned by second-order cybernetics, in recognizing the temporal and conceptual shifts and relationships between different ways of conceptualizing design research and its various methodological practices and related bodies of knowledge" (Joseph, p. 200).

According to Jonas (2007/2008), research *for* design is more focused on asking: what is design? How does design work? Research *about* design is focused on asking: what is the nature of design? What is the nature of aspects of design? Research *through* design asks: what is design good for? (ibid). In this respect, research through design (RTD) "offers the semantic category of a designerly mode of knowledge production. […] RTD provides the epistemological concepts for the development of a genuine design research paradigm, which is a condition for methodological development" (Jonas 2007, p. 187). "The formulation of a genuine design research paradigm requires a generic design process model, which serves as a framework for RTD. It has to account for the (impossible but necessary) projective character of the project" (Jonas 2007, p. 201).

Consistent with Findeli's 1998 and Jonas's 2007/2008 models, the present thesis is research through design. It focuses upon finding answers to the questions: What is design good for in Egypt, especially in tackling poverty? And: how to participate effectively as a design researcher in serving people in Egypt while producing a designerly mode of knowledge?

4.4 Research design

Generally, research is about producing new knowledge and research design is about planning for generating this kind of knowledge. According to Creswell (2009), an educational psychologist and author of many books on different types of research design, any research design consists of three major components: philosophical worldview, strategy of inquiry, and specific research methods. Determining these components sequentially will lead to a research approach that tends to be more qualitative, quantitative or mixed. He elaborates this further: "in planning a study, researchers need to think through the philosophical worldview assumptions that they bring to the study, the strategy of inquiry that is related to this worldview, and the specific methods or procedures of research that translate the approach into practice" (p. 5). Accordingly, there are different scenarios of research

design in which these three major components are combined. For the present thesis project, the following scenario is selected and will be further elaborated in the following paragraphs:

→ Pragmatic/transformative worldview for exploring and empowering -> mixed methods approach -> strategy of inquiry (case study) -> methods (interviews, Vester's sensitivity model, Schwartz scenarios, visual methods)

Awareness of the paradigmatic framework (or philosophical worldview) is important for both the individual researcher and the research community. For researchers, understanding the specific paradigm in which they operate will enable them to take the right procedural decisions in accordance with their assumptions, as well as to avoid the naïve trap of thinking they can deliver reliable knowledge without recognizing the scientific rules for doing so. The research community will be more concerned with the way research has been conducted, what kind of outcomes have been delivered, and how far these outcomes are reliable.

Kenney (1983) suggests the use of the term 'epistemology' to articulate one's philosophical worldview or paradigm. For him, lack of awareness of one's epistemological position implies a lack of reflection rather than naïvety. He comments on Auerswald's (1973) opinion that 'having no epistemology' is simply 'bad', writing that:

> the claim to have no epistemology is "bad" only if the individual uses such a claim to avoid responsibility for his ideas, perceptions, and decisions. Having no conscious awareness of one's epistemology is not necessarily bad, although such unawareness may be risky. I would prefer to say that the claim to have no epistemology reveals an epistemology that does not include a conscious awareness of itself. (Keeney 1983, p. 13)

Krauss (2005, pp. 758-759) succinctly explains the different between epistemology, ontology and methodology as well as the interconnected relationship between them: "As ontology involves the philosophy of reality, epistemology addresses how we come to know that reality, while methodology identifies the particular practices used to attain knowledge of it" (qtd. in Joseph 2010, p. 232).

Keeney (1983) refers to the possibility of switching between different epistemologies according to the issue in question. Following Auerswald (1973), he uses the term 'being in transition' to describe the transition from linear to nonlinear epistemology:

> Being in transition from one epistemology to another means moving toward seeing a world that, by definition, is impossible to grasp in the world to which one is traditionally accustomed. For example, although astronomers have proven that the earth rotates, we continue to perceive "sunset" and "sunrise". Moving from conceptual understanding to habitual, common sense perception of a rotating planet represents a paradigmatic transition. (p. 15)

4.4.1 Research Paradigm

Four philosophical worldviews or paradigms are categorized in the following table (adapted from Creswell 2009, pp. 6-11):

Table 4- 1: Four philosophical paradigm (adapted from Cresswell 2009, pp. 6-11)

	Post-positivism	Constructivism	Advocacy/Participatory	Pragmatism
Philosophical assumption	Determination (cause-and-effect)	Understanding A world of meaning	Transformation through political agenda	Consequences of actions
Intent / Characteristic	Reductionism (reduce into small ideas to be tested)	Multiple participant meanings	Social Issue-oriented (empowerment)	Problem-centered
Knowledge based on	Empirical observation and measurement	Social and historical construction	Collaborative approach	Pluralistic approach
Understanding the world through	Theory verification	Theory generation	Change-oriented picture (theoretical lens)	Real-world practice oriented
Research design	Quantitative	Qualitative	Qualitative / quantitative	Mixed methods
Ontology	Objective reality	Subjective reality	Subjective reality	Beyond duality of reality (what works at the time)

The pragmatic worldview

Adopting the pragmatic worldview is characterized by arguing that the reciprocal causality of acting and reflecting will lead to knowledge. This has two implications:

> [I]mplications for the status of knowledge in that knowledge according to the pragmatist view is always about relationships between actions and consequences, never about a world 'out there', [and] implications for the objects of knowledge, which appear as constructions out of the relationships between actions and consequences, not as isolated entities that pre-exist the act of knowing. (Biesta 2010, p. 112)

After reviewing various works by many recent pragmatists Creswell (2009) concluded that "There are many forms of this philosophy, but for many, pragmatism as a worldview arises out of actions, situations, and consequences"(Creswell 2009, p. 10). He synthesizes the following assumptions of the pragmatic worldview based on Cherryholme's (1992) and Morgen's (2007) views, as well as his own:

- Pragmatism deals with research problems from the social sciences (problem-centered)
- Pragmatists apply a pluralistic approach to drive knowledge and understand the problem in social, historical, political, and other contexts, from which they develop consequences in the form of actions.
- Pragmatists use mixed methods research design, using both qualitative and quantitative methods. Thus "pragmatism opens the door to multiple methods, different worldviews, and different assumptions, as well as different forms of data collection and analysis" (Creswell 2009, p. 11).
- Pragmatism seeks to provide the *what* and the *how* of research; therefore researchers are "free to choose the methods, techniques, and procedures of research that best meet their needs and purposes, [but they] need to establish a purpose for their mixing, a rationale for the reasons why quantitative and qualitative data need to be mixed in the first place" (ibid).
- Pragmatists bring theories explicitly or implicitly into their inquiries through a theoretical lens that orients the study and shapes the types of questions asked.
- Pragmatists focus on real-world practice with specific concerns: "Truth is what works at the time" (ibid).

Accordingly, the present thesis adopts the pragmatic perspective because of the following assumptions:

1. The research deals with a real-world problem
2. The researcher is applying multiple methods to understand the problem
3. The research focuses on know-what and know-how
4. A transdisciplinary approach is employed to produce knowledge about the problem
5. The research calls for action.

This thesis perspective also shares some transformative aspects of the advocacy paradigm and has an empowerment character. "Mertens (2007) argued that the transformative paradigm provides a framework for addressing issues of social justice in the research process" (qtd. in Hodgkin 2008, p. 299). The vision outlined in Chapters 3 of the thesis is considered the conceptual framework for changing traditional design thinking. It supports emancipatory forces enabling people to get out of the poverty that prevents self-development and self-determination (see Creswell 2009, p. 10).

This means that this thesis is located within the pragmatic paradigm and has a transformative character, as will be elaborated later in this chapter. Moreover, both paradigms are underpinned by a commitment to a mixed methods approach that combines both qualitative and quantitative methods (see Creswell 2009, p. 4).

4.4.2 Constructing an Operational Framework

The researcher is fully aware of the challenging task behind approaching complex real-world problems and therefore aims to explore some additional skills and methods that support designers in dealing with such problems.

Seeking the achievement of this aim requires an extensive review of literature across different fields. Five basic aspects will be selected and explained to provide new insights and techniques, as well as to facilitate understanding of the methodological terms introduced. These aspects will then be synthesized into a toolbox that will constitute an operational framework. This operational framework

will be divided into three phases: analysis, projection and synthesis. Finally, a 12-step integrative operational model will be developed. This will be further elaborated in Chapter 5, while processing the data using this model will be visualized in Chapter 6.

The purpose of constructing this operational framework is, then, to provide a theoretical background related to the emerging methodological principles that the researcher intends to apply in processing the data in the empirical section of the thesis.

4.4.3 Methodological Approach

→ *Mixed Methods approach*

The mixed methods approach (MMA) has its roots in psychology since 1959; but as a distinct research approach, it is relatively new in the social and human sciences. It has recently been considered as a strategy of inquiry in the social and behavioral sciences in the form of the *Handbook of Mixed Methods in the Social & Behavior Sciences* by Tashakkori & Teddlie in 2003, where the first comprehensive overview is provided (see Creswell 2009, p. 204).

By definition, mixed methods strategy refers to kind of strategy that mixes both quantitative and qualitative methods/data within one study at one or more stages of the research process: gathering, analyzing, and/or interpreting data. Answering the following questions will determine which design is more appropriate to apply in specific study: what and how to mix quantitative and qualitative methods/data.

reviewing of many mixed-methods research designs from different sources such as Tashakkori and Teddlie (2009; 2010), Creswell (2009), and Creswell and Clark (2011), makes it clear that different terms are used in the mixed methods literature to describe the same procedure in answer to the questions formulated above – e.g. Greene's (2007) types of integrated mixed method, which include iteration, blending, nesting and mixing (Nastasi et al 2010, p. 319), and Creswell's (2009) four aspects: timing, weighting, mixing and theorizing (Creswell 2009, pp. 206-207). Both these authors are concerned with answering the question in their own terms. Given this terminological spread, the research design adopted in this thesis follows Creswell's (2009) and Creswell and Clark's (2011) types of mixed method.

The intention of MMA is to gain more insight from combining both qualitative and quantitative methods as well as to provide an expanded understanding of the complex research problem addressed in a study. However, there are three challenging issues that the researcher must take into consideration before choosing this strategy for her or his inquiry: extensive data collection, intensive time consumption and familiarity with both forms of research: quantitative and qualitative (see Creswell 2009, p. 205).

Dynamic Mixed Methods Design

After summarizing many studies from diverse disciplines, Creswell and Clark (2011) developed six major designs to describe how and when the mixing occurs. According to them, these basic designs are: convergent parallel design, explanatory sequential design, exploratory sequential design,

embedded design, transformative design, and multiphase design (for further details see Creswell and Clark 2011, pp. 69-70). They term these designs “typology-based”. They refer to dynamic design, on the other hand, as a kind of design that is not restricted to any of these basic typologies but “focus[es] on a design process that considers and interrelates multiple components of research design rather than placing emphasis on selecting an appropriate design from an existing typology” (Creswell and Clark. 2011, p. 59).

Although selecting one typology-based design would ensure a kind of guiding framework, in reality research problems and questions are sometimes too complex to be appropriately approached through adopting such basic designs. Selecting an appropriate mixed methods design remains a challenging process, and researchers have to consider issues of timing, weighting, mixing and theorizing that are related to describing their designs, as will be described later in this chapter.

In this thesis, a dynamic approach is adopted as an appropriate mixed methods design. This dynamic approach is not restricted to any preexisting MM designs; rather it considers multiple components in a coherent and appropriate design. It combines sequential, transformative and embedded aspects to address the specific research problem. According to Creswell and Clark (2011)

> questions of interest play a central role in the process of designing any mixed methods study. The importance of the research problem and questions is a key principle of mixed methods research design. This perspective stems from the pragmatic foundations for conducting mixed methods research where the notion of "what works" applies well to selecting the method that "works" best to address a study's problem and questions. (p. 60)

The exact mix of qualitative and quantitative methods was not predetermined or planned at the beginning of the research process; it developed during the research in order to make sense of specific collected data and to engage another level of interpretation (as will be explained later). In terms of MMA, the research gives weight to qualitative methods; quantitative methods play a secondary (albeit essential) role in addressing the research problem.

It was clear from the beginning that the research would be conducted in three phases, but the details of each phase were not clear. These details emerged in the course of the case study to make sense of the data gathered in each phase. Mixing during analysis and interpretation of the qualitative data using Vester’s sensitivity model is a direct interaction process that occurred during the first phase (ANALYSIS).

→ *Embedded mixed methods aspect*

The embedding of QUAN method within a predominantly QUAL method is what Creswell (2009) calls “embedded design”. This refers to

> a primary method that guides the project and a secondary database that provides a supporting role in the procedure. Given less priority, the secondary method (quantitative or qualitative) is embedded, or nested, within the predominant method (qualitative or quantitative). This embedding […] seeks information at a different level of analysis. (p. 214)

→ *Sequential exploratory mixed methods aspect*

This thesis also adopts some aspects of the mixed-methods sequential exploratory strategy. It focuses on exploring the problem at issue using sequential timing, which implies collecting, analyzing

and interpreting the data in three sequential phases: Analysis→ Projection → Synthesis. Generally, the strength of using MM research is to "offset the weakness of both quantitative and qualitative research" (Creswell and Clark 2011, p. 12). The strength of using a sequential approach lies in using different phases, this in turn facilitates the process of sharing the results.

→Transformative Mixed Methods Aspect

Providing a theoretical lens at the beginning of this thesis is known in mixing methods as explicit theorizing (see Creswell 2009, p. 212); it is usually applied in change and advocacy studies. Within this thesis, introducing the theoretical lens at the beginning serves as a call for upgrading traditional design scope as well as reorienting design activities towards design for sustainable development. This leads to accurate questions directed towards the additional skills needed by designers to change their way of thinking and acting when they face real-world problems. More importantly, the theoretical lens targets the empowerment of marginalized people in developing countries generally, and understanding poverty in Egypt specifically. The theoretical lens gives this thesis a transformative dimension in addition to its pragmatic perspective. "The aim of this theoretical perspective […] is more important in guiding the study than the use of methods alone" (Creswell 2009, p. 212).

4.4.4 Strategy of inquiry

Conducting case-study research is known in different academic fields, such as political science, the humanities, social studies, design, business and marketing, and so forth. Many scholars refer to case study as a qualitative research method or as a qualitative strategy of inquiry. Collecting data for a case study may involve different kinds of data, quantitative and/or quantitative. However, for many mixed methods studies applying a case study, it has been referred to as a qualitative component of the overall design (Teddlie & Tashakkori 2009, p. 25).

Due to the exploratory nature of this research, a case-study strategy has been chosen to explore the problem under real circumstances. Approaching real-world problems such as tackling poverty in Egypt led to the selection of the *Al-Darb Al-Ahmar Revitalization Project* (DAR). This project (DAR) aims at developing urban community as a complex socio-economic problem that has multi-dimensional challenges. It is one of many development projects undertaken by the Aga Khan Organization in Egypt that aim at alleviating poverty and changing poor people's attitude towards positive participation in order to cope with the overlapping problems they are facing. One particular program, 'Local Crafts Development', will be chosen as an intervention point and the data will be collected through project annual reports and expert interviews using open-end questions to get more insight about the project's different activities. The names of interviewees will not be given in this thesis, to protect their anonymity.

This particular case study has been selected as an opportunity to step into the world of development projects in Egypt and to gain entry to this new field as a designer. As an Egyptian citizen, my perception of local cultural, political and social problems in Egypt has been shaped through living there and dealing with some of these problems first hand. This bias shapes the way I understand and interpret the collected data. This understanding of the context facilitates not only communication but also the interpretation of the data collected in the thesis. At this point, it is important to observe that I describe the problem from my perspective as an Egyptian designer in accordance with the

different scientific methods outlined here for analyzing the relevant material. This will become explicit in Chapters 5 and 6.

4.4.5 Research Methods

Generally, choosing research methods serves two goals: First to answer the research question and second to transform the information into knowledge, which is a long process. This process depends primarily on the conscious choice of appropriate methods. According to Rickenberg (2008) "methods serve as an infrastructure through which information is conveyed and knowledge is codified. […] In other words, they are the rules and routines with which practitioners develop common perspectives and build upon lessons learned by others" (p. 121). In this thesis, gathering, analyzing and interpreting the data occurs at multiple points and involves three sequential phases; accordingly different methods will be used for the specific purpose of each phase.

In the first phase, ANALYSIS, Vester's Sensitivity Model will be used and key decisions will be taken. Reasons will be given for selecting an intervention point and specifying critical conditions. The second phase, PROJECTION, will raise new research question: How might the environment look in which the problem at issue is embedded? This question will be approached via Schwartz's scenario technique of exploring the desired future. These two phases will be followed by an experimental intervention applying different visual analysis and interpretation tools. This third phase, SYNTHESIS, will end with the development of a solution prototype in the form of a social business design model (see Research Design Picture).

4.4.5.1 Phase 1: ANALYSIS

→ Vester's Sensitivity Model

Data has been collected from the following sources:

- Observation: conducting an observation and gathering field notes.
- Interviews: conducting a semi-structured, expert open-ended interview with interview notes (see initial interview questions, Appendix A).
- Documents: collecting and analyzing different Project Progress Reports (2004, 2005, 2006, 2007).

Vester's Sensitivity Model, a computer software program, will be used for data analysis in this project, because of its ability to support the user in capturing the problem comprehensively – i.e. grasping reality as "a network of connections that transcend subject boundaries" (Vester 2007, p. 110) or, to put it another way, taking the complex nature of the problem into account instead of fragmenting it into separate components. Another useful quality is that by incorporating 'soft' data into the systemic model it can map reality while respecting human perceptions of it.

Moreover, applying the linguistic approach of fuzzy logic in a user-friendly way prevents one from getting lost in an endless number of mathematical processes while capturing the examined system (see Malik Management Zentrum St. Gallen, no date, p. 10). Vester (2007) further explains the benefits of applying fuzzy logic stating that

> every stage of capturing and interpreting a system can be worked through with the same set of variables comprising 'hard' and 'soft' influence factors. Using appropriate table functions, even imprecise, purely qualitative effects can be described mathematically, with the result that the same variable can also be employed in the subsequent simulation. (p. 209)

This program has played an important role in quantifying the qualitative data: the qualitative data is converted to a numerical code to be analyzed and interpreted mathematically.

Preparing and processing the data used in the program will be explicitly presented in Chapter 6 (see Analysis) after explaining the background concepts of the software program in Chapter 5 (see Vester's Sensitivity Model). But at this point, it is important to refer to the specific tool used in this program that will support the researcher to take decisions with respect to the dynamic character of the examined system. 'Role allocation' analysis, a two-dimensional diagram, is provided as an output that represents and distributes all the variables according to their character in the system (active/ reactive/ critical/ buffering). This tool will serve as a strategic indicator for determining intervention possibilities and critical conditions, in order to intervene in a sustainable way.

4.4.5.2 Phase 2: PROJECTION

→ Schwartz scenario technique

After reasoning these choices, a sequential phase is required to explore the chosen variables. The second phase, PROJECTION, is related to the chosen variables and provides insights into the question as to the form of the environment in which the problem at issue is embedded.

In this regard, Schwartz scenario technique will be chosen for analyzing the data, after collecting new relevant data in the second phase from different sources: reports, surveys and scientific papers. This technique will be explained and presented in the form of a table in Chapter 5 (see Developing scenarios after Schwartz) while processing the data will be explained in Chapter 6 (see PROJECTION). Scenario technique is generally a promising analysis method for exploring the future with respect to its uncertainty, and Peter Schwartz (1991) developed a step-by-step guideline specifically for scenarios that help people change their way of approaching reality and 're-perceiving' rather than 'predicting' the future.

After applying this method of analysis, the data will be transformed into a 'context scenario' matrix where four scenario logics will be established. The core vision of each scenario will be described in an "end-state" description that provides the answer to the proposed question in a narrative way. Afterwards, a desirable scenario will be chosen and a strategic insight will be built upon this scenario, including goal, intention, and objective.

4.4.5.3 Phase 3: SYNTHESIS

→ Visual analysis and interpretations

After collecting new data in the form of audiovisual materials, different visual analyzing tools will be used in this third phase such as: storyboard, system map, tables, user scenario, and model. SYNTHESIS is the final phase planned in this thesis that aims at developing a sustainable strategy to

solve the proposed problem. Starting with collecting new data regarding the selected target groups, and presenting this data through a visual storyboard, enables target group to identify their wants and needs in a tangible way. Afterwards, collecting relevant information related to market forces will be presented and analyzed in a table in Chapter 5 (see Collecting relevant information on market forces). Then an interpretation of the problem will be presented in the form of a system map (see Designing the problem system-map). Finally transforming information into a business model will be explained and a user scenario and implementation strategy developed. Processing the data and results will be presented in detail in Chapter 5 (see Synthesis).

4.4.5.4 Validity, Reliability and Generalizability

Validity is kind of strategy adopted by researchers to check the quality of their collected data, their results and their interpretation (Creswell and Clark 2011, p. 210). There are two kinds of validity, internal and external.

- Internal validity: to validate the accuracy of the findings (validity) and to demonstrate the reliability of procedures (reliability)
- External validity: to discuss the role of generalization (generalizability) and apply results to new settings, people or samples.

Strategies of Internal and External Validity

Three techniques to ensure internal validity are utilized in this thesis:

→ Triangulation technique (Creswell 2009, p. 191), a common technique discussed by many scholars, refers to collecting data from different sources to ensure the internal validity of the study. This technique has been adopted in this research by gathering data from multiple sources, such as conducting two-stage interviews and presenting them in a narrative that sheds light on the challenges and setbacks, as well as the opportunities for further intervention. Additional sources are derived from reviewing and analyzing many related project reports, observations, audio visual materials, photos, online local newspapers, video reports and published papers and human development reports.

→ External auditor: After finishing the first two phases, ANALYSIS and PROJECTION have been scrutinized by an external auditor who is an expert in cybernetic thinking. I requested her feedback per mail, especially in processing the data through applying Vester's Sensitivity Model, because she worked with Professor Vester on the development of interconnected thinking.

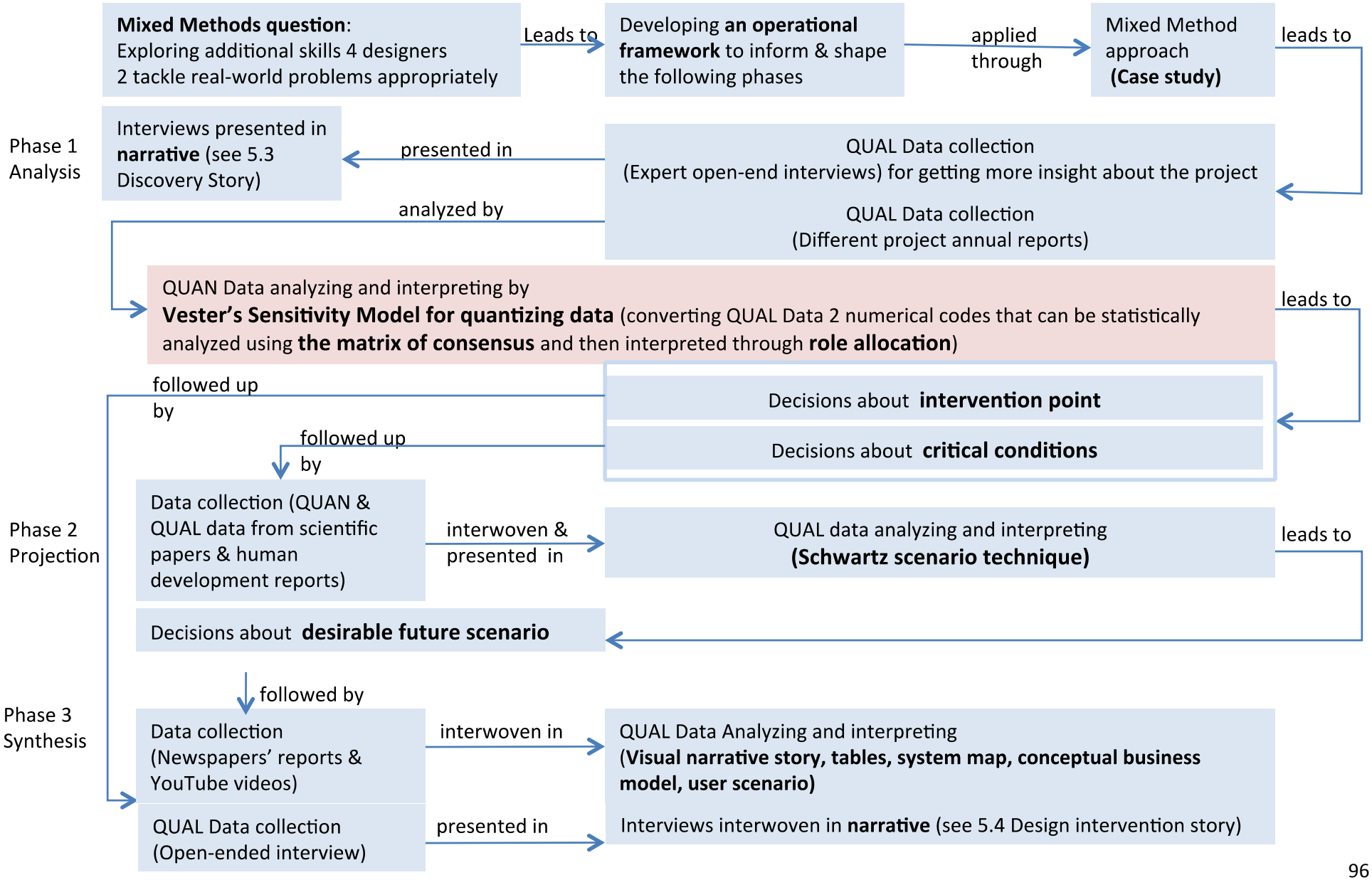
→ Member checking (Creswell 2009, p. 191): After polishing the interviews and interweaving them in the form of different stories, the final output was taken back to one of the interviewees in order to get feedback.

External validity has been guaranteed in this thesis through adopting the provision of "rich, thick, detailed description" (Yin 2003, Creswell 2009, p. 190). Explaining every method in detail, providing detailed definitions of each variable, and documenting many data processing steps, both visualizes the experiences and enables them to be shared, should other researchers be interested in transferring them to another context.

Conclusion

The list below summarizes the chosen terminology in a sequential way. The table provides a research design picture visualizing all the conceptual aspects in a single comprehensive framework.

Pragmatic worldview with transformative character -> ontological assumption (exploring and empowering) -> epistemological position (system thinking) -> methodological approach (dynamic mixed methods design) -> strategy of inquiry (case study) -> methods (open-end interviews with experts, Vester's Sensitivity Model, Schwartz scenarios, different visual analyzing and interpretation tools)


Mixed Methods question:
Exploring additional skills 4 designers
2 tackle real-world problems appropriately
Leads to
Developing **an operational framework** to inform & shape the following phases
applied through
Mixed Method approach
(Case study)
leads to
Phase 1
Analysis
Interviews presented in **narrative** (see 5.3 Discovery Story)
presented in
QUAL Data collection
(Expert open-end interviews) for getting more insight about the project
QUAL Data collection
(Different project annual reports)
analyzed by
QUAN Data analyzing and interpreting by
Vester's Sensitivity Model for quantizing data (converting QUAL Data 2 numerical codes that can be statistically analyzed using **the matrix of consensus** and then interpreted through **role allocation**)
leads to
followed up by
Decisions about **intervention point**
followed up by
Decisions about **critical conditions**
Phase 2
Projection
Data collection (QUAN & QUAL data from scientific papers & human development reports)
interwoven & presented in
QUAL data analyzing and interpreting
(Schwartz scenario technique)
leads to
Decisions about **desirable future scenario**
followed by
Phase 3
Synthesis
Data collection
(Newspapers' reports & YouTube videos)
interwoven in
QUAL Data Analyzing and interpreting
(Visual narrative story, tables, system map, conceptual business model, user scenario)
QUAL Data collection
(Open-ended interview)
presented in
Interviews interwoven in **narrative** (see 5.4 Design intervention story)

Chapter 5: Operational Framework

This chapter aims at creating an operational framework to process the data in the empirical section, starting with selected theoretical background related to the methodologies that will be used later in this framework. The goal here is to explore additional skills and methods that designers should learn in order to grasp the complexity of their world and to accomplish their new role in a sustainable way. System thinking, scenario building and strategic planning and acting are important methodological components that are to be synthesized in a toolbox.

Five background aspects from different fields will be selected and reviewed for particular analysis. Each of them comes with a concept that provides new insights and details relevant to this thesis. Some of this material will be summarized in tables and can be regarded as a guide manual.

Section 5.1 introduces theoretical considerations regarding the design process and methods. This leads to the selection of a design process model as a container to be filled later with different methods relevant to each phase of the design process.

Section 5.2 describes specific real-world problems and addresses the problem of defining and representing them in the context of social design. Simon offers a range of viable concepts and techniques bearing on this issue. Their potential contribution will be exploited for designers who seek to approach complex problems in a sustainable way.

Section 5.3 explains a new way of approaching complexity and how to apply system thinking. Vester's Sensitivity Model is presented as an operational tool for applying this type of thinking.

Section 5.4 reviews scenario building as a method for exploring uncertain futures and taking them into account by outlining desirable situations. Different approaches and aspects will be presented and Schwartz's eight-step guideline outlined. This outline can be taken into account in developing scenarios in general.

Section 5.5 illustrates the potential of strategic thinking from different perspectives specifically that of linking strategic design to the development of a business idea, which in turn is considered as an operational tool for realizing design. A business model template will be presented and finally, the social business model will be explained and expressed in a table.

Section 5.6 synthesizes an operational framework by collecting different methods in a 12-step model to be implemented in the empirical study.

5.1 Design Process and Second Generation Methods

Since many methods and tools that vary according to their objectives, mechanism and activities are currently being used in the design process, both in research and practice, we should start with some general definitions.

Design process as defined by the *Design Dictionary* is generally viewed as

> the means by which people shape their surroundings. […] Designers are trained to conceptualize the process of design as a series of activities that unfold over time, and to view the completion of each activity as a step toward some predefined goal. (Teixeira et al. 2008, p. 128).

Design methods

> serve as an infrastructure through which information is conveyed and knowledge is codified […] In other words, they are the rules and routines with which practitioners develop common perspectives and build upon lessons learned by others. (Rickenberg 2008, p. 121)

Design methodology as described by Cross (1984) is

> the study of the principles, practices and procedures of design in a rather broad and general sense. Its central concern is with how designing both is and might be conducted. This concern therefore includes the study of how designers work and think; the establishment of appropriate structures for the design process; the development and application of new design methods, techniques, and procedures; and reflection on the nature and extent of design knowledge and its application to design problems. (P. vii)

Within the last decade, many design methodologists have emphasized simple models to describe their design process. Most of these depend on importing methods and tools from other disciplines such as the natural or social sciences in order to give the process a scientific dimension. In this regard, the "design methods movement", which emerged in the early 1960s in England and was active for almost twenty years, aimed at promoting research efforts in design on the one hand, and on the other at creating a wide design research community connecting different design practices: architecture, industrial design, planning, graphic design and cybernetics (Margolin 2002, pp. 246-248). The leading figures in this movement were Christopher Alexander, Bruce Archer and John Chris Jones, the author of *Design Methods* published in 1970.

In retrospect, however, all their efforts (conceived as first generation design methods) seem to have failed and their goal of coping with the complex problems of reality remained unfulfilled. This pushed the first generation theorists to call for second generation of attempts. Within these attempts, came a call for "design as a science" by Archer, "he believed that design knowledge would be deepened if it were grounded in a field of science like inquiry" (Margolin 2002, p. 247). Such a science was shared by Herbert Simon in his book: *The Science of the Artificial* (1996), where he distinguished between two disparate disciplinary goals: the goal of the natural sciences is to answer the question how things are and how they work; whereas a designer's goal concentrates rather on how things ought to be (see pp. 111-114). This means the former aims at finding explanations, whereas the latter aims at finding solutions for existing problems in order to change the situation into a desirable one.

The most notable suggestion was offered by Rittel (1972) when he called for "second generation design methods". According to Rittel (1972, pp. 323-324), the development in design methodology should be twofold. On the one hand the argumentative design process model should be restructured to focus on studying the logic used by designers for generating information and forming judgments. On the other hand the instrumental version of the model should be further developed to enhance the process of implementing the argumentative model. Rittel also provided some characteristics and explained some differences between first and second generations in design methods described in the following table (5-1):

Table 5- 1: 1st and 2nd generation design methods (created by the author, adapted from Rittel 1972, pp.325-327)

	1st generation design methods	2nd generation design methods
1	assume: Asymmetry of ignorance p.326 -there is a professional expertise about other people's problems -the designer is knowledgeable about other people's problems and how they can be solved.	assume: Symmetry of ignorance p.325 - expertise and ignorance about the problem are distributed over all participants -nobody is more knowledgeable about problems than others (different participants means activating different knowledge)
2	Separation model -designer plans for client who has the problem without involving him	Conspiracy model of planning to overcome implementation problems -designer is like a teacher: his role is to show others how to plan for themselves
3	Design process is not argumentative Listening & understanding > thinking > solution	Design process is argumentative the logic of reasoning of designer: asking questions > generating info. > forming judgments
4	Professional ethics guiding the designer	Transparency of arguments -to control judgment: because they will affect the solution
5		Objectification -to raise the right issues regarding their importance and the divergence of opinion on them
6	The aim of getting more involved -planning for others /on behalf of others	The aim of self-elimination -designer is a modest activist -designer moderate optimism
7	Great optimism	Moderate optimism

A related situation emerged in 1979, when the shift from "cybernetics" to "2nd order cybernetics" – a phrase coined by Heinz von Foerster that means "observing systems in their interaction with the observed" (qtd. in Jonas 1996, p. 2) – led to the development of a common set of methods that aimed to "widen the scope of subjects of design work, thus helping design to become a more competent and responsible partner in the network of future-shaping disciplines" (Jonas 1996, p. 3). In the same sense Findeli states that "Systems and complexity theories have further contributed to radical transformation of the mechanistic model of the design process" (2001, p. 10).

If one understands the potential of complexity and system thinking for the design process, it is easy to see why and to what purpose a different kind of design method has emerged within the last decade and what kind of difference is required. The new required methods, according to Jonas (1996), should be "open, integrative, transparent, supporting teamwork, interdisciplinarity and public participation through discourse-supporting communicative structures" (p. 3).

5.1.1 Operational model of the design process

The perception of the design process has recently shifted from that of an individual activity concentrated on solving a design problem in isolation (black box) towards that of a collaborative activity aimed at producing products, services or systems that reflect the cooperation amongst the stakeholders. This shift has resulted in a growing need for different operational methods that facilitate communicate and interact in a dynamic context.

Jonas (1996) calls for democratic instruments to support such collaboration:

> We need not only looser roles but more public ways of thinking aloud. More visible design processes so that everyone can see what is being decided, and why, before, not after, the main decisions are made. Collaboration before concept-fixing is perhaps the main strength of the required new design methods. The other strength is to provide means of unlearning, publicly, with changing, not fixed, self-images. We need […] a democratic instrumentarium for participatory socio-technical planning in a situation where planning in the original cybernetic sense is impossible. (p. 2)

In general, design process begins with a problem and ends with a solution, but the activities have often been conceptualized within this process in different terms according to different authors, for instance (Hugentobler et al. 2004, p. 8):

- Analysis > divergence > convergence (Jones 1970)
- Analysis > projection > synthesis (Jonas 1996)
- Examination > interpretation > projection > realization (Melican 1997)
- Research > analysis > synthesis > realization (Owen 1998)
- Analysis > synthesis > simulation > evaluation (Roozenburg 2002)

Jonas conceptualizes the design process in three phases: “ANALYSIS (what is the problem?), PROJECTION (How do we want to live?) And SYNTHESIS (what do we need for this?)”. He suggests focusing more on new analysis and projection methods that support “function-oriented "problem design" instead of ultimate, object-oriented "solution design", examining the system in which this happens and “aim[ing] at contexts and scenarios, not products” (Jonas 1996, p. 3).

Together with Jonas, Hugentobler and Rahe (2004) developed a generic process model, presented in the table below, comprising two dimensions: the macro and micro design process. The macro level, “domains of inquiry” – analysis, projection and synthesis – constitutes the first dimension (processual framework) of this operational model. Communication is considered a soft dimension on this level to facilitate reflecting, integrating and coordinating within the design process. The second dimension is the micro level “steps of inquiry” – research, analysis, synthesis and realization – providing questions and outcomes for a “tailored problem-specific” design process (Hugentobler et al. 2004, p. 8).

These authors offer 12-step model as a structure for organizing a “complete” design process. By selecting and combining different design methods, and moving from one step to another, this model allows for a flexible, tailored design process and will be taken as a manual to develop the model proposed in the present thesis.

		Steps of the iterative **micro process** of learning / designing			
		research	analysis	synthesis	realization
Domains of design inquiry, steps / components of the iterative **macro process** of designing	ANALYSIS "the true" how it is today	How to get data on the situation as it IS? → data on what IS	How to make sense of this data? → knowledge on what IS	How to understand the situation as a whole? → worldviews	How to present the situation as IS? → consent on the situation
	PROJECTION "the ideal" how it could be	How to get data on future changes? → future-related data	How to interpret these data? → information about futures	How to get consistent images of possible futures? → scenarios	How to present the future scenarios? → consent on problems / goals
	SYNTHESIS "the real" how it is tomorrow	How to get data on the situation as it SHALL BE → problem data	How to evaluate these data? → problem, list of requirements	How to design solutions of the problem? → design solutions	How to present the solutions? → decisions about "go / no go"
	COMMUNICATION "the driver"	How to establish the process and move it forward? How to enable positive team dynamics? How to find balance between action/reflection? How to build hot teams? How to enable equal participation? → focused and efficient teamwork			

Table 5- 2: Categories of design methods / tools: questions and outcomes (Source: Hugentobler; Jonas; Rahe 2004, p. 12)

In this system, the choice of different domains determines the kind of design process that will be accomplished, for example:

- a “future” studies process is the result of combining the analytic and projection phases;
- a “normal” design process focuses on analysis and synthesis, ignoring the projection phase;
- a “risky” design process considers projection and synthesis without the analysis phase.

■■■■■■■■■■■■	a "complete" design process
■■■■■■■■	a futures studies process (without synthesis/realization)
■■■■■■■■	a "normal" design process (without proper projection)
■■■■■■■■	a "risky" design process (not properly grounded in what IS)
■■■■	an analytic process (inquiry into "the true")
■■■■	a projective process (inquiry into "the ideal")
■■■■	a synthetic process (inquiry into "the real")

Table 5- 3: Three Types of design & design research processes (Source: Hugentobler; Jonas; Rahe 2004, p. 11)

My intention is to construct an operational model of the design process to facilitate processing the data gathered in the empirical section of this thesis. Therefore, I choose this 12-step model of design process as a comprehensive operational model that will later be filled with appropriate methods for each phase in order to accomplish the empirical study.

5.2 Defining and Representing “Real-World Problems”

The first phase of the design process aims at defining the problem and representing it. Nevertheless, in the real world, problems are highly complex and dynamic, and cut across different disciplines. This makes representing these problems in a manageable way a challenging issue for designers. Due to their complexity, Jonas states that “Since JONES or RITTEL we can know that well-defined problems are rare exceptions.” he explains that “Real design problems are ill-defined or "wicked", because they are transitory, context-sensitive, dependent on stakeholders’ views, etc.” he proposes “to operationalize the systemic approach, to make it manageable in everyday design practice, and, at the same time, to denote its inherent limitations” (Jonas 3-5 Sep. 2003, p. 3).

The concept of 'wicked problems', according to the *Design Dictionary*, was first mooted in 1973 by Horse Rittel and Melvin Webber with reference to complex problems that require a collaborative team from different backgrounds cooperating with the relevant public in order to achieve incremental improvements to a specific situation (Marshall 2008, p. 447). According to Rittel, a 'wicked problem' can be defined as a "class of social system problems which are ill-formulated, where the information is confusing, where there are many clients and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing" (qtd. in Margolin 2002, p. 80). More recently, designers working on environmental, social and economic problems have also adopted this term. Jonas (2005) reviews some suggestions proposed by Rittel regarding the 'wicked problem' and the concept of *design of the problem itself* that refers to the fact that "the problem itself is not 'given', but has to be constructed by the stakeholders" (p. 3). This means understanding and formulating the problem depends not only on the information available but also on the persons involved and the way they ask questions, frame the problem and represent it.

5.2.1 Simon's Social Planning

In his examination of successful social planning for a design process that represents a real-world situation, Herbert Simon (1996) describes the obstacles facing social designers and some techniques for overcoming them.

Starting with "problem representation", the task here is about designing "intelligent information-filtering systems" without using numbers in order to make the problem as transparent as possible for decision-makers. Simon explains the objective of a real design problem as: "to allocate the time they [people] have available for receiving information so that they will get only the information that is most important and relevant to the decisions they will make" (p. 144). The outcome depends on how one conceptualizes the problem: different approaches will inevitably lead to different solutions.

The second obstacle is "planning". According to Simon this means finding "ways of data [that are] accommodating" to the specific environment. Simon links the quality of design with the quality of the data available, which leads him to ask an important question: How much trust can one place in data? The answer is "prediction"; Simon views this as "the heart of the data problem for design" and the task here is "constructing alternative scenarios for the future and analyzing their sensitivity to errors in the theory and data" (Simon 1996, p. 148). Theory here refers to "theoretical understanding of the phenomena" and data here refers to "reliable data" about problem conditions. Simon's approach to designing an acceptable future is based on three steps:

> First, we select some planning horizons; [secondly] we can concentrate our analytic resources on examining alternative target states for the system for the short, middle, and long run […] then turn our attention to constructing paths that lead from the present to that desired future. (p. 148)

However, regarding 'prediction', Simon advises designers not to focus upon distant futures, because it is impossible to imagine remote events in detail; they should rather predict enough about the future in order to guide their present obligation. On the other hand, "feedback" mechanisms are very useful here for "dealing with changes in the external environment" through responding to disagreement between the actual situation and the desired one.

Simon's explanation of "professional-client relations" differs from the traditional view in that he considers society as the client, and in order to enhance human behavior, designers should play a game with people to motivate them and thereby "to achieve goals in the changed environment". Simon uses "organization theory" to clarify how to motivate the individual. In an organization there are specific goals to be achieved and each member of this organization has his or her own role to play in order to accomplish these goals, but the efficiency of the whole depends on the balance between the encouragement provided by the organization and the contributions of the members.

Simon admits that "In any planning whose implementation involves a pattern of human behavior, that behavior must be motivated. Knowledge that 'it is for your good' seldom provides adequate motivation", and he suggests, using game theory, to consider it as "a game between the planners and those whose behavior they seek to influence. The planners make their move (i.e., implement their design), and those who are affected by it then alter their own behavior to achieve their goals in the changed environment" (p. 163-164). The user's role in the game is still reactive and not proactive; which means, in his opinion, the user is not skilled and expert enough to participate in a positive way in the planning process.

The "time and attention perspective" is another obstacle facing the social designer. Simon is suspicious about designers' capabilities for anticipating the appropriate time and action involved in the development process and proposes "discounting the future". This means allocating attention between present and future satisfaction by selecting planning horizons (short, medium, or long term) with respect to the required action. He explains that

> the rate of interest should not be confused with another factor that discounts the importance of the future with respect to the present […] our unconcern with a distant future is not merely a failure of empathy but a recognition that (1) we shall probably not be able to foresee and calculate the consequences of our actions for more than short distances into the future and (2) those consequences will in any case be diffuse rather than specific. (Simon 1996, p. 158)

Simon's concept of "designing an evolving system" remains a powerful perspective of the social design process. Here the intention is to shift the focus from creating a final solution to generating starting points for new design processes. Simon writes: "each step of implementation created a new situation; and the new situation provided a starting point for fresh design activity" (p. 163). He explains "our essential task […] is simply to keep open the options for the future or perhaps even to broaden them a bit by creating new variety and new niches", which he describes as "designing for future flexibility" (p. 167).

Table 5- 4: Representing the Real-world Situation (created by the author, adapted from Simon 1996, pp. 141-166)

	Obstacles	Objectives	Activities
1	Problem representation (p. 144-146) an appropriate representation is essential to: -organize efforts toward solution -to achieve clarity about judging solutions	Designing intelligent information-filtering systems -make it as transparent as possible(without numbers) -allocate the time for receiving important & relevant info. for the decision people will make	-to incorporate data assessments in the design process -to associate a measure of precision -labeling estimates: • how hard or soft they are • how much trust to place in them
2	Planning Ways of data accommodating	Improving the system's adaptation to its environment	Combining predictive control with homeostatic & feedback methods
2.1	Prediction (p. 147-148) expect inadequacies in data require 1. theoretical understanding of phenomena 2. reliable data about initial conditions	Constructing alternative scenarios for the future -analyzing their sensitivity to errors in theory & data	1. select planning horizons (short, middle or long term) 2. examine alternative target states for the system 3. construct paths from present to desired future
2.2	Feedback	Dealing with changes in the external environment	Two mechanisms: - homeostatic: to make system relatively insensitive to environment (short-range fluctuation) - retrospective: to adjust environmental variation (long-range fluctuations)
3	Conceptualizing Professional- client relation (p. 153-154) - society as client - individual as player in a game	Changing social org. in general & individual org. in particular - motivate human behavior (organization theory) - playing a game (game theory)	- redefine client with society - define social goals & priorities - examine balance between inducements &contributions - playing a game between planners (implement their design) &targeted people (alter their own behavior) to achieve goals in changed environment
4	Time & attention perspective (p. 156-162)	Allocating attention between present & future satisfactions - Managing attention to social rate of interest with respect to time-scale required for action	- to anticipate time involved in developing progress: *Short-run improvement = to take action today *Middle-run problem = to take action on a large scale toward development *long-range problem= knowledge-acquiring actions (research programs)
5	Flexibility through designing for future	Designing an evolving system Each step of implementation created a new situation provided a new goal	- to establish initial conditions for the next stage of action - to provide a starting point for fresh design activity

5.3 Complexity and System Thinking

Complexity is considered one of the most challenging issues in grasping reality and overcoming real-world problems in design thinking. The idea of complexity, however, is not new but it has a long history in scientific and engineering theories, particularly system theory. According to Simon (1996), system theory activities concern “mechanisms that create and sustain complexity and […] tools for describing and analyzing it” (p. 170) – or, more concretely, for “synthesizing and analyzing” it. Simon further proposes the “development of a body of knowledge and techniques for dealing with complexity” (p. 216).

In the design field, however, this concept first emerged in the 1960s against the philosophy of simplicity and reductionism, as stated in *Design Dictionary*:

> More recently, the principles of complexity have been integral to the conceptualization and production of integrative designs. […] With the advent of globalization, the continued migration to urban centers and growing concerns with sustainability, accessibility, and safety, designers today are increasingly required to respond to complex issues that lie beyond the capacity of a single discipline […] to address comprehensively. (Hunt 2008, pp. 71-72)

In this context, Vester (2007) calls for avoiding the linear approach in solving complex problems saying that:

> In an age of highly complex structures and processes it is absolutely crucial that we transcend the simple linear approach and that in our thinking, planning, and acting we not only become aware of the complexity […] but learn to exploit [it] in order to be able to act in a sustainable manner. (pp. 19-20)

And he draws on a systemic approach in outlining “a new way of looking at reality” explaining that:

> We must first "invert" our way of seeing things. […] Normally, you are inside the particular system, looking outwards. You take your bearings from what is happening outside [see Fig. 5-1] […] However; with a systemic way of looking you step outside the system, look in from that viewpoint, and mainly examine your own system and how it behaves [see Fig. 5-2]. As a result, you ask quite different questions. (p. 98)

According to Jonas (2003), “system-thinking describes the attempt to make the complexity of problem fields and contexts manageable without destroying their systemic character” (p. 3). Simon (1996) introduces the concept of “inner and outer environment”. “The "inner environment" of the design problem is represented by a set of given alternatives of action. […] The "outer environment" is represented by a set of parameters, which may be known with certainty or only in terms of a probability distribution. The goals for adaptation of inner to outer environment are defined by a utility function” (Simon 1996, p. 116).

As regards recognizing complexity, “pattern recognition” is an initial step suggested by Vester (2007) to grasp reality through systemic planning and action processes. Vester illustrates “pattern recognition” with a computer image of a human head that contains a low numbers of pixels (see ibid, p. 54) to articulate that perceiving reality depends not only on reducing the system to its essential parts: the relation between these parts is also very important to maintain a recognizable picture of the system (ibid, p. 148).

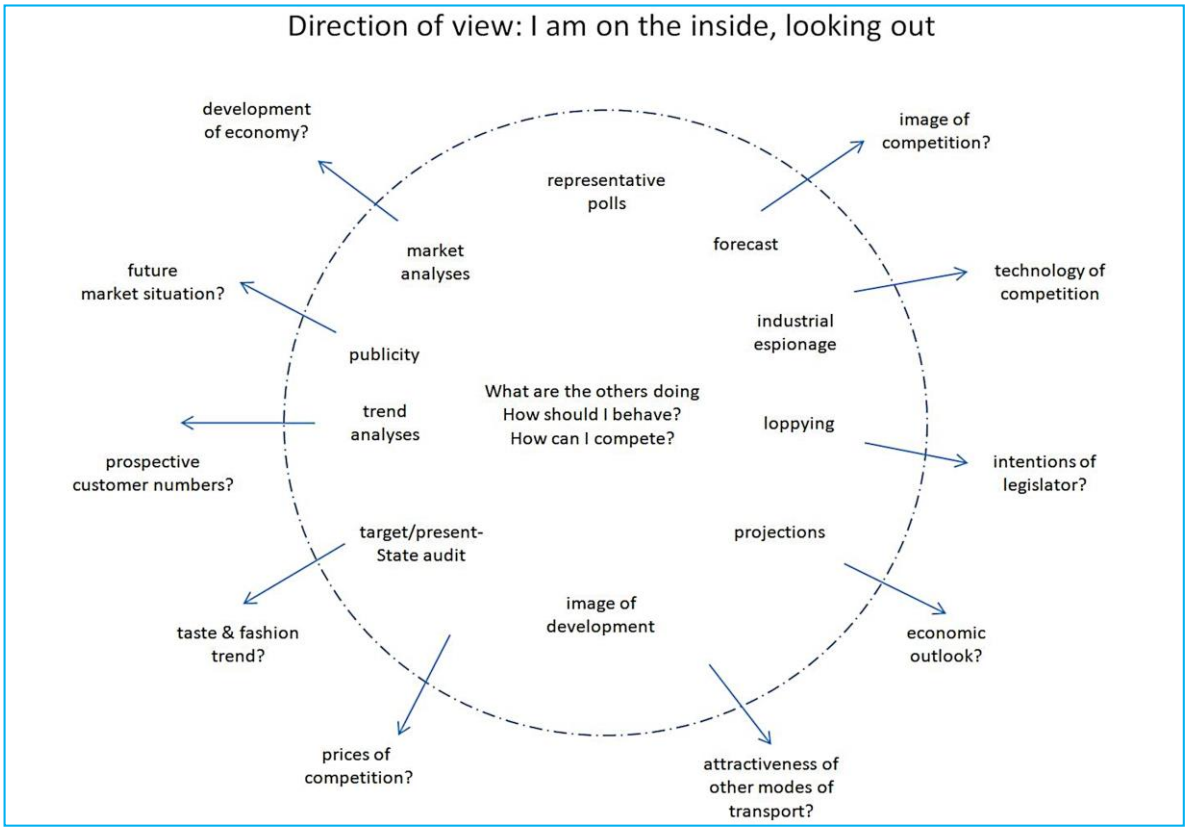


Figure 5- 1: Usual, non- systemic approach (Source: Vester 2007, p. 99)

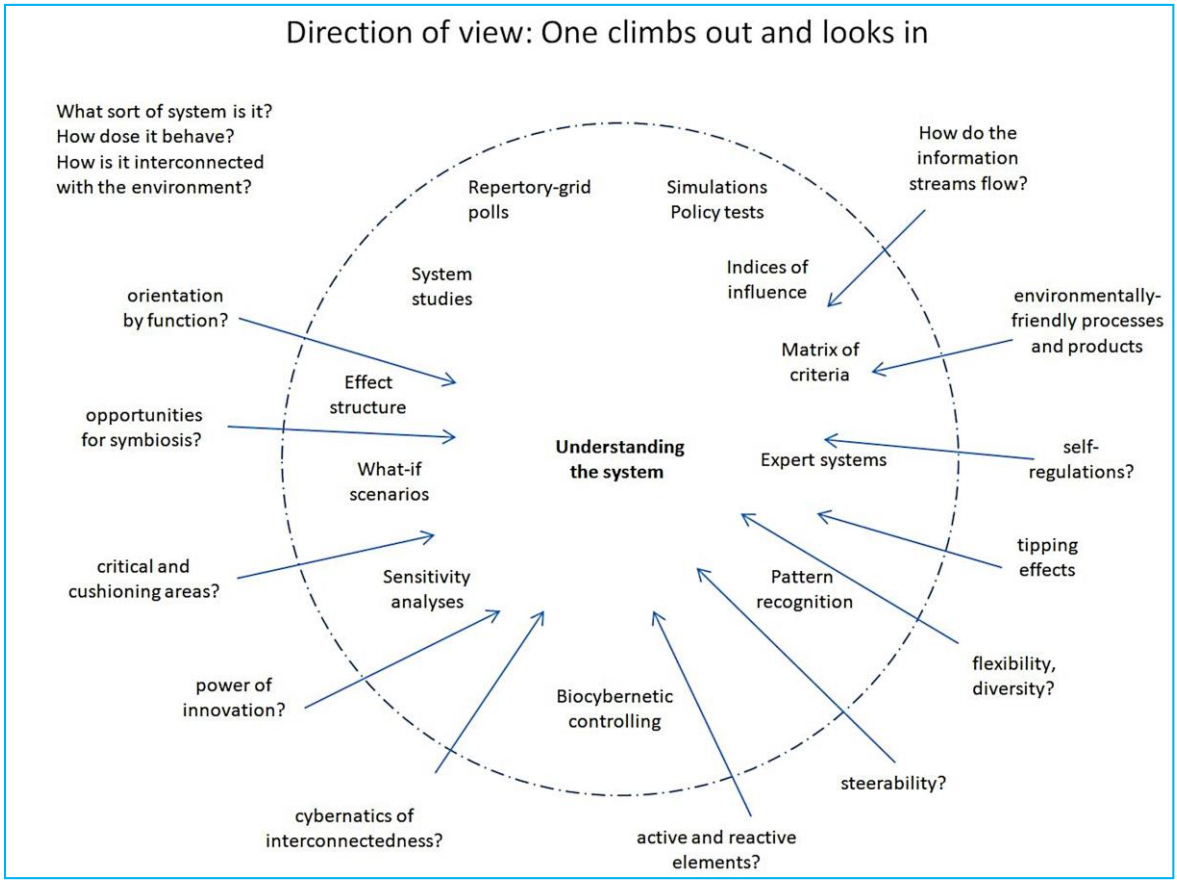


Figure 5- 2: New, systemic approach (Source: Vester 2007, p. 101)

> to grasp reality as a whole it is not sufficient to perceive only details, […] we shall learn a great deal about the details, […] connect the details together. […] Once the picture becomes blurred, the details become less prominent and the relations between them emerge more strongly. […] For pattern-recognition in planning practice, two things are necessary: data must be stripped down to key components, and those components must be interconnected. (Vester 2007, pp. 54-55)

The art of interconnected thinking offered by Vester (2007) is based on capturing a wide range of problem-related considerations – questions, wishes, desires, obstacles and arguments – in an objective way, then incorporating them in a network of connections to be examined within an open system. This will help one avoid the trap described by Goethe in 1817 "One faces the danger of seeing and yet of not seeing" (qtd. in Findeli 2001, p. 11).

5.3.1 Vester's Sensitivity Model

Vester's "sensitivity model" software is an operational tool for applying interconnected thinking that helps individuals, facing complex problems to think, plan and act in an interactive and systemic way. In his book *The Art of Interconnected Thinking*, he explained the theoretical background and the processual tools of his software in detail. A short summary of the application will be given here followed by presenting an outline of the whole processes in Table (5-5).

Starting with "system description", we collect key variables and give broad descriptions to each variable in a flexible way, because this software provides the ability to modify and update the data at any time. Then in a "criteria matrix", we check and scan the set of variables according to 18 criteria based on the ecological principles of living systems, which are subdivided into (see Vester 2007, pp. 210-214):

- seven spheres of life: people, economy, realm of space, human ecology, energy and waste, laws and culture, and infrastructure
- three levels of consideration: matter, energy and information
- four aspects of system dynamics: flow size, structure size, temporal and spatial dynamics
- four types of variable relation to the system: opening the system by input/output, controllable from inside/outside.

At this point, it is important to consider that system description depends on putting these variables together in a proper way, examining the relation between the system and its environment. With the "impact matrix" tool, we start the second level of processing the information: "pattern recognition". While we study the interactions and examine the effect of each variable upon other variables, each variable will be allocated a specific position in the "systemic role" between two axes "active-reactive" and "critical-buffering". This position will determine its cybernetic role: "This may be as a lever (active), a risk factor (critical), a measuring sensor (reactive), an inert element (buffering) or any position in between" (Malik Management Zentrum St. Gallen, p. 6). This will give us the first strategic indications for a successful intervention, whereas, the "effect system" is another tool that visualizes the system in a dynamic way and allows feedback analysis by the system itself (p. 7).The third level of this model is about interpretation and assessment of information through three different steps: "partial scenarios", "simulation" and "system evaluation".

Table 5- 5: Created by the author (adapted from Frederic Vester 2007 pp. 179 - 230)

First level ⟹ description of the system

	Phase	Objectives	Activities
1-	System Description	Designing a usable 'systemic picture' To understand *How the system looks in which the problem at issue is embedded. *What sort of system are we dealing with?	1. Brainstorming: define subordinate partial goals from representatives of different sectors 2. Documenting all ideas, objectives & suggestions
2-	Set of Variables Registering actuating variables	Filtering out vital key data & actuating variables	1. make list of variables 2. describe variables
3-	Criteria Matrix Checking for systemic relevance	Scanning the variables from a variety of angles To examine 'inner order' of the system related to its environment (p. 187)	check whether the set of variables meets the principal system criteria & results are entered in 'the matrix of criteria' (p. 211)

Second Level ⟹ 'pattern recognition'

	Phase	Objectives	Activities
4-	Influence Matrix Studying interactions	Gaining a picture of influences & dependencies (p. 188)	1. Examining the effect of all actuating variables using a matrix of influences 'cross-impact matrix' 2. Conduct an estimate of the strength of the effect of each individual variable 'influence strengths'
5-	Systemic Role Determining role within the system	Showing individual actuating variables	Using 'matrix of consensus' leads to locating each variable in the system between 4 cornerstone values: active, passive, critical & buffering
6-	Effect system Examining overall interconnectedness	Rendering real dynamics of the system	Visualized as a 2D-effect structure

Third Level ⟹ interpretation and assessment

	Phase	Objectives	Activities
7-	Partial Scenarios Cybernetics of individual scenarios	Visualizing detailed functions	1. analyze feedback-loops 2. build up partial scenarios based on expected interesting parts of the effect structure (p. 241)
8-	Simulation 'What-if' forecasts & policy tests	Referring to the way in which the system will react	1. simulating system behavior & consequences of specific interventions 2. trying out strategies & conducting policy tests
9-	System evaluation Evaluating the system & formulating strategy	Deducing suitable strategies & measures for dealing with the system (p. 276)	Following the 8 rules of biocybernetics

5.4 Scenario Building

To begin with, scenarios are defined literally as “an outline or plan of a projected series of actions or events” (*Webster’s Student Dictionary*, p. 653). “Scenario building” is an ambiguous phrase and has different meanings to different persons depending on the context, as well as on the approaches and tools used in this process. Therefore it is important to give a short introduction to some approaches before choosing one of them to be presented in greater detail as the one I will use in this thesis.

The scenario approach is very well known in military planning, future studies, business, politics and many other fields concerned with imagining possible alternative futures. In the early 1970s, however, a new approach to scenario was broached by Pierre Wack, a scenario planner in the London office of the international oil enterprise Royal Dutch Shell (Schwartz 1991, p. 7). Schwartz, a well-known scenario planner, followed Wack in preferring the term “reperceiving” rather than “predicting” the future. For both of them, this suggests a change in the approach to reality, and the possibility of taking more appropriate decisions in an uncertain world:

> To operate in an uncertain world, people needed to be able to reperceive – to question their assumptions about the way the world works, so that they could see the world more clearly. The purpose of scenarios is to help yourself change your view of reality – to match it up more closely with reality as it is, and reality as it is going to be. The end result, however, is not an accurate picture of tomorrow, but better decisions about the future. (Schwartz 1991, p. 9)

Pierre Wack wrote in the same vein: "Scenarios deal with two worlds, the world of facts and the world of perceptions. They explore for facts but they aim at perceptions inside the heads of decision makers. Their purpose is to gather and transform information of strategic significance into fresh perceptions" (qtd. in Schwartz 1991, p. 39).

Schwartz (1991) calls for preparation of people for the future before taking decisions, and acting through scenarios as a method of rehearsing the future. He observes:

> In the real world, you don't know ahead of time which scenario will take place. But you prepare for all (possibilities), and then train yourself to look for one or two small details so that you can recognize the full play before you are called upon to act. […] You run through the simulated events as if you were already living them. You train yourself to recognize which drama is unfolding. That helps you avoid unpleasant surprises, and know how to act. Thus, the "performance" of a scenario will take you once again to your original question. But now you approach that question differently. (pp. 199-200).

Van der Heijden worked with Wack at Royal Dutch Shell. In his book *The Art of Strategic Conversation* he focuses on scenarios within a strategic organizational framework. He defines scenario as “a story, a narrative that links historical and present events with hypothetical events taking place in the future” (Van der Heijden 2007, p. 258). Following Emery and Trist (1965), he distinguishes between two environments, “the contextual environment” and “the transitional environment”. The former refers to scenarios in the external world, which he calls “the world of fate”, which have no direct influence on the organization but at the same time should be considered as a source of uncertainty in a future that is out of our control. The latter, on the other hand, plays an important role in linking action options with a goal in the form of an internal causal story (or stories) called “strategic narratives”. Sometimes also called “the world of desire”, these “influenc[e] the outcomes as much as being influenced by them” (Van der Heijden 2007, pp. 114-115).

Within this framework, scenarios and scenario building are about a cycle of learning and thinking that leads to different generations of scenarios (ibid, p. 267). The first generation scenario does not lead to new strategic insights but rather allows us to assemble what is already known, to organize existing knowledge rationally. In addition to discovering areas, where more information is needed, a set of questions must be raised to be answered in the next step. Analyzing, organizing and answering these questions in a new scenario framework leads to the second generation scenario, where a deeper understanding of the underlying system is established, and so on, until further generations are expressed and completed (ibid, pp. 124-126).

According to Van der Heijden, scenario is an important tool in "scanning the environment for signs of change" (p. 304). He differentiates between two scenarios, generative and adaptive, according to their aim. To him, "scenario framing" is an important consideration that affects the process of judgment. He explains: "the meaning of any scenario depends upon the 'frame' in which we perceive it […]; changing the frame changes the perspective on the scenario, and the perception of good and bad" (ibid, p. 128).

Following this line of reasoning in relation to design methods, Jonas calls for scenario building as an interactive methodological tool to facilitate communication and the development of knowledge among the participants in the design process. For him, scenario building is "a central concept in design, shifting the focus from the object to the process of communication and interaction, and covering all phases of the design process: analysis (analytical scenarios), projection (context scenarios), synthesis (user scenarios)" (Jonas 2001, p. 76). Furthermore, he argues that design is an interface between the system and its environment. Thus, he considers the user scenario a powerful tool in developing design solutions and recommends that "solutions have to take into account the strengths and weaknesses of the system, and the opportunities and threats of the contexts (SWOT analysis)" (ibid, p. 77).

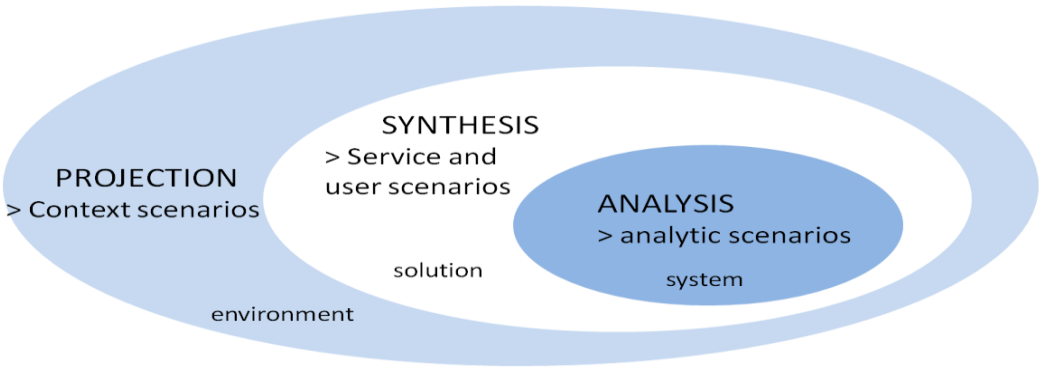


Figure 5- 3: User scenarios as an interface (solution space) between analytic scenarios (system) and context scenarios (environment). (Source: Jonas 2001, p. 76)

In this regard it is helpful to distinguish two ways of developing scenarios depending on identifying their "point of origin". According to Gausemeier et al. (1996), "Explorative scenarios" take a concrete point in the present, an "is-situation", as their starting point. This is why they are also called "beginning-state-driven-scenarios". From there they explore further possibilities in the future, so-called "what-if" scenarios. In contrast, "anticipative scenarios" start with a concrete point in the future, "end-state-driven-scenarios", and go back to the present to identify concrete steps that lead to this desirable future situation, so called "what-must be that" scenarios (p. 110). This is illustrated in Fig. 5-4:

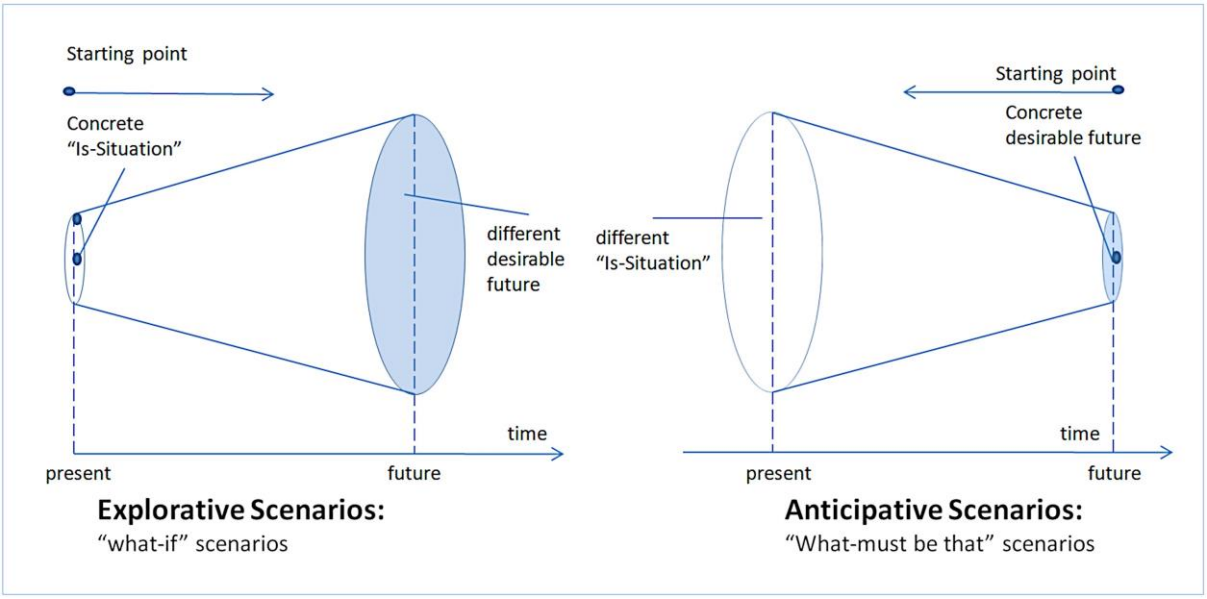


Figure 5- 4: Explorative and anticipative scenarios (source: trans. to Eng. from Gausermeier et al. 1996, p. 111)

There have recently been increasing moves to apply the scenario approach in design research, especially research concerned with sustainability. *The SuSHouse Project: Strategies Towards a Sustainable Household*, led by Manzini and Jégou (2000), applied scenarios as a methodological tool to identify sustainable alternatives to the present organization of household systems (p. 5). They introduced scenario building in the form of "consolidated methodologies aimed at supporting decision making. The more a given context is turbulent, the targeted system is complex and the actors involved are numerous, the more scenario building is useful" (p. 32).

Manzini and Jégou (2000) make a distinction between two types of scenarios according to their nature: policy-oriented scenarios (POS) and design-oriented scenarios (DOS). POS support decision-making at a political level facing complex and dynamic problems and options, whereas DOS are used in design activities as a support tool for products, services and/or systems to provide future orientation for stakeholders and help them build appropriate business solutions.

In relation to addressing sustainability in design research, it is notable that scenario building is the key methodological tool. In his recent book, Fry (2009) calls for sustainability through radical thinking about design theory and the consequent transformation of its commercially grounded practice. Scenario is one of his suggested methods for change. He differentiate scenarios according to their impact and effectiveness on two levels. For Fry, "design scenarios" are conventionally progressive and mean "projections of possibilities by design as currently understood", while, "scenarios of design" refer to (radical) change and mean "an exploration of how design could be other than it is" (pp. 151-152).

Considering these different scenario perspectives, this thesis concludes that scenario building is not an aim in itself but rather a promising method for supporting decision making in many fields. As scenarios tend to be of an exploratory nature, the scenario approach has an important role to play in preparing for future change and sustainable development. Through various mapping and scanning activities people can gain insights that are effective for future change in specific directions. However, this analytic method does not directly produce action: what it offers is strategic insight.

In order to gain a more practical insight into the development of scenarios, I will present one technique in greater detail, following Schwartz (1991), who developed a step-by-step user-friendly guideline that will be applied later in the empirical section of this thesis. Table 5-6 outlines Schwartz's eight steps, which could be taken as a manual for developing scenarios in general.

5.4.1 Developing Scenarios after Schwartz

Table 5- 6: Schwartz's eight steps (created by the author, adapted from Schwartz 1991, pp. 226-234)

	Steps	Objectives	Activities
1	Identify Focal Issue or Decision	Beginning "from the inside out" rather than "from the outside in"	- To begin with important decisions that have to be made - To build out towards the environment: What is the mind-set of the management that has to be considered to facilitate accomplishing these decisions?
2	Key Forces	Listing the key factors in the micro-environment	-To identify factors influencing the success or failure of decisions
3	Driving Forces	Listing driving forces in the macro-environment	-To identify the driving forces (major trends/trend breaks) that influence the key factors identified earlier, asking: • What are the forces behind the micro-environment identified in step two? • What guidance do they provide for the future?
4	Rank by Importance and Uncertainty	Identifying two or three factors	Ranking the key factors and driving forces based on: 1. The most important for the success of the decision 2. The most uncertain factors/trends
5	Selecting Scenario Logics	Determining the logics of different scenarios and presenting them	- Identify the fundamental axes of crucial uncertainties - Choose two extreme values for each factor - Present them along one, two or three axes - Identify the logic of scenarios according to their locations in the matrix - Find their core of logic in the themes and plots of a story - Give vivid names to each scenarios that evoke a powerful and evocative concept
6	Fleshing out the scenarios	Ending up with different scenarios that make a difference to decision-makers	- Return to the lists of key factors and trends - Give some attention to each key factor and trend in each scenario - Weave the pieces together in the form of a narrative (the challenge is how to capture the dynamics of the situation and to communicate the point effectively)
7	Implications	Rehearsing the future: determining the implications of each scenario for the identified decision	- Return to the decision identified before and ask: • How does the decision look in each scenario? • Is the decision or strategy robust across all scenarios, or does it look good in only one or two scenarios? • How could that strategy be adopted to make it more robust?

8	Selection of leading indicators and signposts	Identify a few indicators to monitor in an ongoing way	- Select indicators carefully and imaginatively answering two questions: What the future holds for a given industry/situation? How that future is likely to affect strategies & decisions?

5.5 Strategic Design and Business Idea

The term 'strategy' originally means "the science of planning and conducting military campaigns on a broad scale" (*Webster's Students Dictionary*, p. 727). However, it is currently widely used to mean long-term planning in different fields such as politics, economy and management (Ikeda 2008, p. 373). "Strategy is easily confused with planning", state Cooper and Press (1995) and differentiate between planning and strategy in a way that "planning is rational and sufficient for companies operating in predictable and secure market environments (but) in the 1990s […] no market can be considered either predictable or secure", whereas "the overall aim of strategy is to identify and secure a long term competitive advantage for the enterprise" (pp. 105-106).

Conceptually strategic thinking process involves consecutives stages: starting with asking 'where are we now?' to identifying the current situation A, specifying the desirable future B by asking 'where do we want to be tomorrow?' then recognizing the gap between these two positions in order to make transition happen from A to B by answering this question: 'what should we do to go there?'

According to van der Heijden (2007), "strategising is creating a new and unique policy framework for future action, based on deepening the understanding of the fit between ourselves and our environment in which we need to survive and develop"(p. 113). He distinguishes between "adaptive" and "generative" planning in a way that activating the adaptive/survival mode means being aware of your own capabilities, mapping out the situation, then optimizing your behavior vis-à-vis external obstacles. This involves discovering your own strengths and weaknesses in order to develop the former further and repair the latter (ibid, p. 54). In other words, adaptive strategy is about adapting behavior to a specific situation, whereas the ultimate purpose of generative strategizing or self-development involves gaining new insights into the future for "long-term direction" (ibid, p. 55). Surviving in the market and earning money are fundamental corporate goals supported by strategic design that are

> based on the articulation of both internally and externally oriented business practices. Internally oriented strategies […] focus on how well an organization promotes inter-organizational communication, knowledge, and understanding. Externally oriented strategies, on the other hand, are often market driven, and focus on how effectively the design reaches the target market, promotes a consistent brand identity, and gives the company its competitive edge. (Ikeda 2008, p. 373)

Best (2006) distinguishes three levels of strategic design activities within an organization:

> integrating design thinking in an organization on the strategic project level in order to identify a strategic need relevant to the problem situation, using design process on the business level to serve its operational need effectively in the form of products or services, and/or applying design activity to develop the product or service. (p. 49)

For Van der Heijden (2007), strategic planning "involves exploring the future and defining and developing it in the form of a business idea of the organization" (pp. 301-302). He introduces the "business idea" as a central concept versus "business model", which is a "complex mathematical model of profitability". "Strategy is the art of making choices," states van der Heijden; therefore it is important to develop a robust business idea, which is "holistic, shared and focused on the essentials" (p. 207). He considers the "business idea" an operational tool for the organization's survival and self-development, indeed as the driving force for every successful organization (p. 55), because it is concerned with exploring "when and where […] to go beyond the business-as-usual model in the light of internal and external change" (p. 58).

Rethinking the current business model in a critical way was also proposed by Manzini (2002). In his view this leads to widening the business horizon from products and production towards a concept of business as "solution providers" and "system organizers". He calls for sustainable solutions through the exploration of "new ideas on business", in addition to generating "new business ideas" (p. 1). Together with Jégou (2008) he refers to the business idea as "the organizational and economic model that explains how a service works; what its systemic architecture is like, who the involved actors are and what their motivations, relationships and economic and non-economic exchange are" (p. 38).

(Best 2006) recognizes the potential of "building a business case of the design idea" to make the design idea more tangible. Another recent book *Business Model Generating* (Osterwalder et al., 2010) offers a step-by-step template for building a business model in nine blocks, and presents different visualizing tools that support the design of such a model in a user-friendly way. This template could also be considered as a tool for strategic conversation that aims at changing the current situation and creating alternative innovative solutions. In the authors' words

> a business model can best be described through nine basic building blocks that show the logic of how a company intends to make money. The nine blocks cover the four main areas of a business: customers, offer, infrastructure, and financial viability. The business model is like a blueprint for a strategy to be implemented through organizational structures, processes, and systems. (Osterwalder et al 2010, p. 15)

Five different business model patterns are presented in their book. Osterwalder and his colleagues (2010) explained and articulated the pattern by applying the template to well-known companies in order to make the concept of each pattern more tangible. At the same time, the authors admit that finding the right business model is a challenging issue for any business in startup mode. The nine blocks are outlined below in Table 5-7.

Table 5- 7: A business model template with nine building blocks (adapted from Osterwalder et al 2010, p. 44)

<table>
<tr>
<td rowspan="2">Key partnerships (KP)

Seeking out partners and engaging them effectively in your business will optimize the process and minimize the risk</td>
<td>Key Activities (KA)

Undertaking one or more actions to operate and process the business model successfully</td>
<td rowspan="2">Value propositions (VP)

Realizing the value of your offer from the customer side will turn them toward your company, whether you offer products or services to satisfy their needs in an innovative way</td>
<td>Customer relationships (CR)

The way you try to establish a positive experience with your customer while offering him your value proposition</td>
<td rowspan="2">Customer Segment (CS)

Identifying one or more customer groups is the core of any business model, and if the needs of those customer segments are well defined and approached, this in turn will lead to a successful business model</td>
</tr>
<tr>
<td>Key resources (KR)

All resources and different materials required to realize your offer</td>
<td>Channels (CH)

The way you connect and reach your customer to deliver your offer</td>
</tr>
<tr>
<td colspan="3">Cost structure (CS)

All costs involved in operating the business model</td>
<td colspan="2">Revenue streams (RS)

Earning money and generating profit according to the payment mechanism after subtracting the costs of operating the business model</td>
</tr>
</table>

5.5.1 Social Business Model (Muhammad Yunus)

There is a growing awareness of the importance of promoting social quality while solving problems in global research projects. For example the European funded project *EMUDE (Emerging User Demands for Sustainable Solutions)* focuses on "social innovation" with reference to "changes in the way individuals and communities act to solve problems or to exploit new opportunities" (Manzini and Jégou 2008, p. 29). Two books have been published as a result of this project, and they articulate two significant concepts: *Creative Communities* (Meroni 2007) and *Diffused Social Enterprises* (Manzini and Jégou 2008). "Creative communities" indicates an active group of people who try to help themselves (in the first place) and others to deal with "highly critical social problems" and come up with innovative solutions and good business ideas, while "diffused social enterprises" is a more developed form of "creative community" that refers to a new kind of social enterprise seeking local development which is supported by different tools and systems (Manzini and Jégou 2008, p. 32).

Taking into account these two parallel developments in business and society, both models deal with social problems but with different approaches: 'diffused social enterprises' is a top-down approach that seeks out new social business model to change market perspectives, while 'creative communities' is a bottom-up approach that seeks behavioral changes in society.

The significance of new kind of business is also recognized by Muhammad Yunus, Bangladeshi microfinance pioneer and Noble laureate. The social business model concept was introduced by Yunus as "a self-sustaining company that sells goods or services and repays its owners' investments, but whose primary purpose is to serve society and improve the lot of the poor" (Yunus et al. 2010, p. 309). Although the concept of social business is "still under construction" and has emerged through ongoing experience of the *Grameen Group* that seeks to alleviate poverty in Bangladesh, ultimately the impact of social business can be seen as the key for sustainable change in two dimensions. The first dimension is "sufficient business-like characteristics" to survive without donations; and targeting social problems, instead of profit-maximization, is the focus of this type of business. This means the investors or owners will get their money back but without dividends. Then, as a result, the products or services that social business offers are much more affordable, due to reinvestment of the surpluses for the customer's benefit as opposed to the owner's profit.

When seeking to convince investors of the benefits of the social business concept, Yunus links the social business model to corporate social responsibility (CSR), social entrepreneurship and charity, in a sense that seeks a better understanding of the diversity of these factors despite their common goals (Table 5- 8 shows a comparison between them). For example, considering social business "as a subset of social entrepreneurship" as regards giving up dividends, the advantages of owning a social business over just donating to charity is that one keeps control of one's own business and can develop it with one's own creativity. The growing awareness of CSR has led to a number of social projects and initiatives that seek the promotion of social values; but the authors argue that only "pro-active CSR policies" can lead to social business in the proper sense. This expression has emerged in the context of evaluating corporate social performance and refers to doing more than the minimum required by anticipating social trends.

Table 5- 8: Yunus's et al. (2010) comparison between social business model, corporate social responsibility (CSR), social entrepreneurs and charity (created by the author)

Corporate Social Responsibility (CSR)	Social business
Calling for measuring companies by "triple bottom line" of financial, social and environmental benefits, ultimately only the financial profit really matters	Implementing "pro-active CSR policies" can lead to social business: this means anticipating social trends and doing more than the minimum required
Social entrepreneurship	**Social business**
Including profit and not-for-profit initiatives	As a subset of social entrepreneurship
Not all social entrepreneurs are engaged in social business (e.g. including dividend to shareholders)	All people running social business are social entrepreneurs
Social wealth is a by-product of the economic value created	Priority: social wealth creation vs. economic wealth reaction
Charity	**Social business**
People donate for helping others	Self-sustaining business
People do not get their money back	Investors get their money back
----------	Remains the owner
----------	Can decide business future
----------	Offers an opportunity to solve social problems through their own skills and creativity

According to the business model template, nine buildings blocks are essential for constructing any business. These categories are essential for building a social business model too, but the shift in focus towards social profit rather than maximizing financial profit is the only difference.

Subsequently, I have applied the social business concept to the business model template and the output of this upgrading process is a social business model template (see Table 5- 9). This template includes two more building blocks at the top that are considered as integral to the social profit equation: social profit (SP) and social benefit (SB).

→ SOCIAL BUSINESS MODEL TEMPLATE = Business model template + Social profit (SP) +Social benefits (SB)

Table 5- 9: Social Business Model Template (developed by the author)

<table>
<tr><td colspan="3">Social profit (SP)

Articulating the expected social profit to the partners who are willing to be involved in supporting business with specific social mission. E.g. linking this profit to their own Corporate social responsibility (CSR) policy</td><td colspan="3">Social benefits (SB)

State the intended social goals you plan to achieve through applying your business model, which must target people in need</td></tr>
<tr><td rowspan="2">Key partnerships (KP)

Seeking out partners and engaging them effectively in your business will optimize the process and minimize the risk</td><td>Key Activities (KA)

Undertaking one or more actions to operate and process the business model successfully</td><td rowspan="2">Value propositions (VP)

Realizing the value of your offer from the customer side will turn them toward your company, whether you offer products or services to satisfy their needs in an innovative way</td><td>Customer relationships (CR)

The way you try to establish a positive experience with your customer while offering him your value proposition</td><td rowspan="2">Customer Segment (CS)

Identifying one or more customer groups is the core of any business model, and if the needs of those customer segments are well defined and approached, this in turn will lead to a successful business model</td></tr>
<tr><td>Key resources (KR)

All resources and different materials required to realize your offer</td><td>Channels (CH)

The way you connect and reach your customer to deliver your offer</td></tr>
<tr><td colspan="3">Cost structure (CS)

All costs involved in operating the business model</td><td colspan="3">Revenue streams (RS)

Earning money and generating profit according to the payment mechanism after subtracting the costs of operating the business model</td></tr>
</table>

5.6 Operational Framework

Constructing this operational framework has required examination and adaptation of various tools and methods from different fields including design, complexity and system theory, scenario and future studies, and business management. The intention has been to construct an operational model of the design process to facilitate processing the data gathered in the empirical section of the thesis. The 12-steps model of the design process has been chosen as a comprehensive operational model that can be filled with selected methods in an integrated way to construct a tailored design process.

According to the following table (Table 5-10), processing the data will go through three phases: Analysis > Projection > Synthesis. Each phase is guided by Simon's concepts (upper table) and different activities suggested by Hugentobler et al. (2004) in their generic process model (lower table). At the same time, each phase will consist of different methods as follows:

ANALYSIS

Analysis aims to describe the actual situation and to gain a picture of the real dynamics of the system. In this phase, Vester's Sensitivity Model is chosen to deal with complexity in a more transparent way. Beginning with describing the system, the collected key variables will be described and vital data will be filtered out. Using a "criteria matrix" will allow the variables to be checked from different angles (according to the 18 criteria mentioned earlier). The variables will then be listed in a two dimensional matrix called the "influence matrix", which facilitates scanning and examination of the interactions between them. This in turn will lead to "role allocation", where each variable is allocated, according to its role and character, between two axes: the active-reactive and the critic-buffering axis. Each variable in the active area could be considered an intervention point, whereas variables in the critical areas refer to critical uncertainties. The expected output from this phase is identification of an intervention point and two critical variables on which to build context scenarios.

PROJECTION

The projection phase focuses on constructing 'context scenarios' following Schwartz's approach. Aiming at answering the following question: How might the environment look in which the problem at issue is embedded? Exploring the answer requires four steps:

- Listing 2 driving forces that refer to critical variables or critical uncertainties in the previous phase.
- Defining 2 extreme values of driving forces: a positive and a negative value
- Selecting scenario logics: 2x2
- Constructing a "context scenario" matrix.

The output of this phase will offer a strategic insight for the intended intervention with respect to the local environment.

SYNTHESIS

The synthesis phase is the key to solving the problem. It aims at designing a solution with the following four steps: Identifying users' needs and desires calls for a "user-story telling" technique to create awareness of needs in a more tangible way. Collecting relevant information about market forces leads to realizing customer demands in the light of critical market issues. Designing a system-map will come as a result of the previous efforts to frame the problem. Finally, these steps lead to a prototype solution gained by transforming the information into a business model.

Table 5- 10: Operational Framework (created by author)

Simon[2]	PROBLEM PRESENTATION	PREDICTION	DESIGNING
	Make it as transparent as possible: ➢ Designing an intelligent information-filtering system	Constructing alternative scenarios for the future: ➢ Allocating time & attention between present & future satisfactions	Designing an evolving system: ➢ Each step of implementation created a new situation with a new goal

Design Process: Opera-tional frame-work	Set of variables > Filter out vital data	Criteria matrix > Check variables	Influence matrix > Studying interactions	Systemic role > Determining role within the system	Listing 2 driving forces: critical Uncer-tainties	Define 2 extreme values of driving forces	Selecting scenario logics: 2x2	"End-states" scenarios descriptions: „Context scenario" matrix	Identify unmet wants & needs in "a user-story board"	Collecting relevant info. on market forces	Designing the problem system-map	Transform the info. into business model
	Vester[3]: sensitivity model				Schwartz[4]: developing scenarios				Developing social business design model			

Hugent-obler, Jonas& Rahe[5]	A1	A2	A3	A4	P1	P2	P3	P4	S1	S2	S3	S4
	Getting data	Make sense: knowledge	Understand worldviews	Presenting IS Situation	Getting future data	Interpreting data	Possible futures scenarios	Presenting scenarios	Data on 'shall be'	Evaluating	Design solutions	Present-ing
	ANALYSIS 'the true' as it is today				PROJECTION 'the ideal' as it could be				SYNTHESIS ' the real' as it is tomorrow			

2Simon, Herbert A. (1996): *The Sciences of the Artificial*. 3. ed.,. Cambridge, Mass.: MIT Press.

3Vester, Frederic (2007): *The Art of Interconnected Thinking. Tools and Concepts for a New Approach to Tackling* Complexity. Germany: MCB Verlag

4Schwartz, Peter (1986): *The Art of the Long View. Planning for the Future in an Uncertain World*.

5Hugentobler, H. K.; Jonas, W.; Rahe, D. (2004): *Designing a Methods Platform for Design and Design Research* (presented at Futureground, DRS. Melbourne.)

Conclusion

In this chapter, it has been argued that the designer must be open to other disciplines and must adopt new concepts, methods and tools as long as these tools support her/him in solving the problem in hand effectively. This chapter has presented and mapped out various theoretical backgrounds related to the design process, social planning, complexity and system theory, scenario building, strategic design and the social business model. Finally, several methods from these different backgrounds have been compiled in an integrated and comprehensive framework. This 'operational framework' is considered the fundamental step for processing the empirical data in the following chapter, as well as a visual answer to the question: What kind of methods and tools do designers need to develop their skills for coping with the challenges they face, especially when approaching real-world problems?

In this respect, five aspects from the literature were selected and reviewed for particular analysis, because each one of them comes with a model that provides new insights and details for the present thesis. Some of these were outlined and summarized in tables and could be regarded as a guide manual.

Starting with design processes and methods, theoretical considerations have been introduced and have led to the selection of a comprehensive design process model (Hugentobler; Jonas; Rahe 2004) – a flexible 'container' that can later be filled with different methods for each phase of the design process.

The issue of real-world problems and how to define and represent them in the context of social design has been outlined in accordance with Herbert Simon's concepts and techniques (1996). Simon describes the potential contribution of designers who seek to approach complex problems in a sustainable way, where the outcome of design interventions is an evolving system in which each step creates a new situation and provides a new goal.

Vester's Sensitivity Model has been presented as an operational tool for applying a new type of thinking and a new way of approaching complexity, based on system thinking. As an appropriate method for exploring the uncertain future, 'scenario building' takes into account major trends for approaching desirable situations. Different approaches and aspects were presented, e.g. Schwartz 1991; Gausermeier et al. 1996; Manzini and Jégou 2000; Jonas 2001; Van der Heijden 2007; Fry 2009, and Schwartz's guideline was outlined in greater detail. It was concluded that scenario building is not an aim in itself but rather a promising method for supporting decision-making.

According to Van der Heijden, "Strategy is the art of making choices" and this research has concluded that 'strategic design' is the art of realizing these choices in a sustainable way. 'Strategic design' aims at preparing people for the desired future by generating a social business model which, in addressing their problems, focuses on people's needs. In the light of internal and external change, there is a significant need for developing a new kind of business that promotes self-survival and self-development while solving immediate problems (see e.g. Meroni 2007; Manzini and Jégou 2008; Yunus et al 2010).

Chapter 6: Case Study and Findings

Al-Darb Al-Ahmar Revitalization Project in Egypt

The 'operational framework', discussed in the previous chapter is still at the abstract level of knowledge. This chapter presents a case study that applies that framework to a real complex situation, thus offering an immediate understanding of the tools and concepts mentioned above, and of the way they function in practice. This case study will show how to apply each phase of the operational framework, demonstrating the precise output of each phase as well as the final outcome.

An introduction will briefly present the interviews and interviewees at Al-Darb Al-Ahmar; then the project background and critical issues will be described; this will be followed by a design intervention story illustrating the actual design thinking in approaching the problems articulated in this thesis. Finally, the operational framework will be applied to launch the proposed design process; this involves processing the data in three phases: analysis, projection and synthesis.

6.1 Introduction

Interviewing different individuals from diverse backgrounds leads to perception of the issue in a variety of perspectives. For this purpose, interviews were conducted at the Al- Darb Al-Ahmar (ADAA) organization to gain an accurate insight into the organization's activities, and to provide a holistic picture of the complex reality dealt with there. The project manager A. gave me an overall perspective about the project's different programs and some details about the challenging problems and setbacks they are facing. Not only the interview, but also the different project progress reports he gave me were a great help in learning more about the situation and project activities at ADAA.

In order to obtain first-hand-experience of the project I spent about two hours in a small alley in ADAA called Atfet Asaad observing different Al-Darb Al-Ahmar Revitalization Project (DAR) project activities and taking on-site photos of building's façades after improvement and rehabilitation. Talking to inhabitants about the project, exploring their experiences as users, and discussing some uncomfortable issues in a friendly way allowed me to see otherwise invisible aspects of the project.

One particular program, 'Local Crafts Development', was facing certain problems and had approached two different design universities, a public and a private one, asking them to cooperate in finding appropriate solutions. For administrative reasons the cooperation was only established with the private Design University. Determining this program cooperation as a strategic intervention point, I illustrate it below from both the academic design and the DAR side, citing four interviewees in order to discover the process, activities and obstacles from those two different perspectives.

A.K. and A.E. are two of the academic staff at the Design University who participated in the DAR project, guiding the students through the design process from conceptualization, sketches and product to final presentation. They have different backgrounds: A.K. is Dean of the Design Department, has a social and cultural history background and teaches design theory; A.E. has a design background as an interior designer and teaches different design courses. Both of them were keen to participate in this project to gather new experience and knowledge in an emerging field. They took part in the interview together, which enriched the discussions around design practice in Egypt regarding social needs.

A.S. is the manager of a local craft development program with a design background, which enables him to establish contacts and communicate with designers easily. H.I., the local Crafts Development Officer, guided the lecturers and students through their visit to different carpentry workshops in ADAA to observe the needs and problems of the craftsmen there.

6.2 Project Background

The development of urban community is considered one of the most challenging issues in Egypt. Taking account of differences in age, gender, personality and education and of the multilayered social, economic and physical problems they face, the Aga Khan Organization in Egypt aims at changing poor people's attitudes toward positive action and participation. It is engaged in the development of a comprehensive strategy that helps people structure their life in a sustainable way.

Al-Darb Al-Ahmar (ADAA) is the name of a region in Cairo that was considered one of the wealthiest parts of medieval Islamic Cairo. Unfortunately now it is one of the poorest districts of Cairo and suffers from inadequate public services and other socio-economic problems.

Divided geographically into 13 administrative zones, ADAA has an estimated population of 92,000 (as stated in the 2007 Progress Report, p. 8). The traditional crafts that form the vibrant economic center of this area depend on skilled workers and shopkeepers, most of whom work in three main craft sectors: carpentry, leather and patchwork.

Figure 6- 1: Al-Azhar Park in Cairo (Source: www.akdn.org/hcp/img/large_egypt.jpg)

The Idea of developing the area started with the construction of a 30,000 hectare park adjacent to ADAA, called *Al-Azhar Park* (Fig. 6-1) as a gift from the Agha Khan to the people of Cairo. The

traditional layout of ADAA and *Al-Azhar Park* are harmoniously integrated into a friendly neighborhood that serve as a great public green space for different social integration in Cairo.

Then the idea has been extended into a series of programs and intervention with in a long-term strategy for revitalizing this area in a more comprehensive way. Regarding to the intervention's experimental approach, DAR project is divided in three phases 2000-2004, 2005-2009 and 2010-2014 in order to evaluate and to improve the setbacks and the challenges that stated in a previous phase. (A. A., 2009)

In this respect, describing the organization's vision, values and objectives will help in providing a framework for discovering the desirable future in this area.

6.2.1 Project Vision, Values and Objectives

Al-Darb Al-Ahmar Revitalization project (DAR) is an Aga Khan Trust for Culture program (AKTC) described in the following terms: "The combination of physical, economic and social objectives leads to dealing with the improvement of housing and public space and the development of better socio-economic delivery mechanisms, thus ensuring people better access to services" (AKTC 2007, pp. 2-10). AKTC believes that "the residents are, and will be, the main players in rehabilitating the area and revitalizing its vibrant nature and cultural heritage" (Progress Report 2007, p. 4). The key features of the program are outlined as:

Mission: Eliminating poverty and improving the livelihood of the area's inhabitants through integrated socio-economic and physical development initiatives (ibid, p. 6)

Vision: "a society that is characterized by empowerment, hope, and social justice is envisioned; where poverty has been alleviated and people live in security and dignity" (ibid, p. 6)

Objectives: "Encourage a sense of community responsibility and participation
Support community-based initiatives aimed at environmental upgrading
Encourage sustainable community participation in all project phases
Promote inward investment in a manner compatible with the area's historic character" (AKTC 2007)

Intervention areas for development: "Analyzing the deeper causes of poverty […] defining ways of creating an enabling environment that can uplift people's standards and resources [and] linking the dimensions of poverty eradication to tangible domains" (ibid, p. 15).

Table 6-1 the linkage between dimensions of poverty, domains of asset creation and major development sectors (source: AKTC 2007, p. 19)

Dimension of Poverty	Principal Domain	Development Sectors and Cross-Cutting Themes
Fulfilling Basic Needs	Health & education	Healthcare Education Water and sanitation Solid waste removal
	Physical infrastructure	Housing & public space improvement Water and sanitation
Providing the Means to Achieve Welfare	Social and cultural assets	Health and education (including cultural events)
	Economic well-being	Employment Access to micro-credit
Creating a Secure Social and Physical Environment	Representation and influence	Organizational & institutional development of civil society Gender and development
	Natural environment	Environmental protection

Project programs:

- Housing Rehabilitation Program
- Planning and open space upgrading program
- Employment and job creation program
- Basic social services (Education-Environment-Health Center)
- Micro-credit and enterprise development program
- Traditional crafts development program

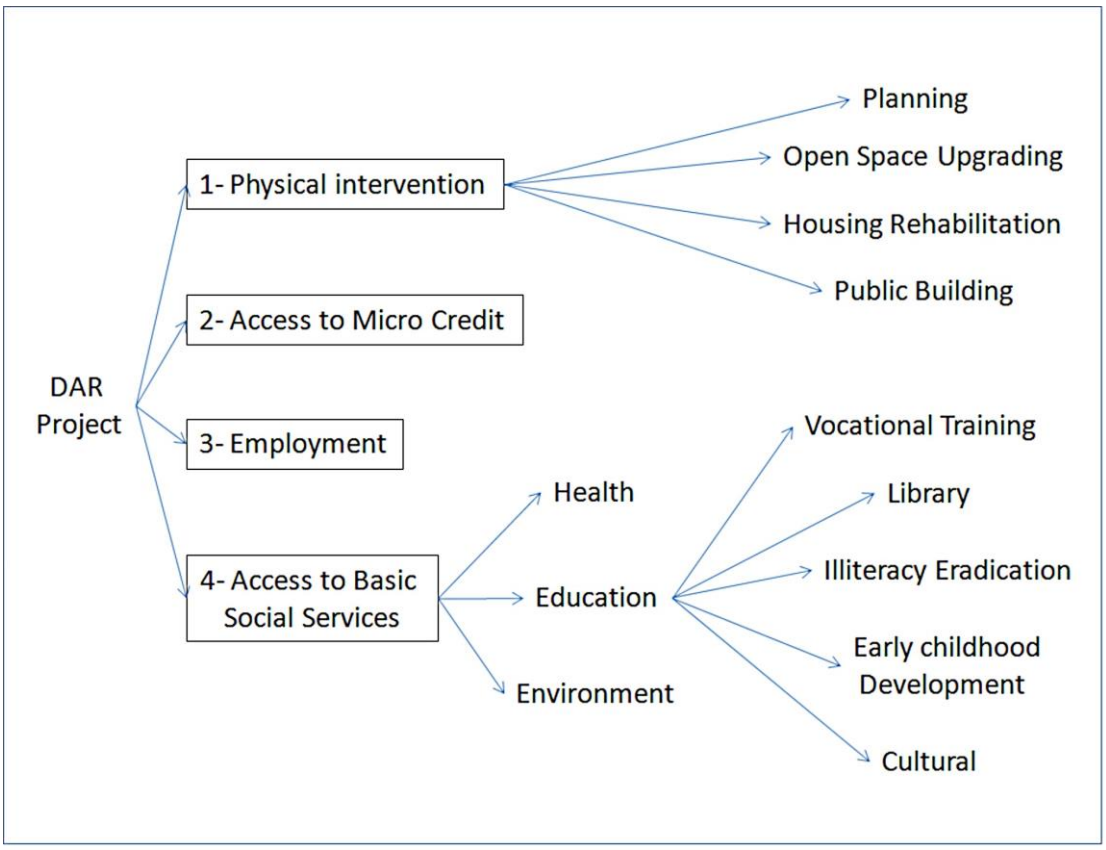


Figure 6- 1: DAR Project: Intervention Areas (source: Progress report 2007, p. 7)

6.3 Discovery Story / Critical Issues

When I asked A.A. the project manager to tell me more about problems and issues that are, in his opinion, critical to the success of the project, he mentioned three main areas: handcraft development, solid waste disposal, and environmental protection.

Handcraft development, he observed, faces a number of problems starting with the cultural dimension: “our culture is against handcraft training and crafts jobs, because people cannot earn good money compared with people graduating from universities”, and he stated that design is urgently needed in the development process: “When we analyzed handcraft from the beginning up to the end-user (value share analysis) we found that the design role is missing. But we need design from the development perspective not the academic one: sitting down with craftspeople and communicating with them in order to integrate theory with practice”. A.A. said people in ADAA buy imported traditional goods because they match their needs better: “China has undertaken numerous surveys of our community needs, such as Galabya and other traditional goods […] and then has manufactured them and sold them to us. We don’t have this ability here yet: so called ‘community-needs assessment’” (A.A. 2009, in Arabic).

At this point A.S., the local crafts development manager, explained that “craftsman shouldn’t focus on the traditional forms of their products. We are now living in 2010; people are different and their needs too. So the products must have a new vision, while at the same time maintaining the traditional character of the area.” He added “we have conducted research and found that there are

other problems connected with marketing like new designs, quality, branding and accreditation" (A.S. 2010, in Arabic).

The project manager, in turn, emphasized the importance of the syndicate and the role it could play in supporting craftsmen. The problem here is that "there is no specific syndicate that is interested in developing the handcraft industry, consist of some conscious people, who understand the situation and have an interest in the common good" (A.A. 2009, in Arabic).

Due to the cooperative nature of the project, with many partners, the process of finding an appropriate mechanism for coordinating was a challenging task. Considering the *Solid Waste Disposal program*, the aim was to improve the quality of DAR's environment through improving solid waste disposal services offered by a private company called ENSER. "We have established collaboration between DAR, the Cairo Governorate, ENSER, and street cleaners, but these efforts failed to continue. One reason was because ENSER used inappropriate equipment and the collection vehicles were too large for the area's narrow alleys […] And if the alleys are not clean, there will be no way to connect this place with Al-Azhar Park as a touristic paths" (A.A. 2009, in Arabic).

In addition to the solid waste disposal program, commitment toward environmental protection ensured that priority was given to encourage individuals and nongovernmental organizations to participate actively in workshops related to this issue. "We are supporting active participation of NGOs and individuals in workshops related to environmental protection and recycling pilots". One thing that frustrated these pilot schemes was the lack of marketing. "We need mechanisms to market these ideas, to put them in a motivating structure for anybody interested in doing business, as well as the efforts to make the schemes work" (A.A. 2009, in Arabic).

6.4 Design Intervention Story

The Goethe Institute in Cairo, one of the participants in a recycling project in ADAA, recommended DAR to approach private design University (GUC) with the intention of getting innovative ideas and designs regarding recycling and reusing the waste material left over from ADAA workshop production. The Design academics welcomed the opportunity to cooperate in this recycling project, but when they explored the workshop situation they realized that this cooperation should be extended. "Recycling was a very limited project and we said all the recycling idea is only part of design production and of the production process in general" (A.K. & A.E. 2010).

Design academics started to develop a clear concept called a "design craft cluster" to consider the whole craft production process:

> We are finding ways to integrate this project into the curriculum […] and we have included it in the education of the students in order to develop the relation between craftsmen and designers, to make the students aware of the richness of the culture […] and to translate it into contemporary designs. […] Students have been prepared with social science input, with ways of observing, with methods and structures of communication. (A.K. & A.E. 2010)

DAR, which was in charge of coordinating the interaction between craftsmen and design academics, organized the initial meeting in order to prepare the participants from the private design University (designers) and to facilitate the communication process. This meeting came up with an agreement

that students would produce their designs in ADAA in specific workshops under the supervision of DAR. After that, DAR would guide the students in their journey of observation at ADAA and introduce them to different workshops. This would enable them to recognize the real problems and craftsmen's needs, which was a necessary step in order to cooperate effectively with them (H.I. 2010, in Arabic).

After visiting the ADAA workshops, students were asked to develop their design concepts for furniture products. At the final meeting, the students gave a presentation to visualize their concepts and to introduce their new product designs to craftsmen.

Then they had feedback and some of them managed to produce their designs, while other students did one modification after another until the semester was at an end. However, producing the products was not as encouraging as DAR had hoped. Because some students did not produce their products in ADAA workshops, as had been planned for cost reasons (H.I. 2010).

"Within the process we found out that it was much more complicated than we thought". After the first semester "we had a lot of questions mainly on communication […] and we tried to find out how to improve". But they accepted the challenge and "the planning made for the second semester is much clearer, because we now have more experience" (A.K. & A.E. 2010).

It required much time, effort and experience for students to understand the substantive value of their designs and how to communicate them to their clients in a successful way, so that the clients really understood the reason behind the designs. The program manager believed that

> the cooperation with GUC was very good idea, but the application of this idea was the problem. Therefore, this year we will try to change our way of acting. We plan to make some changes in this cooperation. The topics, targets and activities will be the same, but in a new framework, namely to launch 'a design competition' between students and the 'top 10' designs will be chosen and produced in ADAA workshops. (A.S. 2010)

The logic behind on-site visiting was that students would understand and realize the real needs of the craftsmen, which in turn would allow them to collaborate more effectively in terms of design value and product quality in order to raise the product's marketability. "Instead of being aware of the significance of on-site observation, it was more about inspiration as a source of modern innovative design" (H.I. 2010).

Figure 6- 2: Design students visit crafts people's workshops in Al-Darb Al-Ahmar

The cooperation between DAR and the academic design University illustrates traditional design thinking, where there must be a solution for the problem in the form of products, without taking into account other socio-economic aspects or taking time to analyze the problem.

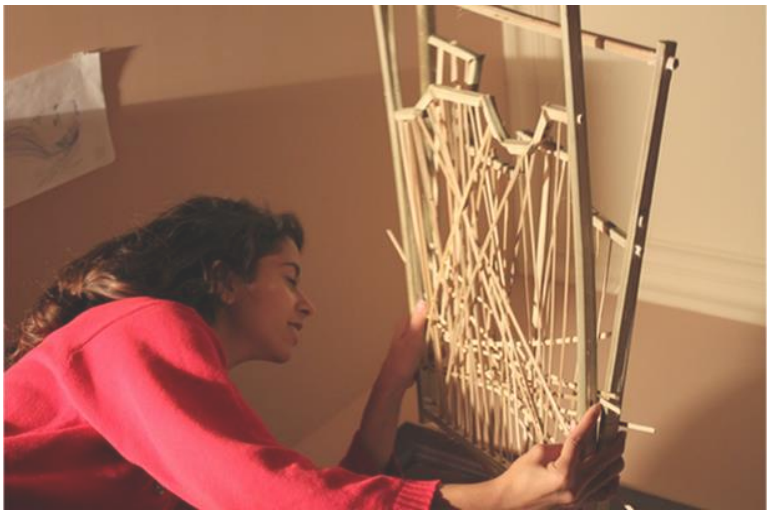


Figure 6- 3: Converting on-site observations into innovative products

Through the design intervention story we can see that designers focused more on furniture design than on craftsmen and their problems. On-site observation had become a source of inspiration instead of an opportunity to perceive craftsmen's wishes and needs. The output of the cooperation between designers and craftsmen was modern innovative design as illustrated in Fig. 6-4, whereas the craftsmen hoped to improve their skills and productivity, and thus also their income. Their products were not sufficient to solve the craftsmen's real problems; accordingly, the 'operational framework' that was developed in the last chapter will now be applied with the intention of visualizing the design thinking process needed for addressing those problems.

6.5 Design Process: Operational Framework

As explained in detail above, system thinking, scenario building and strategic planning are central concepts in approaching real-world problems. I have developed the operational framework in the previous chapter in order to apply these abstract concepts and related methods to tackling poverty as one of these complex problems. The intention of the following section is to describe how data will be processed to generate a tangible solution.

The design process begins with the analysis phase in which Vester's Sensitivity Model will be used to present the actual situation (IS Situation) in a transparent way. The output of this phase will be identification of the intervention point (from the active area) and the two critical variables required to construct the "context scenario".

The projection phase will focus on constructing "context scenarios" by adopting Schwartz's approach to scenario building. This will lead to a strategic insight for appropriate design intervention. The synthesis phase will provide the key answer and the outcome of the design process. It will lead to a tangible innovative design solution for tackling poverty in ADAA. This will be followed by user scenarios to illustrate the implementation strategy.

6.5. Design process: Operational Framework

Herbert Simon (1996)	PROBLEM PRESENTATION	PREDICTION	DESIGNING
	Make it as transparent as possible by designing an intelligent information-filtering system	Constructing alternative scenarios for the future by allocating the time & attention perspective between present & future satisfactions	Designing an evolving system where each step of implementation creates a new situation and provides a new goal

Design Process	Setting of variables: > Filter out vital data	Criteria matrix > Check variables	Influence matrix > Study inter-actions	Systemic role > Determine role within the system	List 2 driving forces: Critical uncer-tainties	Define 2 extreme values of driving forces	Select scenario logics: 2x2	Flesh out the scenarios: 'context scenario' matrix	Identify unmet wants & needs in 'a user-story board'	Collect relevant info. on market forces	Design problem system-map	Trans-form info. into busin ess model
	Frederic Vester (2007): sensitivity model				Peter Schwartz (1986): developing scenarios				Developing design strategies			
Output:	→Intervention point & context scenarios				→strategic insight				→ solution prototype			

Hugentobler; Jonas; Rahe (2004)	A1	A2	A3	A4	P1	P2	P3	P4	S1	S2	S3	S4
	Collec t data	Make sense 'knowledge'	Understand 'worldviews'	Present IS Situation	Collect future data	Interpret data	Possible futures scenarios	Present scenarios	Data on shall be	Evaluat-ion	Design solution s	Prese nt-ation
	ANALYSIS 'the true' as it is today				PROJECTION 'the ideal' as it could be				SYNTHESIS 'the real' as it is tomorrow			

6.5.1 ANALYSIS

Mapping out the reality in question in all its complexity is, in Vester's words, a matter of "examining the system in which the problem occurs, not just the problem itself" (2007, p. 108). To achieve this end, Vester's Sensitivity Model is used. This analyzes the system based on applying 'interconnected thinking', where *the art of interconnected thinking*, as stated by Vester (2007), is

> about capturing all the arguments objectively […] and incorporating them in a network of connections. With this tool the strength of the approach lies in throwing up possibilities as to how we need to shape and handle the system under investigation in order to make it react with maximum flexibility and capacity for self-stabilization to such events as may occur. It becomes possible to 'render the future well-disposed' instead of at best 'repairing' the consequences of wrongly anticipated developments. (pp. 224-226)

6.5.1.1 Setting Variables > Filter out Vital Data

An initial step of Vester's Sensitivity Model is describing the system by collecting key variables. This aims at "registering actuating variables" with respect to our perception of reality by considering the 'soft' data into the systemic model. The variables listed below are adopted from an analysis of different DAR Project Progress Reports 2004, 2005, 2006, 2007, and from the Aga Kahn Historic Cities Program 2007; they are then inserted in the program (for further details see Appendix I)

1. Health care accessibility
2. Raising education skills
3. Vocational training
4. Local craft development
5. Water accessibility
6. Sanitation improvement
7. Solid waste removal
8. Housing rehabilitation
9. Public space development
10. Employment opportunities
11. Access to micro-credit
12. Strengthening civil society
13. Gender development
14. Family development
15. Environmental protection.

6.5.1.2 The Matrix of Consensus> Studying Interaction

After setting variables relative to the system in the previous stage, the variables are listed in the matrix horizontally and vertically to examine their interactions. This matrix will then, in accordance with Vester's principle (2007), serve as a "foundation for subsequent stages" (p. 225).

This stage answers the question: How strong is the impact of variable A on variable B? A specific value between 3 and 0 is allocated: strong (3), medium (2), weak (1), or no impact at all (0). It is important to point out that the evaluation at this stage depends on the analysis of interviews, materials, and the findings of project progress reports. These sources contribute as much as the opinions of the people involved in the project.

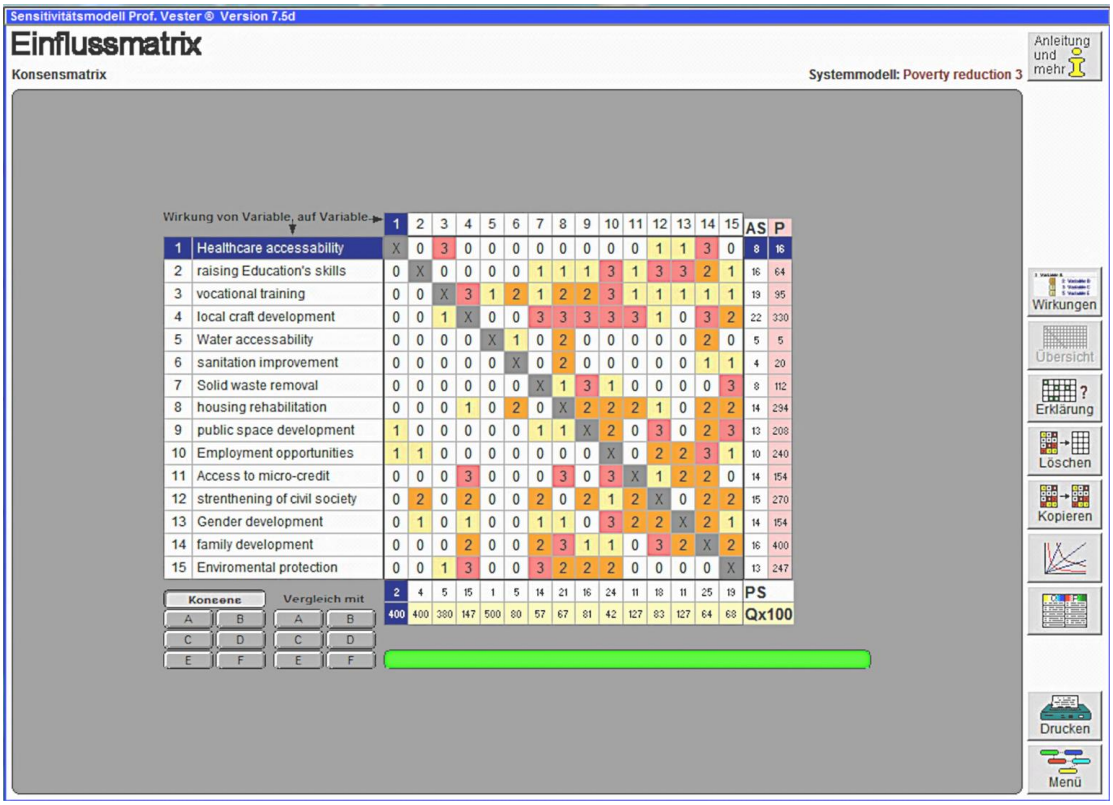


Figure 6- 4: Evaluating the variables in the influence matrix using Vester's Sensitivity Model

6.5.1.3 Role Allocation> Determining Role within the System

The variables captured in the matrix will be allocated here according to their role and character. This means that each variable has its own position determined by the mathematical processes of the system. According to Vester (2007) “distributing the variables gives an immediate impression of the character of the system as a whole, […] interpreting the roles of individual variables […] serve(s) as a cybernetic strategy indication” (p. 227). This initial step offers a transparent view of the real structure of the system in a dynamic way and gives information about the sensitivity of the system.

There are four different areas here: active, reactive, critical and buffering. In addition to the neutral area located between these four areas. Each area has its own character as follows:

- The active area includes all variables that have a strong impact upon other variables, but on which variables in other areas have a trivial impact.
- The critical area shows variables that have a strong impact on others and at the same time are affected strongly by others, so it calls for special attention due to high uncertainty levels and unrestrained qualities.
- The reactive area indicates weakly on the system but is strongly influenced by other variables.
- The buffering area means that the variables are neither effective nor affected by others.
- Variables lying in the neutral area indicate that “the system is well-equipped for self-regulation” but not suitable for steering the system.

Regarding role allocation analysis, this dynamic model points to intervention possibilities in the active area. This must be considered, along with the critical conditions, in order to respect the dynamic character of the system.

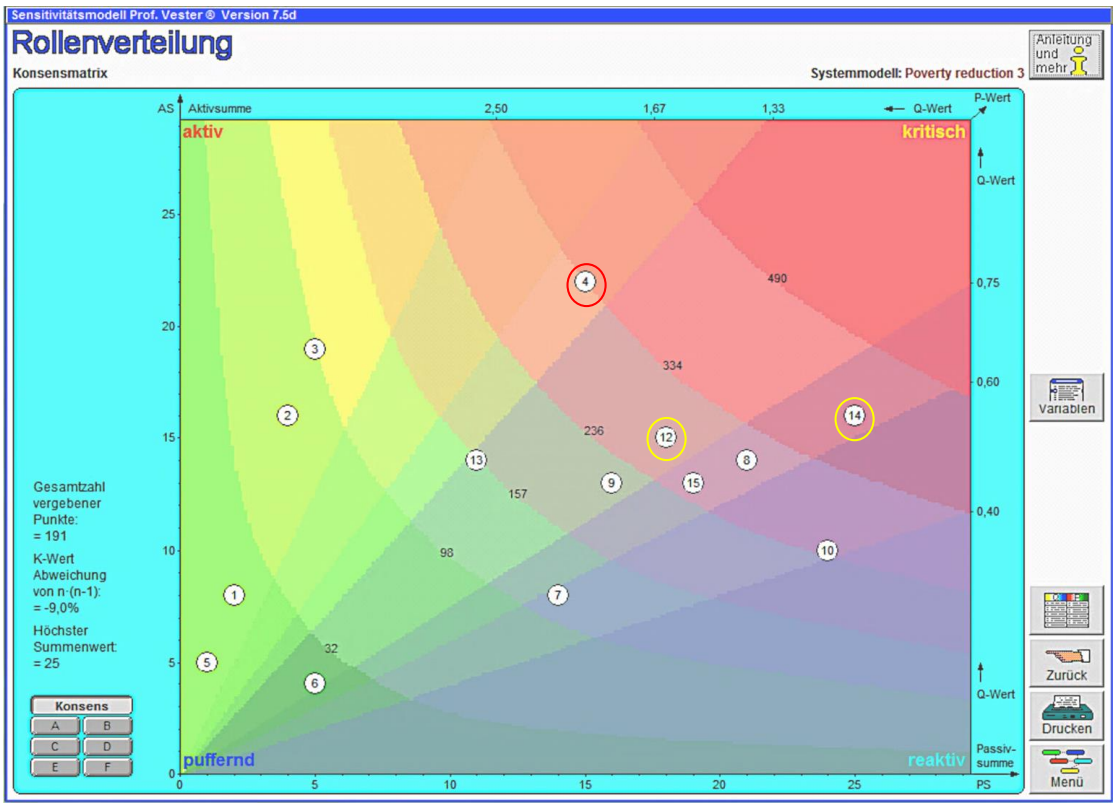


Figure 6- 5: Allocating the variables in role allocation analysis

6.5.1.3.1 Variables in the active area > "intervention point"

Figure (6-5) shows five variables in an active role: 1. healthcare, 2. raising education skills, 3. vocational training, 4. local craft development, 5. water accessibility. All of these could be seen as a strategic intervention-point in the DAR project. But I would argue that 'local craft development' is the most appropriate intervention point, because the other active variables including healthcare, education and vocational training need high financial investment before they can be seen as a direct opportunity for generating income. On the other hand, according to the DAR Project Report 2007, the various crafts and goods of ADAA "were once considered a trademark of the area's unique identity". However, the problem in ADAA is about the lack of craft skills, which has in turn affected the quality of products. Therefore, the strength of ADAA could be seen as a dynamic market for handmade crafts and goods in various fields including leather production, tent-making with patchwork (Khayamiyya), carpentry and wood inlaying (mother-of-pearl).

This intervention point will help in formulating a strategy that focuses on existing skill potential and at the same time generates income for craftsmen, empowering to counter their own poverty.

6.5.1.3.2 Variable in the critical area > "context scenarios"

As mentioned above, in addition to the recognition of the active role for the variables, this phase of the model shows critical variables that indicate high uncertainties such as: variable 12. civil society, 14. family development, 8. housing rehabilitation and 15. environmental protection. Any of these variables could be considered suitable for constructing context scenarios. I will choose 'civil society' and 'family development' for this purpose, because these two variables comprise the social

dimension that plays an important role in the development of local crafts at ADAA and will help effectively in generating a comprehensive strategy of sustainable social development (this will be explained later in SYNTHESIS).

At this stage, I prefer not to take Vester's Sensitivity Model any further, because it is possible to see the dynamic model characteristics of every variable in "role allocation". Choosing the intervention point (variable 4.) and taking into account the critical conditions (variables 12. and 14.) will respect the dynamic character of the system and lead to a sustainable intervention.

6.5.2 PROJECTION

The aim of this phase is to answer the following question: how might the environment look in which the problem at issue is embedded? The focus will be on constructing 'context scenarios' following Schwartz's approach. Four steps are required in order to answer the previous questions:

- Listing 2 driving forces that refer to critical variables or critical uncertainties in the previous phase.
- Defining 2 extreme values of driving forces: a positive value and a negative one
- Selecting scenario logics: 2x2
- Constructing a "context scenario" matrix.

6.5.2.1 Listing Driving Forces > Critical Uncertainties

Civil Society Organizations (CSOs)

The overall aim of CSOs is to participate effectively and sustainably in socially critical issues by spreading awareness, promoting human development, and advocating human rights. According to the *Egypt Human Development Report* (EHDR) 2008, CSOs are not-for-profit organizations "distinguishable by their value dimension" that occupy the social space between people, market and state "to achieve the collective benefit of society as a whole" (p. 61). These organizations can be seen under three categories: non-government organizations, advocacy organizations, and business interest associations (ibid, p. 61).

A growing number of sustainable-development oriented (CSOs) that focus on poverty reduction have come to the surface in Egypt. Confronted with the various challenging dimensions of poverty – "the weight of hopelessness, of illiteracy, of disease, of unemployment, of delinquency, and of hazardous living conditions" – which in turn "make it impossible for the ultra-poor to use cash or any other resource alone to break the dark cycle of chronic poverty" (EHDR 2008, p. 146), they operate in different but related activities: community rehabilitation, social revitalization, human development, and people empowerment.

In this regard, the Egyptian government has, in its political discourse, realized the important role that CSOs play in contributing to the development process in different sectors. The major objective of EHDR 2008, for instance, was to articulate the role of CSOs in poverty alleviation. It identified some 150 successful CSOs out of over 20,000 organizations (p. xi) under so called 'best practice' (BP) that "are innovative […] make [a] difference […] have a sustainable effect [and] have the potential for replication"(ibid, p. 7).

EHDR 2008 has suggested four essential roles that CSOs must play in order to address poverty alleviation and social protection in more effective way:

1. Design and draw up the terms or conditions of the program with reference to local needs, burdens and abilities;
2. Provide some services, but more importantly, lobby for the poor and enable them to get the best quality services and support that is available;
3. Monitor and develop the program so as to ensure that it is flexible and responsive enough to meet its objectives;
4. Market the program and defend its integrity. (p. 146)

Family development

The DAR project is more concentrated on family development from a health perspective, as is mentioned in the Project Annual Report 2006 "it responds to the need for health promotion and preventive care to adolescents and parents as well as medical care to young children in kindergarten" (p. 24). Because this is a limited perspective, I will approach it in a more comprehensive way, examining the major social, cultural and economic dimensions and trends in family development in Egypt.

The family in Egypt plays a powerful role in social life and is responsible for seeding different values in family members that lead to successful social development. The family is seen as an essential social capital that participates actively in different social activities, promoting communication, and responsibility and creating multiple synergies.

Egypt as a conservative religious society does not allow or accept having children before marriage. The family therefore always starts with marriage, which is then followed by having children. Children usually live with their parents, even as adults, as long as they are unmarried, unlike the western family where children are expected to move out and establish their independence before they get married. But the only accepted exception is if a son goes abroad to work and save money and then returns to marry. Furthermore, the father is responsible for providing money for his family, whereas the mother undertakes her traditional responsibilities at home, in addition to working and helping her family meet the ongoing increase in the cost of living.

The major social problems that Egyptian society faces nowadays regarding family development are the drop in marriage rates and the rise in divorce rates. Starting with marriage, one distinctive trend of marriage in Egypt now is the rising cost of marriage regardless of limited income. This has led to other social problems such as the rising women's age of marriage from 20-25 to 30-35, staying single for a long time sometimes leads to spinsterhood (a kind of social stigma for women). These new trends reflect broader social and economic issues that have accompanied the opening of the Egyptian economy, such as rising expectations and consumerism. People cannot throw off the habit of consuming luxury goods to show their modernity and express their prestige.

It is, then, important to understand the social behavior and economic burden associated with marriage. Starting with typical marriage costs that have always involved costly ceremonies, these include housing, furniture, appliances, as well as the engagement, dowry, trousseau and wedding. According to the Survey of Young People in Egypt (SYPE) conducted in 2010, housing is the first major problem that young couples preparing for marriage face. Followed by "finding a job" and "furnishing

the house" in second and third place. Especially the cost of locally produced or imported furniture and appliances is now a major item in the overall cost.

As stated in one study related to marriage costs in Egypt, in urban areas people who live below the poverty line "spend nine times their annual household expenditure per capita on marriage related costs" (Rashed et al. 2005, p. 2). This means, in spite of the critical economic situation for the couples and their families, the marriage cost is still high and sometimes unaffordable. Therefore, different negative marriage patterns have surfaced across Egypt such as "Urfi" (unregistered and secret marriage), or marrying a rich older man or woman (10-30 year gap).

On the other hand, divorce, which was not common in Egypt, is now frequent on account of problems ranging from financial difficulties to sexual frustration. In 1999, Egyptian secular law gave women the right to ask for a divorce under any circumstance not only in certain circumstances as it was in the past. Contrary to the opinion of Egypt's policymakers, who are concerned only with over-population and therefore welcome the new trends, these social and economic problems challenge family development in Egypt and will lead to a deterioration in family life by opening the door to critical and unexpected consequences.

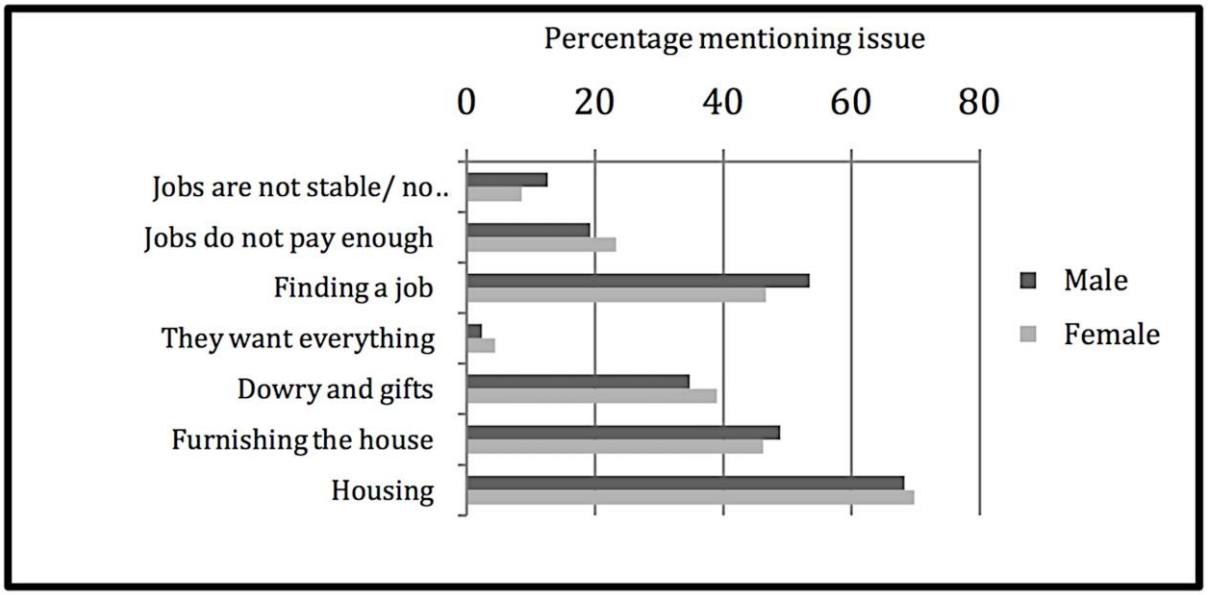


Figure 6- 6: Young people's perception of the major problems facing young Egyptian couples preparing for marriage, by sex 2009 (source: SYPE 2010, p. 127)

6.5.2.2 Finding Two Extreme Values

- **Civil Society Organizations** – in enabling/challenging environments

Active-responsible-efficient-vigorous /passive-irresponsible-insufficient

The dynamic social, economic and political contexts in which CSOs operate have a profound impact on their contribution to society. An enabling environment, as defined by EHDR 2008, "can be seen as a set of interrelated conditions that impact on the capacity of citizens and CSOs to engage in development processes in a sustainable and effective manner" (p. 87).

The efficiency and effectiveness of civil society and its organizations depends on participating actively in different development issues within an enabling environment. "The government of Egypt has great responsibility in creating the enabling legislative and administrative environment for CSOs to grow

and prosper" on the one hand (ibid. p. 25). On the other hand, CSOs have the responsibility to raise their quality and image, as well as "the level of their internal practices, so as to develop an independent, reputable, and high profile public presence, able to guide policymakers and attract donors" (ibid. p. 25). In this respect, creating an enabling environment for CSOs is still the challenge facing the government of Egypt now.

Regarding a challenging environment, the Egyptian civil society has a long development history over the last century. However, since the 1980s,

> the Egyptian government has focused on economic development. To achieve economic progress, the government has made strides in instituting liberal, market-oriented economic reforms, but laws did not change to allow explicitly more freedoms for civil society organizations. Rather, there has been a gradual and selective recognition of certain civil and political rights. (EHDR 2008, p. 90)

The government's ability to provide adequate and effective public goods and services alone is becoming increasingly questionable. In 2000, the government identified the important role of civil society in the development process, as mentioned in EHDR 2008, "as complementary and integral to the role of government" (p. 20). Unfortunately, however, "there remains a huge gap between the intentions stated in the political discourse and the reality on the ground" (p. 89).

- **Family development** – Deterioration-erosion / maturation-evolution

Deterioration-erosion refers here to negative development, up to the extreme situation where couples remain single for long time, when, even if there is a chance to marry later on, they cannot for biological reasons have (healthy) children. This is highly detrimental to family development in the sense described above.

Maturation-evolution refers to positive development towards a desirable future, where couples can avoid the economic difficulties of a standard marriage and manage to marry before ending their period of biological fertility and have healthy children. Then family development has no inherent threat to its persistent evolution.

6.5.2.3 Establishing Scenario Logics

The following points articulate the core vision for each scenario that result from combining the two extreme values for civil society and family development.

6.5.2.1 "Break their hearts" – This scenario expresses the actual situation where family formation in Egypt is now challenging and even beginning to disappear because of overly high marriage costs. These are leading to spinsterhood/bachelorhood and general deterioration in family development. CSOs are bystanders in a society where social standing and luxury goods consumption are benchmark values.

6.5.2.2 "Break their backs" – In this scenario young people could marry in spite of high marriage costs, but this will put them under pressure from the economic burden and they will suffer for long time.

6.5.2.3 "Break the ice" – This scenario offers a limited perspective for affordable marriage, which will improve the situation short-term, but the outcome will be poor because of the complexity of the problem. CSOs are like beginners playing chess.

6.5.2.4 “Break their burden” – This scenario enables CSOs to be active players in poverty alleviation and help young people to afford marriage costs, which will push family development in a positive direction. As a result, this will “effectively enable families to beat poverty and the burden of ‘incapability’’’ (EHDR 2008, p. 146).

6.5.2.4. “End-States” Descriptions for “Context Scenarios” Matrix

At this point, I decided not to develop the scenarios further, but just to use the end-state descriptions related to these 2 dimensions. I chose the upper right scenario “break their burden” as a desirable future for family development that supports the conservative form of family that is highly valued in Egypt. Through this scenario, I argue that the rates of spinsterhood/bachelorhood among young people will decrease according to the affordability of marriage, and this in turn will drive the family erosion trend back toward family evolution.

Strategic insight

The output of this phase offers a strategic insight for the intended intervention with respect to the local environment.

- Goal: to connect the STRENGTH of local craftspeople (after developing their skills) and the need for affordable furniture of young couple who want to marry, as an OPPORTUNITY for marketing craft furniture
- Intention: to select a desirable context “Break their burden” and then build an ideal strategy within this visionary context (normative approach) that implies a back-casting process: determining and describing the steps that would lead from today to the (ideal) tomorrow.
- Objective: to create a strategy based on sustainable social development: cost-effective furniture design (affordable product) + interior design service.

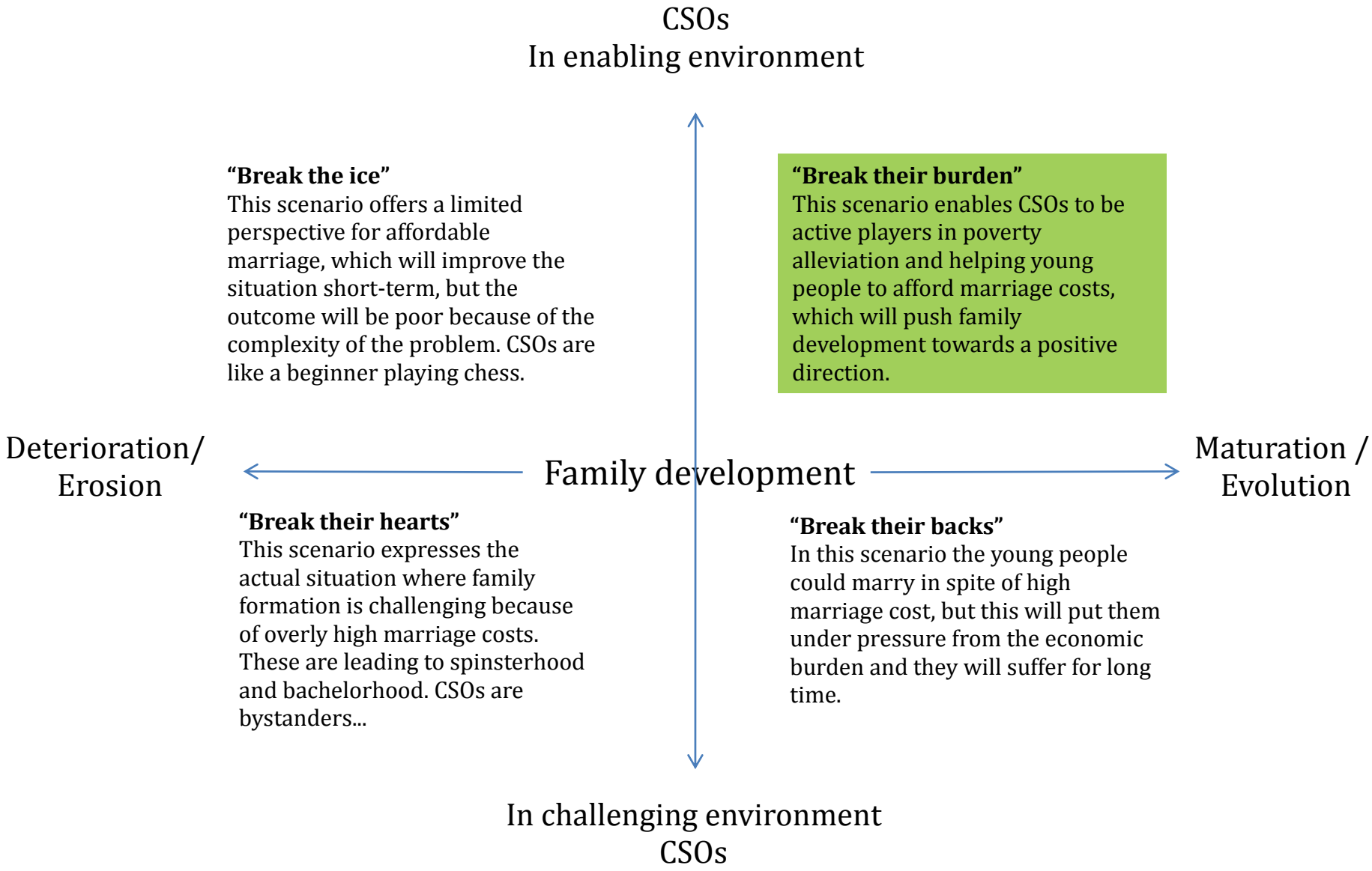


Figure 6- 7: Establishing four scenario logics

6.5.3 SYNTHESIS

'Break their burden' has been chosen as a concrete desirable future. This entails returning to the present in order to determine required incremental improvements to the actual situation.

6.5.3.1 Identify unmet wants and needs in "a user-storyboard" > to create awareness of need

Because of the restrictions of time and place imposed by scholarship (having to meet deadlines and not being in Egypt), I collected the following data from different Egyptian newspaper reports and investigations such as *almasryalyoum* and *youm7* online newspapers. Rather than just describing people's needs in words, I also gathered related visual material from *YouTube*. This serves to build a visual storyboard that will elaborate users' real needs and wants in a more tangible way, as well as presenting a more interesting and transparent story.

- Customer perspective

  In Egypt generally and in Al-Darb Al-Ahmar specifically, youth under 30 years is suffering from unemployment. Most of them are searching for one or two jobs because the salary is not always enough to cover the high cost of living and they keen to save money in order to get married. Despite the fact that furniture prices are increasing and that young couples have limited money, they want to furnish their apartments as a primarily step for getting married. Accordingly, they turned to buy imported furniture from China because it is very cheap in comparison with the local manufactured furniture in Egypt. However the quality of the Egyptian furniture is more advanced to the Chinese one. Unfortunately, they are adopting the logic of short-term gain to long-term loss that let them get married in short time.

- Customer perspective

Figure 6- 8: Identifying unmet wants and needs from the customer perspective (user-storyboard 1)

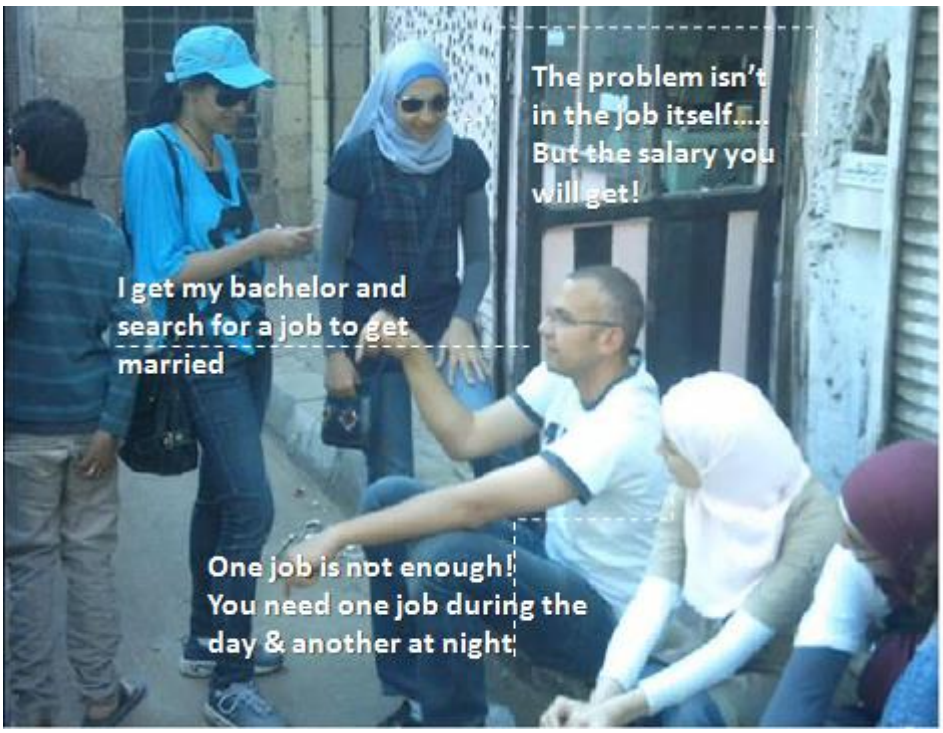


Figure 6- 9: Identifying unmet wants and needs from the customer perspective (user-story board 2)

Figure 6- 10: Identifying unmet wants and needs from the customer perspective (user-story board 3)

Figure 6- 11: Identifying unmet wants and needs from the customer perspective (user-story board 4)

Figure 6- 12: Identifying unmet wants and needs from the customer perspective (user-story board 5)

Figure 6- 13: Identifying unmet wants and needs from the customer perspective (user-story board 6)

- Producer perspective

  Producers in Al-Darb Al-Ahmar are suffering from deep stagnation of the handcraft products and furniture. They face many challenging issues that led to this stagnation. For example the invasion of the cheep-imported furniture from China and the increase in timber prices have led to a decline in demand for domestic furniture by 70%. In addition, the skilled workers began to run away from the workshops because of the low wages. Accordingly, large numbers of workshops for manufacturing furniture have been closed due to their inability to compete with imported pieces from China.

- Producer perspective

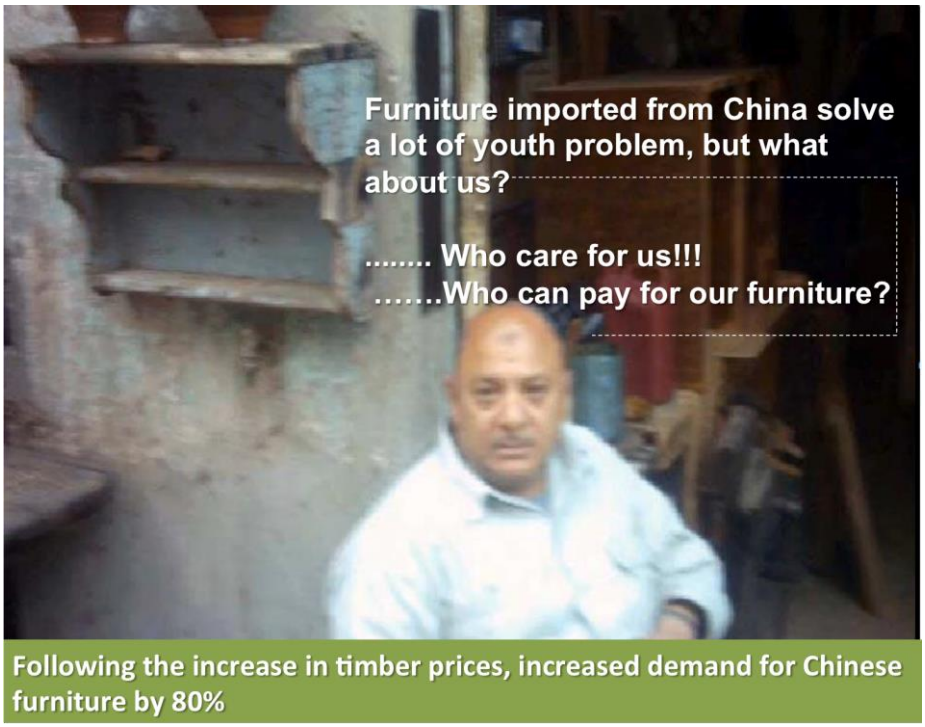


Figure 6- 14: Identifying unmet wants and needs from the producer perspective (user-story board 1)

Figure 6- 15: Identifying unmet wants and needs from the producer perspective (user-story board-2)

Figure 6- 16: Identifying unmet wants and needs from the producer perspective (user-story board 3)

Figure 6- 17: Identifying unmet wants and needs from the producer perspective (user-story board 4)

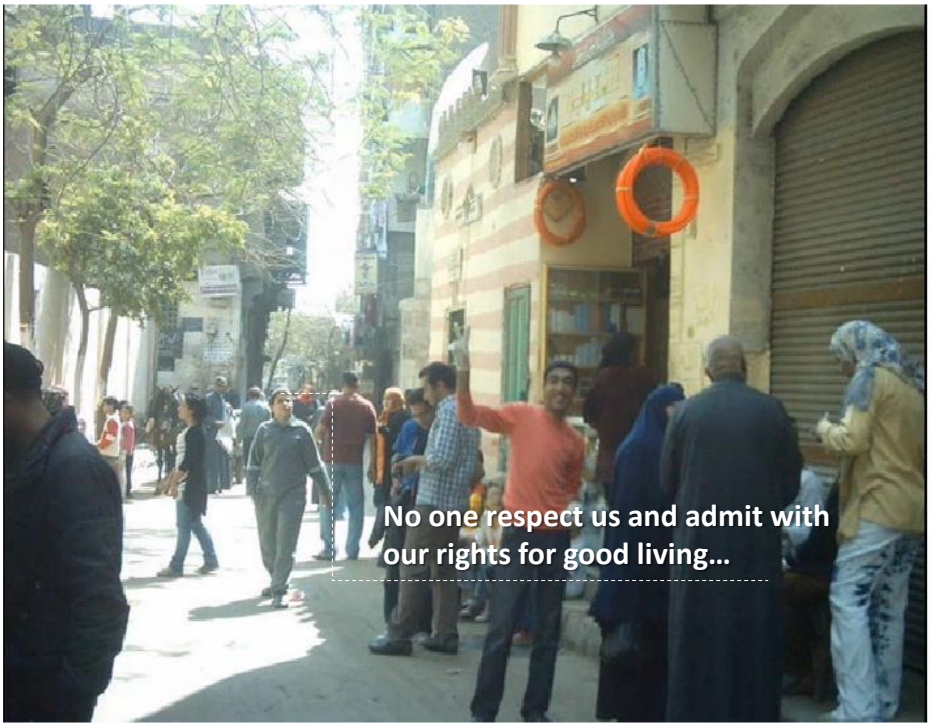


Figure 6- 18: Identifying unmet wants and needs from the producer perspective (user-story board 5)

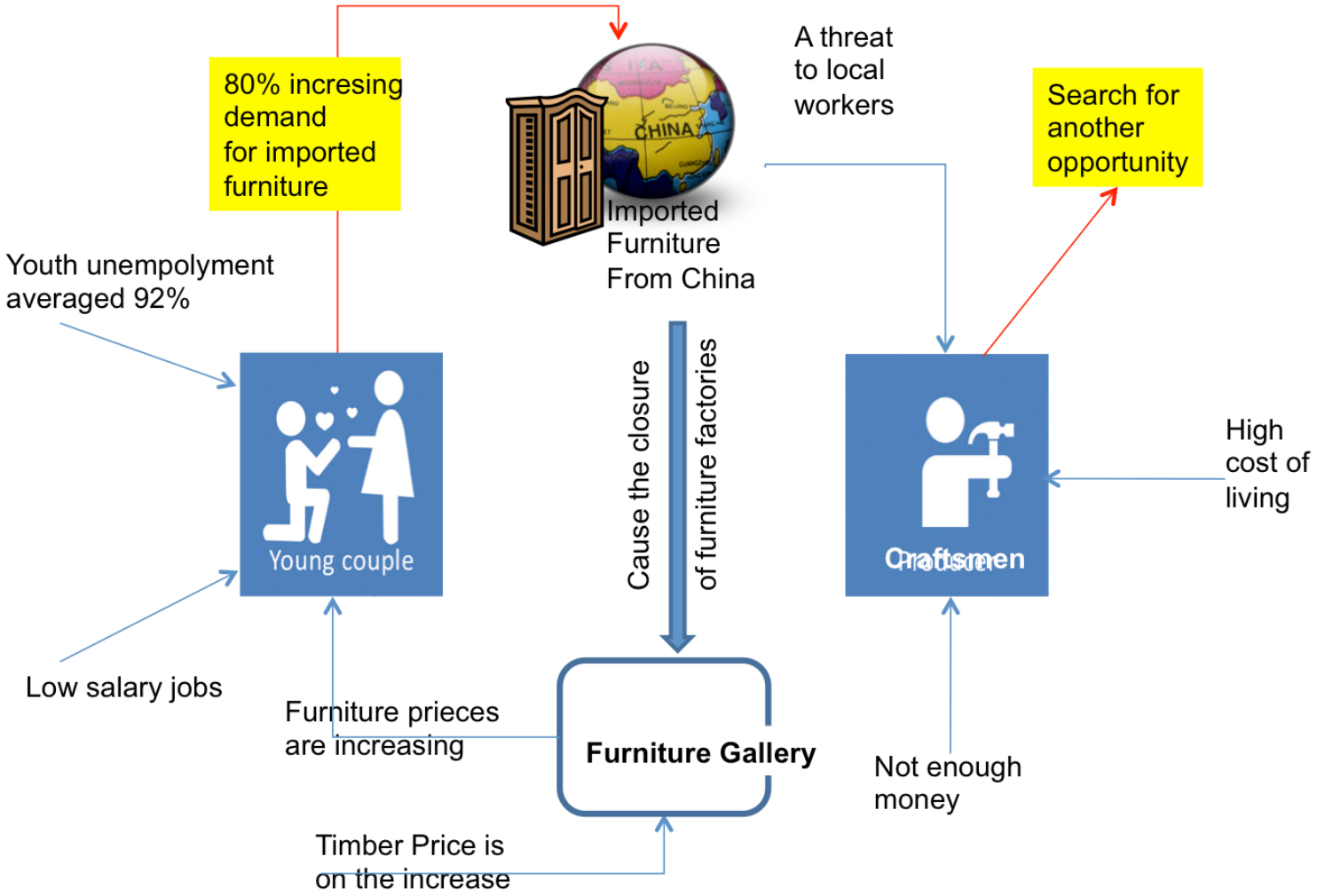
Figure 6- 19: Identifying unmet wants and needs from the producer perspective (user-story board 6)

6.5.3.2 Collecting relevant information on market forces

Market issues	Generally, the Egyptian furniture market is suffering from deep stagnation (Wahab 2009, youm7) There is a shift in the Egyptian home furniture market, from buying locally manufactured furniture toward imported furniture. This is considered a crucial issue affecting local furniture marketing in Egypt … (Bakr 2010, almasryalyoum)
Market segment	Young people (between 20-40 years old) are the most important customers, as they want to marry and furnish their new homes in a simple and modern way. In Egypt, according to official statistics, there are 13 million unmarried people older than 35 years and the rate of spinsterhood among girls is 17%.
Needs and demands	Strong need for simple, modern and affordable furniture. Cost is considered the key factor affecting choice. People need to furnish their houses at the lowest possible price, and Chinese furniture meets this need very well.
Switching costs	The low price of Chinese furniture enables these products to find their way into almost all segments of Egyptian society. Although the quality is still very poor in comparison to the locally manufactured furniture, the guarantee they offer on their products supports Egyptian demand for Chinese furniture (Bakr 2010, almasryalyoum). The reason behind this is the logic of short-term gain to long-term loss (due to the poorer quality of the Chinese products) that young people are adopting (Wahab 2009, youm7).
Revenue attractiveness	Customers are willing to pay for simple quality furniture at reasonable cost.

The price of the timber has been increased dramatically since the revolution and accordingly furniture galleries have raised furniture prices, which in turns affected supply and demand. In addition, youth unemployment averaged 92% across Egypt and low-salary jobs are leading to the miserable financial situation that consumer is suffering from. All these factors have led to an increase of 80% in the demand for cheap imported furniture from china. At the same time, this has a serious threat of the closure of local furniture factories and workshops where craftsmen, on the other side, are suffering from low wages and can hardly afford the cost of living which has been risen sharply in the last years. Therefore skilled craftsmen skip from the workshops and search for another opportunity under all these pressures.

6.5.3.3 Designing the problem system-map [*](framing the problem)



[*] young couple and Craftsmen Icons created by the noun project (www.theprojectnoun.com)

6.5.3.4 Transforming the information into a business model

Developing a full business plan is not my intention here, but rather a business model that represents an outline solution as follows:

Vision: Enabling young couple to enjoy their life at home and feel happy to furnish their homes in a more conscious way, as well as enabling local artisans to enhance their skills and thus also raise their income.

Business Idea: To offer a combination of highly-cost-effective simple furniture and interior services in an affordable way.

Business Model: To connect the needs of young couples with the manufacturing facilities craftsmen possess in their own workshops. But of course the challenging issue is always the price; therefore the starting point to overcome this challenge will be through seeking partnership opportunities with different stakeholders and institutions.

This social business idea is built on three social benefits (SB):
-To alleviate poverty through supporting local artisans to generate income and supporting young couples to save money in furnishing their homes.
-To reduce unemployment among local artisans.
-To reduce spinsterhood/bachelorhood among young people by offering them quality products and services in an affordable way.

Social Profit (SP)
-Supporting business through a specific social mission.
-Local employment.
-Facilitating an active society: students, academics, artisans, private and public sectors work together to help each other.

Customer Segments (CS) This business model target two different segments: niche producers (active poor), which refers to local artisans working in three craft sectors: carpentry, leather goods and patchwork. The second is niche consumers that refers to young couples with university degrees who have limited money and want to furnish their apartments in order to get married.

Value Propositions (VP) Two different service packages will be provided to the customer segments according to their needs and demands. For the first target group, the offer aims at generating income and will be in the form of different services: free modern furniture designs, free training workshops

and/or product marketing. Whereas, saving money will be the focus in supporting the second target group through offering different services and products including:

- Free basic interior design services: to provide interior design services free of charge including professional advice in supporting the customer to furnish the apartment in a more conscious way (according to his/her real needs).
- Premium interior services: to charge advanced features and services such as drawings and on-site customer support.
- Highly cost-effective modern furniture: to offer quality furniture at reasonable prices with guaranteed repair services.

Channels (CH) In order to reach the producer (craftsmen), the business team will approach craftsmen in ADAA through the Aga Khan Organization. Marketing producers' products will be through introducing them to young couples as affordable furniture for their flats. Moreover, reaching the consumers (young couple) will be through financial institutions that offer intermediate loans to the same target group (to be explained later under Partnerships). The other option for informing the consumer about this business is through the social network: Facebook, twitter, …

Customer Relations (CR) In addition to the standard product-service package, tailored services are offered to customers to meet their specific needs and establish a positive relationship.

Revenue Streams (RS) Money will be earned according to the following payment mechanisms: 1. Sales commissions: the producer will pay a fixed low percentage after selling products to consumers (young couple) 2. Interior service fees: get the basic interior service for free and pay for advanced services (premium). 3. Generating small revenues from "selling less of more": offering more niche products for affordable prices

Table 6- 1: The suggested social business model of design that focuses on CS., VP. and RS.

<table>
<tr><td rowspan="2">KP</td><td>KA</td><td rowspan="2">VP

To generate income
• Free modern furniture designs
• Free Training workshops
• Products Marketing

To save money
• Free basic interior design services
• Premium interior services (On-site customer support)
• Highly cost-effective modern furniture (repair services guaranteed)</td><td rowspan="2">CR

Tailored services

Young couple to be married

Design academia</td><td rowspan="2">CS
• Niche Producer:

local artisan in three craft sectors: carpentry, leathers and patchwork

• Niche Consumer:

young couple</td></tr>
<tr><td>KR</td></tr>
<tr><td colspan="2">CS</td><td colspan="3">RS
Sales commissions (low)
Interior service fees
Free (Get the basic for free, pay for more)
Generate small revenues (selling less of more)</td></tr>
</table>

Explore opportunities for Key Partnerships (KP): Activating the participatory mode between different institutions, not-for-profit organizations and the public sector will be in the form of seeking partnership with them. This partnership will extend limited resources and activities relying on skills, experience and knowledge in different fields on the one hand, and on the other hand making it possible to offer a value proposition to target groups in an affordable way through sharing infrastructure and thus reducing costs. Each partner offers different resources or performs different activities, for example:

Industrial Modernization Center (IMC): The aim is to create an enabling environment in which the private sector can lead growth and help Egyptian industries leapfrog into global competitiveness, by providing funds and training, and pressing the government for structural change to support target industries. http://www.imc-egypt.org/

DAR Project: Al-Darb Al-Ahmar Revitalization Project aims ultimately at eliminating poverty and improving the livelihood of the area inhabitants (see p. 3-6 above). The project has established the Carpentry Training Centre to support local craftsmen by enhancing their skills and producing woodwork pieces and furniture for DAR-project-related activities.

Social Fund for Development (SFD): A socio-economic safety net to protect low income families from the negative impact of economic reform. Its aim is to create new jobs, reduce unemployment, generate income and alleviate poverty. The fund transforms state development policy into different programs and actions, besides offering financial and non-financial services for small and micro-enterprises, and HR and community development. http://www.sfdegypt.org/

Academic design School: Involving design students, academics and professionals in the process will give them the chance to participate effectively in solving social problems. Sharing their ideas, sketches, drawings and other skills will be integral to this partnership. One of these suggested schools is the Faculty of Applied Art at Helwan University, which has 13 different departments including interior and furniture design, textile, printing, product design, decoration, and graphic design.

Egyptian Marriage Bank: The innovative idea behind this national social bank is to provide 60,000 EP. as a marriage-loan to young couples to enable them to afford marriage and then to pay just 50% back in 10, 15 or 20 years. But the bank is not established yet. http://www.facebook.com/BankZawag

Nasser Social Bank (NSB): This was established with the aim of broadening the base of social solidarity among citizens, to solve social problems (poverty, unemployment ... etc.), and to achieve a just and sufficient society through providing financial and social services. Marriage and furnishing loans for young married couple are two examples of these services. http://www.nsb.gov.eg/nsb/social/Default.aspx

Key Activities (KA) Undertake different activities including: 1) Designing furniture and different interior services; 2) Produce-on-demand: using craft workshops as infrastructure for manufacturing furniture only in response to actual orders; 3) Network management: hiring HR management team to facilitate the communication process between different actors and partners; 4) Furniture repair services.

Key Resources (KR) Deliver the required products to the customer. Packaging and transport facility.

Cost Structure (CS) Calculating all the costs of the activities and resources required to operate this business model, including: design services, network management, furniture repair services and product packaging and transporting.

Table 6- 2: The suggested social Business Model of design that focuses on KP, KA. and CS.

<table>
<tr>
<td rowspan="2">KP

مركز تحديث الصناعة
INDUSTRIAL MODERNISATION CENTRE

DAR Project

SFD الصندوق الاجتماعي للتنمية
Social Fund for Development

Academic design school

Egyptian Marriage Bank

NSB</td>
<td>KA

Interior and furniture design services

Produce-on-demand

Network management

Repair services</td>
<td rowspan="2">VP

To generate income
• Free modern furniture designs
• Free training workshops
• Product marketing

To save money
1. Free basic interior design services
2. Premium interior services (On-site customer support)
3. Highly cost-effective modern furniture (repair services guaranteed)</td>
<td>CR

Tailored services</td>
<td rowspan="2">CS

• Niche producer: local artisan in three craft sectors: carpentry, leather, and patchwork

• Niche consumer: young couple</td>
</tr>
<tr>
<td>KR

Transport
Packaging and logistics</td>
<td>CH

Design students

Young couple to be married</td>
</tr>
<tr>
<td colspan="3">CS
Design services
Network management
Repair services
Packaging and logistics</td>
<td colspan="2">RS
Sales commissions (low)
Interior service fees
Free (Get the basic for free, pay for more)
Generate small revenues (selling less of more)</td>
</tr>
</table>

Table 6- 3: Social Business Model = Business Model + Social Profit + Social Benefits

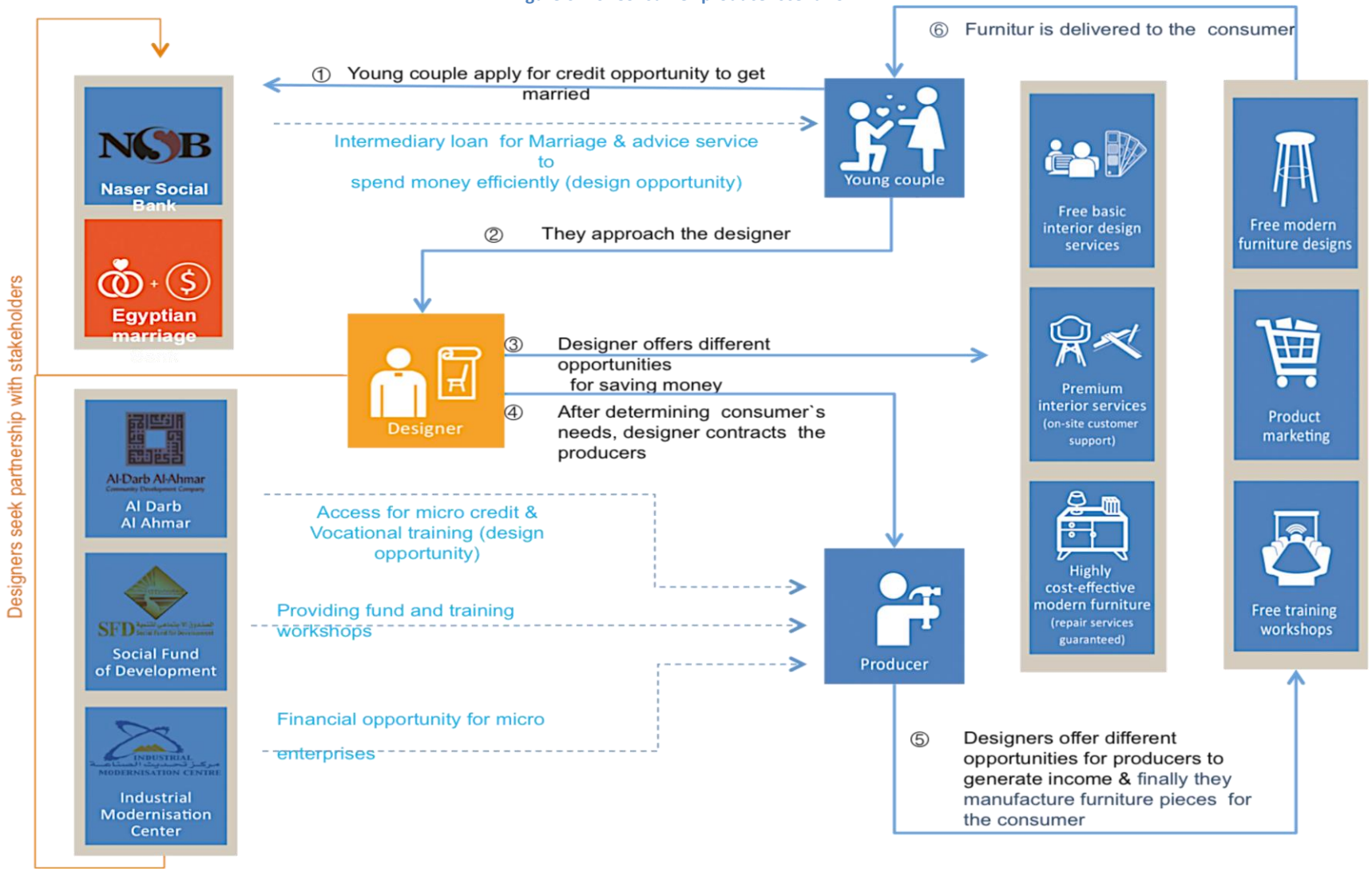
<table>
<tr><td colspan="3">SB
-Supporting business with specific social mission
-Local employment
-Facilitating active society: students, academics, artisans, private and public sectors work together to help each other</td><td colspan="3">SP
-Alleviate poverty through supporting local artisans to generate income and supporting young couples to save money in furnishing their homes
-To reduce unemployment among local artisans
-To reduce spinster-/bachelorhood among young people by offering them quality products and services in an affordable way</td></tr>
<tr><td rowspan="2">KP
مركز تحديث الصناعة
INDUSTRIAL MODERNISATION CENTRE
DAR Project
SFD الصندوق الاجتماعي للتنمية Social Fund for Development
Academic design school
Egyptian Marriage Bank
NSB</td><td>KA
Interior and furniture design services
Produce-on-demand
Network management
Repair services</td><td rowspan="2">VP
To generate income
• Free modern furniture designs
• Free training workshops
• Product marketing
To save money
1. Free basic interior design services
2. Premium interior services (On-site customer support)
3. Highly cost-effective modern furniture (repair services guaranteed)</td><td>CR
Tailored services</td><td rowspan="2">CS
• Niche producer: local artisan in three craft sectors: carpentry, leather, and patchwork
• Niche consumer: young couple</td></tr>
<tr><td>KR
Transport
Packaging and logistics</td><td>CH
Design students
Young couple to be married</td></tr>
<tr><td colspan="3">CS
Design services
Network management
Repair services
Packaging and logistics</td><td colspan="3">RS
Sales commissions (low)
Interior service fees
Free (Get the basic for free, pay for more)
Generate small revenues (selling less of more)</td></tr>
</table>

6.5.3.5 User scenario and implementation strategy

The major challenge that (social) designers will be confronted with is this question: How to offer quality products and services to young couples when they have too little money to pay for the offer? The answer could be: By providing an intermediate loan to furnish their homes with these products and offering them the opportunity to invest part of their loan in this business if they wish, which will help them to pay their loan back. It could work like this:

1. Designers and academic design schools seek partnerships with different stakeholders (e.g. Nasser Social Bank (NSB), Egyptian Marriage Bank (EMB), Social Fund for development (SFD), Industrial Modernization Center)
2. Young couples apply for credit opportunity to get married: The couples approach NSB and EMB that offer intermediate loans for marriage and at the same time provide a consultant and advisory service about spending money efficiently (by telling them about design opportunity)
3. They approach the designer and explain their needs and limited budget.
4. The designer gives them different offers that meet their needs, as well as saving money (e.g. free basic interior services, premium interior services with on-site customer support, cost-effective modern furniture).
5. The designer contracts the producer (craftspeople) after determining the consumer's needs.
6. The producer manufactures furniture pieces.
7. Furniture is delivered to the consumer.

Figure 6- 20: Consumer-producer scenario*



* Designer,youngcouple,producer,and the six icons on the right side are adopted from the noun project (www.thenounproject.com)

Conclusion

The design intervention story indicated that designers have been focusing more on product design, with the result that on-site observations have turned into straightforward inspiration sources instead of realizing craftsmen's needs and wishes. The outcome of the cooperation process between designers and craftsmen was merely modern innovative designs, whereas the expectation of craftsmen was also to improve their skills and productivity and to increase their income. The cooperation between DAR and the academic design school illustrates that designers have been focusing only on the synthesis phase, as if there could be a solution for the problem in the form of products without taking into account other socio-economic aspects, or taking time to analyze the real-life setting of those products. Today this is considered an emphatically traditional approach to design thinking. In this situation, design intervention is urgently needed, and much appreciated from the DAR organization's perspective, not just on the activities level but on a strategic level, too.

Accordingly, I have applied the 'operational framework' that was developed in the preceding chapter with the intention of visualizing the design thinking process needed for tackling poverty in Al-Darb Al-Ahmar, and outlining what kind of solutions might be expected.

Starting with the analytic phase, data was collected from expert interviews and analysis of different Project Progress Reports, and data processing was then undertaken, using Vester's Sensitivity Model. At this point, it is important to note that I am not claiming to choose the proper set of variables; rather I choose a set of variables that describes the problem from my perspective as an Egyptian designer (subjective reality), enabling me to analyze different related materials. The model is an optimal tool for approaching such complex problems, which in turn prepares the way for sustainable interventions.

In the projection phase, new data was collected about civil society and family development in Egypt. This information was analyzed and interpreted by applying Schwartz's scenario technique. After establishing the core vision of each scenario in "end-state" descriptions, it was not necessary to develop the scenarios further. The strategic insight is clear and enables the construction of a sustainable design strategy.

Applying strategic design thinking in the synthesis phase led to a participatory approach focusing on people both as consumers and as producers. The "Break their burden" scenario was chosen as a concrete desirable future; reference was then made back to the present, in order to determine the incremental improvements required by the actual situation. For this purpose, relevant information about user needs and market forces was collected and a problem system-map designed in order to frame the problem. Finally, the outcome of this phase was a social business design model followed by a user scenario to illustrate the implementation strategy.

Chapter 7: Sustainable design strategy to tackle poverty in Egypt

This chapter discusses different dimensions of expected interventions, roles, and skills that designers should adapt in order to tackle poverty in Egypt. It provides answers to research questions, which in turn lead to a choice of platform – in this case a pragmatic mixed methods approach – from which to address the overriding research problem. A case study was selected as a strategy of inquiry in order to concretize the upgraded design thinking needed with respect to poverty in Egypt.

The present chapter discusses the findings of the case study in the light of the preceding analysis. It is divided into the following sections:

- Section 7.1 outlines the findings obtained in the thesis by answering the research questions developed at the end of Chapter 3. Each question raises a specific issue that will be answered and supported by elaborating relevant results. The answer will then be referred back to the literature and to the work of others.
- Section 7.2 presents a model of design intervention to tackle poverty in Egypt that allocates different design activities to positions within a national strategy, as well as offering a comprehensive vision to connect design efforts with sustainable development. This model is based on literature covered in the second and third chapters.
- Section 7.3 discusses three significant contributions made through the present thesis.
- Section 7.4 reflects on number of difficulties and challenges that have appeared during this research and how they have been overcome.
- Section 7.5 offers recommendations with respect to three areas: design education, design practice, and design policy.
- Section 7.6 provides recommendations for future studies by reporting different problems that could be taken as raw material for choosing a specific issue and developing further case studies for design intervention.
- Section 7.7 explains the wider implication of my thesis for social change in Egypt.

7.1 Research Findings

I have argued that design can play a powerful role in contributing to ongoing efforts of many institutions and organizations in Egypt that are trying to tackle 'poverty' in order to achieve sustainable development. The meta-hypothesis is that, by applying system thinking, scenario building and strategic planning from a design perspective, we can gain a better understanding of poverty as a complex problem and develop more flexible strategies for future solutions. In order to test the research hypothesis, this thesis has been engaged with exploring answers to questions such as:

What kind of methods and tools do designers need to develop their skills for coping with real-world problems? This question is an inquiry into new skills that designers need for processing data and understanding the problem properly.

Real-world problems are not, as such, given problems: they depend on the individual's ability to perceive and frame an issue. The first prerequisite is awareness of the complexity involved; this requires the gathering and processing of a large amount of data. The second step is about learning new methods and techniques related to analyzing the data and framing the problem in a manageable way. Designers must be open to other disciplines and adopt new concepts, methods and tools on a pragmatic basis of effectiveness in addressing the problem at hand. Projection techniques are also required to zoom out and to take the social, economic and other aspects of the problem into

account. This step is essential for developing a sustainable solution and avoiding the trap of solving one problem by creating another. Finally, synthesizing techniques are important for constructing an appropriate, functional and sustainable solution for all stakeholders.

In the current study, the operational framework is a visual answer to this question. It has been developed for processing the empirical data. Several methods from different backgrounds have been collected and integrated in this comprehensive framework. Constructing the operational framework has required three sequential phases: analysis > projection > synthesis. Each phase imposes different questions to be answered in the next phase. The first phase (analysis) aims at representing the actual situation with respect to its dynamic character using Vester's sensitivity model. The second phase (projection) focuses on constructing 'context scenarios' following Schwartz's approach. The third phase (synthesis) presents the innovative design solution.

Many terms mentioned in the literature to express the required skills for approaching complex problems have been adopted at each relevant point. For instance, Vester's (2007) 'pattern recognition' has been used to render such problems 'manageable without destroying their systemic character' (see Jonas 2003). Another example was 'filtering the important information to represent the problem in a transparent way' (see Simon 1996), which has been adopted in this thesis in the form of the problem system-map. Identifying unmet wants and needs in 'a user-storyboard' has facilitated the transformation of these needs into a business model (see Osterwalder et al. 2010).

In accordance with the present results, previous design studies have demonstrated that applying a scenario approach as a projection technique is essential for developing sustainable solutions (e.g. Manzini and Jégou 2000, Manzini 2002, Jonas 2001, Fry 2009). Scenarios are appropriate methods for 'reperceiving' and 'rehearsing' the future (Schwartz 1991) in order to scan the environment for signs of change (Van der Heijden 2007). To avoid misunderstanding or misinterpretation, different scenarios have been elaborated in this research (see Scenario building).

The second question asked in this thesis is: **How can people's needs be translated into relevant products, services and systems in an affordable way?** This question addresses two issues: the designer's ability to create relevant solutions for people's needs in the form of products, services and/or systems, and the challenge of making this solution affordable. Answering this question engages with three steps:

- The first is about being aware of people's needs and recognizing their wishes. In this regard, reading different documents and sources that focus on people's problems will enable designers to grasp the overall picture. For instance, academic social researches, national reports and media investigations are recommendable as a starting point.
- The second step is about including people (target group) in a participatory approach to give them the chance to express their needs, to articulate the roots of the problem, the wider picture. That will help designers see what kind of products/services/systems should be designed to satisfy those needs. In this regard, designers should play different roles: that of the observer, teacher, moderator, as well as that of the pure designer.
- The third step is planning a solution and making this solution affordable, because price is always a challenging issue. Therefore, identifying a niche market for these products within the emerging local marketplace could be an effective starting point to overcome this challenge as well as seeking partnerships opportunities with interested stakeholders and institutions.

These three suggested components are significant for creating a sustainable solution. If one of the steps is missing, the proposed solution will not be sustainable; it will sooner or later cause another problem.

The results of the case study have indicated that the target groups (local artisans and young couples) are clearly identified in the synthesis phase, after determining 'local craft development' as an intervention point in the projection phase. A five-step problem-solving process was then developed as follows:

- Identifying unmet wants and needs in a 'visual user-storyboard', where the relevant information had been gathered about people's needs from different media sources and visualized in two user-storyboards (see consumer and producer-storyboard). Interviewed by media reporters, not by the researcher, the target groups are indirectly involved in this research. Hence this can be called an indirect participatory approach.
- Collecting relevant information on market forces.
- Designing the problem system-map with respect to different factors: framing the problem.
- Transforming the information into a 'social business design model' in which both target groups – producers as well as consumers ––have offers to satisfy their needs and wishes in an affordable way. Seeking different partnerships will extend limited resources and activities and make it possible to offer an affordable value proposition to target groups by sharing infrastructure and thus reducing costs. Each partner offers different resources or performs different activities, as explained above.
- Creating user scenarios to illustrate the implementation of the strategy.

These findings are consistent with Margoline's (2002) proposals for a design intervention model following that used by social workers. Margoline and his colleague developed a six-step intervention model "that includes: engagement, assessment, planning, implementation, evaluation, and termination" (p. 26). It is important to observe that the evaluation and termination phases are not included in this study, because evaluating the proposed solutions would have required implementation in the real world. According to Rittel and Webber (1984), "There is no immediate and no ultimate test of a solution to a wicked problem. […] Every solution to a wicked problem is a 'one-shot operation'; because there is no opportunity to learn by trial-and-error, every attempt counts significantly" (p. 139).

In fact, termination is not even intended in such a solution; the intention is to spread the system through different applications and levels. Simon's (1996) concept of "designing an evolving system", explained earlier in this research, remains a powerful perspective for generating starting points for new design processes because "each step of implementation created a new situation; and the new situation provided a starting point for fresh design activity" (p. 163). Moreover, participatory and collaborative approaches are well known in design literature (e.g. Jones 1992, 1991; Papanek 1984; Gomez 1977; Manzini 2002, Meroni 2007; Manzini et al. 2008).

The third question asked in the thesis is: **How can local craftsmen's skills and productivity be improved to increase their income?** This question is an inquiry into the designer's role in improving the quality of craftsmen's lives.

Designer's critical engagement and analysis of the production process is needed for the empowerment of local producers, starting from developing their skills and tools, choosing good

materials, providing them with appropriate modern designs instead of manufacturing traditional designs, giving them the opportunity to market their products. All this will support them and increase their productivity; the quality of their products will rise and their income will increase. However, the challenge remains of motivating them to engage actively in this process.

One of the results of this thesis is that through the social business design model craftsmen have been provided with three different offers that aim to increase their income:

- Free training workshops in order to improve their skills.
- Free modern furniture designs in order to help them produce what people really need not just to produce their traditional pieces which people no longer need nowadays.
- Product marketing by connecting consumer needs with craft products, giving craftsmen the opportunity to sell their products to young couples.

This result matches those observed in an earlier study by Thomas (2006) that demonstrates the needs of craftspeople faced with production and quality problems:

> Poor producer groups often do not have design capabilities in the conventional sense, and little or no knowledge of the market demands of the developed world. Producers, especially if female, usually have had little formal schooling and may be illiterate. This raises problems about communicating design and production requirements, and quality control issues. (p. 55)

Handmade in India 2005 is an outstanding example of craft documentation in India that demonstrates the novel output when designers are involved in the development process. According to Ranjan et al.,

> New categories have emerged that respond to trade and professional needs of the craftsmen and now designers have joined hands to create new objects for new markets that provide economic value to the community of makers and satisfaction to a whole new community of users, some in distant lands. (p. 21)

This illustrates the cooperation of designers with handcrafts people and many other stakeholders by listing unpublished craft documentation of the National Institute of Design (NID):

> Craft Documentation Studies are undertaken by faculty and students of design at NID as part of the education curriculum and research activities. Done in the field, these have given designers an invaluable experience and a genuine appreciation for the crafts of India, and the traditional wisdom of the craftsperson. (ibid, p. 551)

The fourth thesis question asked: **How can these products be efficiently connected with markets in order to avoid donor and NGO support and lead to a sustainable economic situation?** This question is concerned with finding an opportunity for marketing products to achieve sustainable economic production.

Usually, local production is supported by local or international NGOs that help in product marketing by launching projects. However, these projects always run only for a limited time, which means there is limited, not sustained support. In this regard, designers must support local producers to avoid NGO financial support and take responsibility for marketing their own products, which will make the economic cycle sustainable.

Therefore, this thesis calls for a 'social business design model' as a vehicle of desirable social change, where *ideas* and *actions to realize those ideas* are not separated. This model illustrates the potential of integrating business concepts and skills in design thinking to widen the scope of design and its activities. The significant difference between this model and the usual business model is that satisfying human needs in the form of products, services and/or systems is the target; gaining money serves only (in the background) as a survival mechanism to avoid the need to rely on donations.

This model goes beyond the duality of market model vs. social model proposed by Margolin et al. (2002). They claimed that these models are "two poles of a continuum" rather than "binary opposites", where the difference lies in priorities: serving commercial needs versus serving social needs. The distinction had evolved only on account of theoretical efforts in favor of the market model. However, the findings of the present study do not support this duality. Instead, this research calls for integration of market mechanisms into the kind of business that serves social needs in the first place.

On the other hand, the 'Social Business Design Model' corroborates the ideas of Yunus et al. (2010), who suggested that social business could be seen as the key to sustainable change. They defined the social business model as "a self-sustaining company that sells goods or services and repays its owners' investments, but whose primary purpose is to serve society and improve the lot of the poor" (p. 309).

The final question in this thesis has sought to determine **the role of the designer in supporting national policy toward sustainable development** in Egypt and other developing countries**.** Addressing this question aims at breaking down the partitions that limit the design role, and motivating designers in developing countries to participate effectively in national policymaking. It explores designers' ability to challenge traditional design obstacles: political passiveness, lack of business skills and reluctance to assume social responsibility in local design discourse.

Design as a partner in the development process is based on action on three levels: micro, meso, and macro. As shown in Table 7-1, the micro level refers to the level of design *activities*; the meso level refers to the level of design *strategy* oriented toward affordable design solutions; while the macro level refers to the level of design *policy*. The objectives of each level are as follows:

→ The micro level: Design activity must be reoriented toward the specific social framework that serves the needs of local people and participates effectively in local society. This orientation aims at preparing people for the desired future and should be established in local design discourse through launching cooperative projects – after preparing designers for such cooperation – between academia and civil society. This cooperation will give designers the chance to be actively involved in solving real-world problems and will encourage them to develop tangible solutions.

→The meso level: Design strategy to launch a 'social business design model' that aims at ensuring the required transformation through spreading it through local design practices. This should be encouraged and supported by the government by giving privileges (legislative privileges and tax concessions) for business that serves people's needs in an affordable way.

→The macro level: Design policy to develop a national design agenda for sustainable development that aims at articulating a comprehensive vision, as well as spreading design awareness and capability to address real-world problems and achieve better quality of life.

Table 7- 1: Three levels of design intervention to sustain development efforts

Micro level	Meso level	Macro level
Design activity for preparing people for the future	Design strategy for ensuring transformation	Design policy for articulating the vision
Social framework for design practices (product/service/system)	Social business design model (collaborative design process)	National design agenda for sustainable development (vision)

In this regard, the findings of this thesis confirm the association between different design activities and sustainable development efforts. This is in line with past studies by Manzini (2002) – "sustainable solution[s]" – Meroni (2007) – "creative communities" – and Manzini and Jégou (2008) – "diffused social enterprises". Their efforts can be cited as good examples illustrating the cooperation between academic design and local stakeholders. This cooperation can generate innovative solutions and business ideas that directly serve sustainable development, for example:

> 'Car-sharing on demand', 'micro-leasing system for tools between neighbours', 'shared sewing studio', 'home restaurant', 'delivery service between users who exchange goods' […] This sample of solutions looks at how various daily procedures could be performed by structured services that rely on a greater collaboration of individuals amongst themselves. […]This book is therefore an essay about a new design field, which lies at the crossroads of social innovation and design for sustainable development. […] A new, different and fascinating role for the designer emerges […] A role that does not substitute the traditional one, but that works alongside it opening up new fields of activity, not previously thought of. Moving in this new direction, designers have to be able to collaborate with a variety of interlocutors, putting themselves forward as experts, i.e. as design specialists, but interacting with them in a peer-to-peer mode. More in general, they have to consider themselves part of a complex mesh of new designing networks: the emerging, interwoven networks of individual people, enterprises, non-profit organizations, local and global institutions that are using their creativity and entrepreneurship to take some concrete steps toward sustainability. (Manzini et al. 2008, p. 25)

Regarding design policy, the Ahmedabad Declaration 1979 is a good example from India (see Papanek 1986; Bonsiepe 1991; Margolin 2007). It calls for developing a national design agenda in developing countries that links design directly to national priorities (National Institute of Design 1979, p. 10).

Bonsiepe's (1991) five-stage model of design development, as explained earlier in this thesis, also notes the importance of design policy for developing countries – in addition to the other four design domains. Design policy, for Bonsiepe, is about "integrating design within government policy through industrial development programs" (ibid).

7.2 A Model of Design Intervention to Tackle Poverty

The problem that has been raised in this thesis is that, despite the publication of the first Egypt Human Development Report (EHDR) in 1995, the role of design as a partner in the development process to achieve sustainable development has not yet been recognized. It has been shown that national strategy in Egypt focuses on human development, but a design mission that supports sustainable development is missing. It has also been observed that design education in Egypt follows the western image of 'design for luxury' rather than seeing design as a strategic tool. In order to sustain a design intervention strategy, the design perspective in Egypt must, therefore, be reconsidered and extended to approach social problems in a way that encompasses political influence on a national scale. It has been argued throughout this thesis that national strategy and human development are already linked through business solutions, but that design activity and design strategy are not yet part of this linkage. I have argued that this connection must be established through design intervention (after upgrading local design perspectives) in order to advance design thinking and design activity toward sustainable development (see fig. 7-1 below).

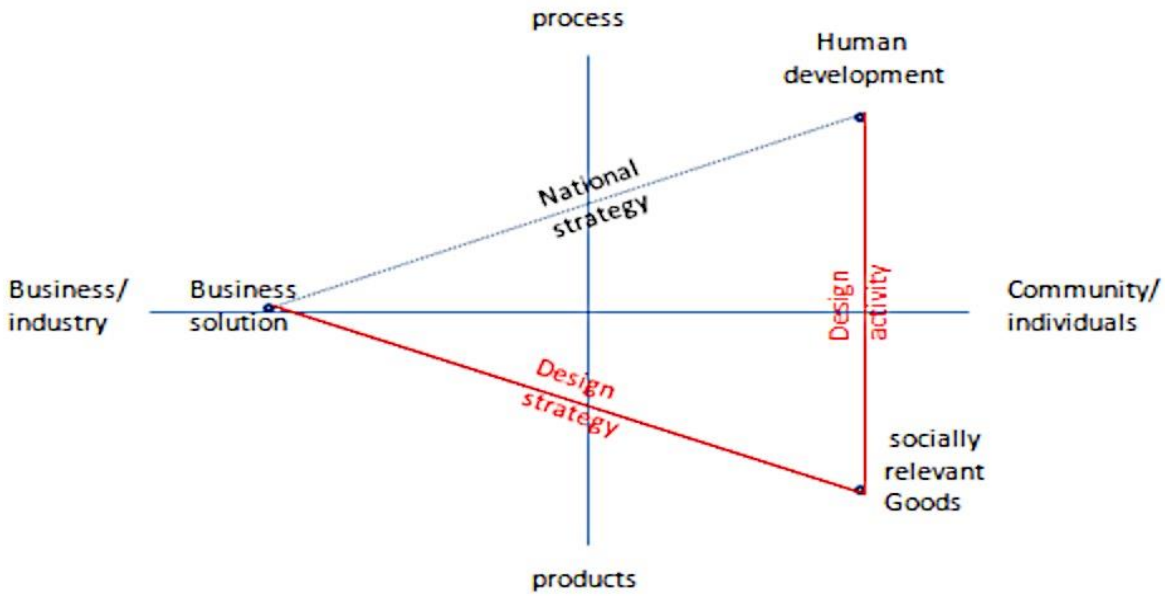


Figure 7-1: Connecting design activity and design strategy to the national strategy

Regarding the alleviation of poverty, the focus must be on people's needs and skills, then at a certain point it must be associated with the national strategy for promoting development in specific subsectors. Here design is multitasked and has a pivotal role to play, starting with being active in translating people's needs into relevant products, services and systems, then improving craft skills and productivity to increase income, and finally connecting these products efficiently with markets in order to avoid donor and NGO support. This will lead to a sustainable economic situation.

In the context of craft development in Egypt, design intervention, it has been argued, must focus initially on people, both as consumers and as producers, in a participatory approach that aims at connecting available opportunities (social needs) with craft strengths in a social business design

model. Academic staff, students and professionals must first be prepared with their socially and environmentally responsibility perspectives, skills and activities, and craft skills must then be developed. Start-up niche markets must be established through approaching governmental institutions and not-for-profit organizations that fund social welfare projects. This partnership will optimize the process and reduce costs, which in turn will contribute to sustainable development in Egypt (see Figure 7-2 below).

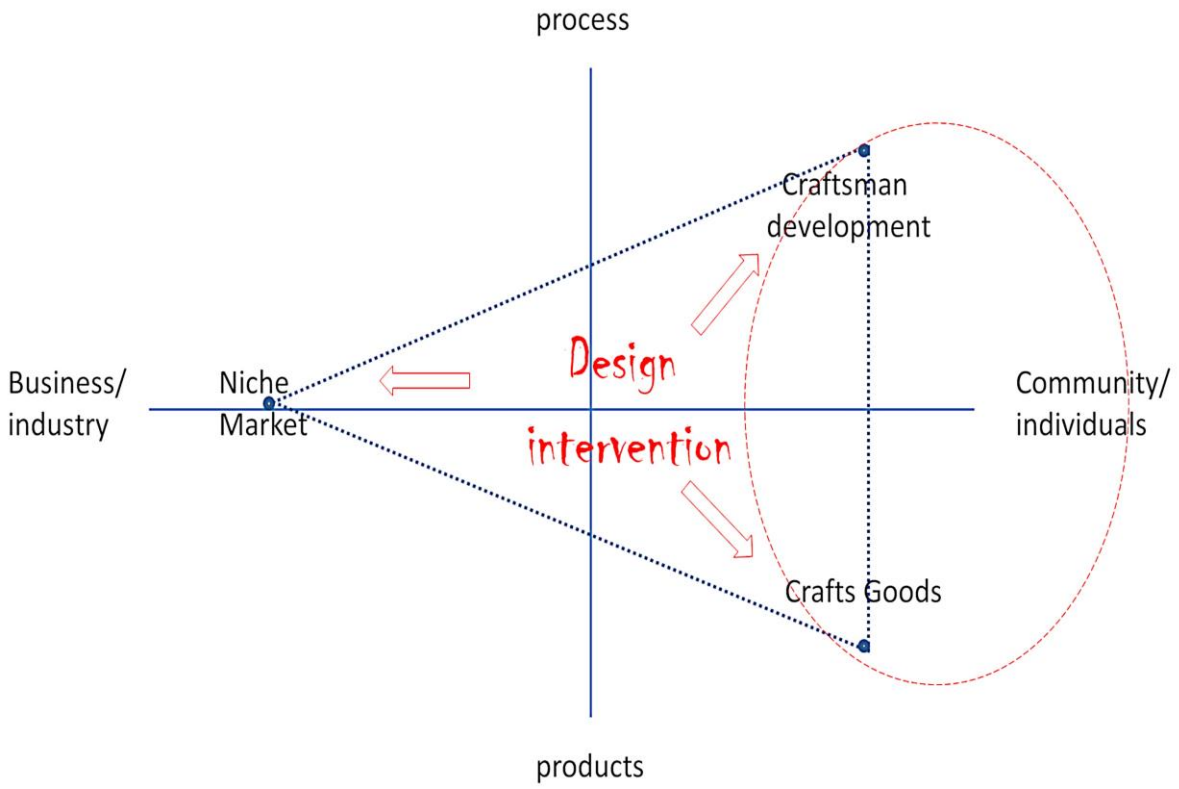


Fig. 7-2: A model of design intervention to tackle poverty in Egypt

Diagram 7-1 visualizes a comprehensive concept of design capability as realizing the abstract values of development in the form of tangible solutions. Here the operational level focuses on people as both consumers and producers, aiming to generate income to empower the producer, and to save money for the consumer by offering affordable products. The strategic level seeks to reorient design activities toward a specific strategy that will contribute effectively to tackling poverty in Egypt.

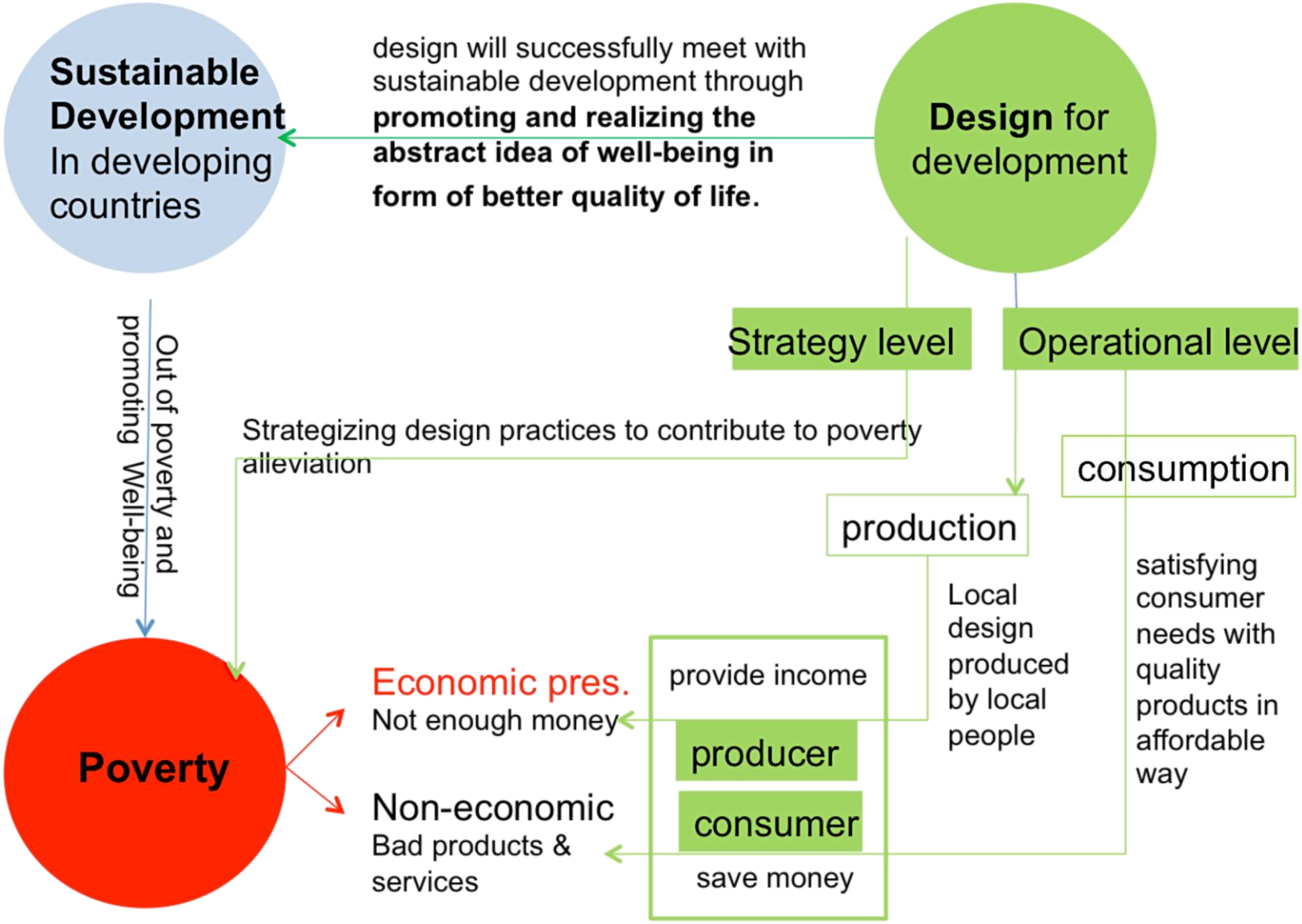


Diagram 7- 1: A comprehensive vision of design for development

7.3 Contribution to Knowledge

→ "Using already known material but with a new interpretation" (Phillips and Pugh 2005, p. 62)

The significant contribution made through this thesis lies primarily in the development of the theoretical framework (know-*what*) that connects design with sustainable development. The analysis and interpretation of historical development efforts in both theory and practice has led to new insights into different design aspects and activities elaborated in design discourse. Relational analysis and historical mapping of different design perspectives have been developed, connecting design perspectives with real-life aspects. This, in turn, has given rise to some novel insights into specific design positions that challenge traditional discourse and engage with wider development discourse. 'Design for sustainable development' is a vision that aims at building bridges between different design perspectives and activities and development measures to tackle poverty in Egypt. While there is an emerging effort to involve design in some development projects in Egypt, many designers' contributions have been limited to the creation of modern products based on their individual expertise – a perspective that is overly focused on the product itself. Others have sought to develop design research based on the traditional understanding of the field of design. However, despite these efforts, there is still a recognized need for a comprehensive concept of 'design in development discourse', as has been undertaken in this research.

→ "Making a synthesis that has not been done before" (ibid.)

Another contribution has been made in terms of the development of an operational framework for processing the data gathered in the empirical study. While there are many design approaches for conceptualizing the design process and applying new design research methods, the contribution of this thesis lies in mapping diverse methodological components from different theoretical backgrounds, extending some of them, and finally synthesizing them in order to develop know-how for tackling real-world problems. This operational framework aims at empowering designers to change their traditional way of thinking and acting, to grasp the complex world, to accomplish their new role, and to intervene in a sustainable way through the assimilation and application of new skills and methods.

→ "Carrying out empirical work that has not been done before" (ibid.)

The original empirical study conducted in the course of this research represents a further significant contribution to knowledge. Conducting a case study has two aspects: on the one hand, it tests the theoretical vision and instrumental methods developed at a theoretical level. On the other hand, it visualizes a tangible contribution to tackling poverty. The outcome of the empirical work indicates that designers have an active role to play in solving real-world problems and producing solutions that focus on local people's needs as craftsmen and consumers.

To sum up, this research confirms the role of design as a partner in the development process by evolving a comprehensive vision of design that moves from abstract values to tangible solutions and back; because this research offers a methodological instrument to empower designers in a new role.

Finally, choosing a case study to test the application of both the vision and the methodological instrument under real conditions avoids the trap of parochial vision and overcomes the gap between theory and practice.

7.4 Limitations of this Research

There were a number of difficulties and challenges to be faced during this thesis, starting with working across different areas ranging from development, business, anthropology, future studies, social studies, complex systems and political science. The ultimate aim has been to understand a research problem and produce a tangible solution. By conducting transdisciplinary research as a new mode of knowledge production for addressing complex real-world problems, the knowledge produced in this thesis overcomes the traditional boundaries between disciplines, as well as the gap between theoretical assumptions and practical applications. In order to avoid misunderstanding or misinterpretation, a lot of time has been spent in each discipline in order to understand its premises and to consult experts where necessary.

Developing the operational framework was another difficulty, where relating methods from different theoretical backgrounds was a challenging task. However, once established, the operational framework provides appropriate methods for answering questions raised in the case study.

Moreover, choosing a sequential explorative mixed method for the research inquiry has required gathering new data three times and then analyzing and interpreting each data set. It entailed doing three research projects in one. Not to mention, the time needed for understanding Vester's Sensitivity Model and then processing the data with this program. But using this software facilitated engagement with the analysis and interpretation of the underlying problem.

Likewise, another difficulty lies in understanding the inherent complexity of real-world problems in the case study and then transferring the theoretical and operational aspects into a tangible solution. In this respect, using appropriate methods in developing the operational model was significant for engaging with the analysis, projection and synthesis of the structures leading toward the solution.

The non-inclusion of the target group directly in this research was a simple problem of space limitation. For example, identifying the target group came in the third phase (synthesis) when I had already completed two field visits to Egypt, and could not conduct further interviews. In order to overcome this problem, related data and information was gathered from news reports and YouTube videos with these target groups and it was possible to include their opinion indirectly in this way. Afterwards, visual storyboards that expressed their wants and needs in a tangible way were developed.

Finally, during this thesis IKEA opened a shop in Cairo, which somehow affected market research in the synthesis phase in 2010. However, when visiting this shop in Summer 2014 it became clear that the target group of this thesis was not the IKEA target group, because the prices there were unaffordable. IKEA in Egypt offers its products with the same prices as in Germany and instead of producing their furniture locally in Egypt, it manufactures it in China, Vietnam or India. So this means that IKEA operates as if Egypt was not a developing country; it applies the same business model as in Europe without adequate adaptation to Egyptian conditions. The target group of IKEA in Egypt is the

rich people who want modern design and at the same time can save money in comparison to buying classical American furniture, where quality is still an advantage.

7.5 Recommendations for Action

In the light of this study, I recommend three specific measures:

The first recommendation is for **design education to upgrade local design discourse toward dealing with real-world problems** instead of following the footprint of *design for luxury* or *design for fun*. The findings of this research urge more awareness of design implications toward choosing how to serve local people's needs and what kind of design issues for local society should be raised in our educational programs. Both undergraduate and post-graduate design students must be made aware of the different implications of design practice in an emergent economy. Stressing the ethical implications of design means addressing the challenge of low income with affordable products for local consumers. Stressing the social implications of design calls for designing effective, socially relevant products and services to serve local people. Stressing the political implications of design involves active participation in shaping "the background of the daily life of a culture" (see Bonsiepe 1991).

Papanek's notions of responsible design as a problem-solving activity, for example, is considered a good beginning. Papanek (1984) lists six possible directions for responsible design contributions to local society: designing basic tools and implements, design of teaching and training devices for the retarded, the handicapped, and the disabled, design for medicine, surgery, dentistry and hospital, design for experimental research (laboratories), system design for sustaining human life under marginal conditions, and design for breakthrough concepts (p. 234–247).

However, the knowledge and skills required for dealing with real-world problems is different from what is traditionally conceived as design knowledge in local education programs. These have long been focused on design as a form-giving-activity. Hence orienting design activities, skills and practices toward a social framework needs appropriate tools and additional skills and methods that designers must learn from scratch. Once they start thinking and acting in order to grasp the complex world, this will support them in fulfilling their new role in a sustainable way.

System thinking, scenario building and strategic planning and acting are important methodological components visualized in this research for processing information through the design process (see the operational framework). But these methods must first be learned. Moreover, preparing designers to serve social needs calls for interdisciplinary programs for social designers that should include social science, marketing, management, future studies, and design.

The second recommendation is for **design practice to expand the business-as-usual model that just focuses on rich people as a target group toward developing a social business design model**. The social business model is an emerging concept developed by Muhammed Yunus through his ongoing experience of Grameen Group that seeks to alleviate poverty in Bangladesh (see Chapter 5 for the theoretical background).

Building on this concept, this research suggests developing a 'social business design model' for targeting social problems and improving the life of local people through running a business that does

not primarily seek maximization of profit. Developing this concept further has been discussed and visualized. It builds on three social benefits (SB): alleviating poverty by supporting local artisans to generate income, supporting young couples to save money in furnishing their homes, and reducing unemployment among local artisans. It may well also reduce spinsterhood/bachelorhood among young people by offering them quality products and services in an affordable way. Offering affordable products and services is the significant outcome. This will be established through two mechanisms: first by cooperating with different stakeholders as sponsors to support developing appropriate and effective solutions; secondly through reinvestment of surpluses in favor of the target group instead of the owner's profit.

The third recommendation, regarding **design policy,** is a call for a **National Design Agenda for Egypt** that targets sustainable development efforts. It should be concerned with such questions as: What kind of design do we need in Egypt to participate effectively in serving our country as well as to shape the background of the daily life of Egyptians.

This thesis can be regarded as a vision for developing this agenda because it addresses the problem of ignoring the role of design capability in development discourse in Egypt. 'Design 4 Sustainable Development' (know-*what*) and the operational framework (know-*how*) have been developed to illustrate what kind of design we need in dealing with complex problems. Both are interwoven in the case study to offer a tangible solution for tackling poverty from a design perspective.

Furthermore, this thesis cites a considerable body of literature recommended as advocating the type of responsible social design we need in Egypt.

7.6 Recommendations for further study

This thesis has opened the door for further research based on case study inquiries to solve real-world problems. Adopting the theoretical and operational framework described and applied in this thesis will support designers' interventions by launching transdisciplinary design research. It will help develop relational understanding of the problem at issue under real circumstances and foster exploitation of opportunities for productive solutions.

In this regard, the raw materials for choosing a specific issue and developing a case study for design intervention could be derived from newspapers and project reports as good sources of information on such problems. For example, a report in *El-Watan News*, an online newspaper, offers a promising case for design intervention of the sort that I have actuated in my research. This news report reveals the plight of unemployed skilled craftspeople who, given the high cost of living, have had no choice but to abandon their workshops and search for another way of earning money to feed their families.

The article, titled "Six villages are dropped from universality to poverty because of ignorance", provides a series of reports about the problems faced by many handcraft villages in Egypt that were once productive and whose products were well known and even taken to European cities by tourists, thanks to their individual skills and good reputation. The report gave the following examples: "Cobwebs threatens carpet castle in Aboshaarah after decorating the Elysee Museum in France with its handmade carpets"; "Menoufia: Kafr elmanssy's handcrafts abandons arabesque after exporting it to Canada and Holland"; "Qena: Ceramic industry trembles in Jrajos after inviting the King of Sweden to visit this village in Upper Egypt because of the precision and excellence of its products"; "Al-

sharkia: The history of papyrus industry disappears from Qramous". Unfortunately these villages are now suffering: many of craft workshops have closed and the craftspeople are unemployed or seeking other jobs (Adel et al. 2014, in Arabic).

I will just focus here for a moment on the last example ("Al-sharkia: The history of papyrus industry disappears from Qramous"), to visualize a problem that could be an opportunity for design intervention. Qramous is one of the villages in Al-sharkia in Egypt that was well known of cultivating and manufacturing papyrus. The papyrus industry was started 30 years ago in this village thanks to Anas Mustafa, a fine artist who had the idea of farming papyrus seedlings and manufacturing papyrus in Qramous as a major source of livelihood for the village. It was a successful industry and almost everyone in the village was involved either in farming or in manufacturing papyrus. The idea of establishing an association between farmers and merchants was one of Mustafa's brilliant ideas to fight monopoly but, unfortunately, after his death nobody was interested in solving handcraft problems or promoting this industry, or even continuing its existence (Adel et al 2014, in Arabic).

7.7 Implications for Social Change

A significant implication for social change resulting from this thesis is a call for redirecting the design compass toward the achievement of the values of the Egyptian Revolution. As the findings of this thesis indicate, recent design thinking can support designers with new mechanisms to communicate with their social, cultural and political environment in a positive and effective way. Especially after the revolutions of January 25, 2011 and June 30, 2013, designers are not only much appreciated; indeed, they are called upon to instigate a parallel revolution in traditional design discourse in Egypt, to take design out of its traditionally passive role toward a new space that reflects the changes that have happened in the last few years.

Upgrading and promoting the perspective, mechanisms and tools of design will in turn empower designers and facilitate their ability to read reality with its complex problems and realize their own role in solving such problems in a creative and holistic way. In this sense, design is a key to social, as well as individual, change and development.

Accordingly, as the Egyptian Revolution seeks better ways of living, designers, in turn, must take responsibility for orienting their activities to deliver solutions that support the revolution's values, as well as focusing on the needs of excluded groups (poor people, handicapped people, children with special needs etc.). If designers, as good citizens, want to participate effectively in sustaining the values of the Egyptian Revolution, with its four clear demands for "Bread, Freedom, Human Dignity and Social Justice", they must first become aware of their new role in realizing these demands. Then they must commit themselves to the process of change through their work, ideas, and skills (after updating their perspectives and developing appropriate skills). This will sustain the Egyptian Revolution's goals and reinvest the Egyptian citizen, who is and must be the focus of the design process, with human dignity.

Conclusion: Seeing the Future through Aesthetics

Summary of the Thesis

Throughout this thesis 'aesthetics' has referred to the aesthetics of change and of anticipation. These are two sides of the same coin and are required in the complex social context of a developing country as a dynamic process of thinking and reflecting, which has its origins in a new mode of perception. This mode aims at changing the status quo for the better. It poses potential for individual, social and cultural development.

The title of the thesis, "Seeing the Future through Aesthetics", suggests a new approach that designers should adopt to see the desirable future through a new lens. This recognizes the potential to employ different methods and tools that will enable them to upgrade their skills. Most of these methods are derived from concepts of second-order cybernetics, selected to support sustainable design interventions.

This thesis has aimed at exploring the kind of responsibility designers must adopt in the local design discourse in order to be able to approach and tackle real-world problems (know-*what*). It has also involved exploring additional skills and methods that designers should learn to change their way of thinking and acting (know-*how*). The thesis has argued that these methods empower designers to fulfill their suggested new role.

The problem raised in this research was that even following the publication of the first *Egypt Human Development Report* (EHDR) in 1995, the role of design as a partner in the process leading to the achievement of sustainable development remained unrecognized. However, more recent EHDRs have recognized particular academic disciplines, segments, or sectors as partners in the development process to achieve sustainable development: EHDR 2007 focused on "Business Solution for Human Development"; EHDR 2008 spotlighted the role of civil society in "Egypt's Social Contract"; and EHDR 2010 focused on "Youth in Egypt" as a resource for change and for building the future.

In order to achieve the research aims and to resolve the research problem, the process of designing this research was not linear. It was an evolving, spiral, heuristic process to satisfy the curiosity of the researcher in finding answers to the problems that emerged during the research. A pragmatic worldview with transformative character was adopted to explore answers to research questions and resolve research problems as they occurred. A pragmatic worldview, according to Creswell (2009) and Creswell et al. (2011), goes beyond the duality of reality and idea and follows a pragmatic motto (what works at the time). This means that 'subjective reality' is generally adopted in producing knowledge for this thesis, and 'objective reality' is adopted only by applying Vester's Sensitivity Model, where the qualitative data has been converted into a numerical code to be analyzed and interpreted mathematically (see Research design)

A sequential exploratory research design was chosen, with three phases: analysis, projection, and synthesis. Providing a theoretical framework in the third chapter, known in mixed methods as *explicit theorizing*, guided the study toward desirable change, as well as serving to orient research questions toward empowering designers (see Research design). Due to the exploratory character of the research questions, answering these required a mixed methods approach using Vester's Sensitivity Model in the first phase (ANALYSIS), with both qualitative and quantitative methods applied to the analysis and interpretation of data. A dynamic mixed methods design was developed with regard to

prioritizing the qualitative approach, which means that the quantitative approach was restricted to the analytic phase (Creswell 2009).

Design, sustainable development and poverty are three different topics addressed and discussed in Chapters 2 and 3 in order to build bridges between design and sustainable development. Chapter 2 undertook a rigorous review of the literature on development, covering notions of development ranging from strengthening industrialization, through improving quality of life, to combating poverty through merging social and economic aspects, and finally focusing on human development. Contemporary post-1990s development approaches referred to here covered sustainable development (SD) as a strategy to give development a last chance to survive. Three modes of sustainable development were described: the first mode was about linking development issues with environmental considerations. The second was about expanding the limited scope of environmental issues in order to integrate the economic and social dimensions. The third was about spreading the culture of sustainability across different stakeholders. As a result, sustainable development has become a driving concept to promote a global agenda for change and to support the development of further strategies.

Different approaches to sustainable development have been discussed in this thesis. They are characterized by clear dualisms: growth vs. distribution, agriculture vs. industrial development, capital vs. labor-intensive technology, and modern vs. traditional. Each term has been highlighted by considering its own debates (pros and cons) in the matter of reducing poverty and speeding up development. Reasons have been given to believe that both sides of each dualism can be important and beneficial at specific points and in specific situations. Developing countries should therefore adopt a goal-oriented approach when choosing between them.

Approaching sustainable development in a developed country is different from approaching it in a developing country. This thesis follows Misra's (1985) principle that

> there is nothing like a single development situation in the world. The relative importance given to a particular sector, region or group must change through time. It would, therefore, be useful to debate and understand the potentialities of each sector at each stage of development rather than to base judgment on dogmas. (p. 43)

Each nation has its own problems and strengths, its own value-systems and cultural models that can be seen as a strategic stock for change and an innovative motor for development. Sustainable development is, then, a continual search for a better life and a better situation within the cultural and social constraints that underlie and reinforce group values.

'Egypt and the Vicious Circle of Poverty' has explored the national scene in Egypt with regard to development efforts for alleviating poverty. The thesis has concluded that Egypt does not suffer from poor resources but from poor governance. This conclusion has been reasoned by pointing out the different mechanisms that rotate poverty to become a social life cycle. For example, the political and cultural recruitment of religion aims at shaping people's religious awareness in a way that is consistent with the state's policy of making the poor poorer and the rich richer, even though eliminating poverty is an inbuilt moral code of Islam. In addition to economic and political mechanisms, it has been argued that Egypt is suffering from what is known as 'the vicious cycle of

poverty' where the state has fallen into the trap of slow economic growth and slow improvement in human development with a negative feedback relation.

In the third chapter, 'Design for Sustainable Development' has been established to offer a comprehensive vision. It aims at changing into a more responsible approach the traditional way of design thinking and acting, which focuses only on form-giving activity.

This vision demonstrates a conceptual framework that moves forward from ad hoc classifications to discover the relationships between different design efforts and connect these directly with development aspects (see Diagram 3-3: 'Design 4 Sustainable Development'). In the process, design activities are filtered out on the basis of their impact toward purposeful action with regard to each development objective, as follows:

Design for Sustaining Human Development (D4SHD) will contribute to human well-being, focusing on increasing human capability and dignity in order to help individuals build their lives and realize their potential as human beings (see e.g. Buchanan 2001, Thomas 1993, Amir 2004). Collaborative design, contextual design, intangible design, integrated design and the capability approach are concepts for empowering people to participate in solving their own problems (Papanek 1984, Jones 1991/2002, Mitchell 1993, Margolin 2002, Fuad-Luke 2009, Oosterlaken 2009). These concepts were elaborated and discussed in Chapter 3 to promote design activities that focus on the extension of man's capability to remain productive. Examples were given to illustrate how design can support human well-being, and at the same time sustain human development and dignity (Buchanan 2000). Bonsiepe's (1991) desirable features of design activity were listed to illustrate his insight into "designing equipment fitting into the constraints of poverty and suitable for genuine development". Finally, the examples were visualized in a table to explain the sequences of design activity that will expand human capability and respect human dignity while serving human needs.

Design for Sustaining Community Development (D4SCD) will contribute to social well-being. Here design, it is argued, is a vital and potent source for improving living conditions and creating harmonious interaction between individuals and society. Different design activities, whether tangible as enabling structure or intangible as enabling infrastructure, can shape everyday life in a positive way on condition that they are capable of converting the tension between individual and society into harmonious interaction.

The link between design activities and social health has been discussed by many designers (Fuad-Luke 2009, Whiteley 1993, Papanek 1984), stressing that design can be considered as an interactive interface between the individual and society (e.g. Simon 1996, Jonas 2001). This connection is like a mirror that reflects the quality of both parties: if design efforts are poor and pale, they may well cause social problems and vice versa. In this regard, the designer's role is not just to act or react toward community needs but to extend activities and methods proactively to cope with anticipated challenges (e.g. Simon 1996, Margolin 2002, Fry 2009). This proactive role aims at acting as an intermediary between society and the individual in a way that reduces the tension between what society can offer and what the individual needs. Thus, in a social context, design aims at optimizing choices (Simon 1996) as well as affecting individual behavior. A number of successful examples were provided to visualize the involvement of designers in developing public sectors and services.

Design for Sustaining Industrial Development (D4SID) will contribute to economic well-being. It focuses on promoting production to increase income and generate wealth by orienting industrial-design policy toward economic well-being. This point has two major trajectories: the first is about

orienting design efforts toward strengthening the industrialization process for an export-oriented economy that will compete globally (Margolin 2007); the second is about orienting industrial design policy to promote production to serve local people's needs in the form of useful products that will at the same time strengthen the national economy (Bonsiepe 1977/1991, Papanek 1986). These trajectories are complex and sometimes opposed to each other, but they intersect at one point: promoting production and thereby strengthening the national economy.

It was concluded that the major issue is to address the starting-point critically: What kind of policy do we need for industrial design in this country at this time, for what purpose, and for whom? Goal-oriented thinking is needed to choose an appropriate design policy. If our goal is to put local people first, both as producers and consumers, then the policy of design should be twofold: to generate income and to serve real needs. Depending on the level of industrialization, the governments of each country should decide where to start. If the craft sector is promising, government should invest in this sector first, and can later (when industrial design is mature enough) switch to competing in the global economy.

On the other hand, the governments of developing countries play a major role in creating opportunities for design that will lead to economic well-being. It was argued, therefore, that preparing a friendly environment for design interventions in developing countries requires reorientation of industrialization policy toward promoting national production and industries that depend on local technology, in order to reduce foreign dependence (in Bonsiepe's words (1977), "Nationalism and pro-autonomous industrialization policy"). In developing countries design can be seen as a continuous search for autonomous and decentralizing solutions (Papanek 1986). Following the path of Japan, Korea, India and China, emerging economies must, therefore, invest in design education if they want to participate actively in economic well-being (Marshall 2008).

At the same time, the thesis recognizes that designers must learn new methods to change their way of thinking and acting in a complex development context in order to tackle poverty. After proposing a clear vision that defines the design role in development discourse (know-*what*), research questions have been proposed to explore empowering designers to accomplish their new tasks effectively through raising questions that relate to appropriate methods Key questions here are: What kind of methods and tools do designers need to develop their skills to cope with the real-world challenges they face? How can people's needs be translated into relevant products, services and systems in an affordable way? How can local crafts people's skills and productivity be improved to increase their income? How can these products be efficiently connected with markets in order to avoid donor and NGO support and lead to sustainable economic growth? What role should the designer play to support national policy in developing countries toward sustainable development?

Seeking the answers to these questions, the operational framework (know-*how*) was developed in the following chapter to serve two aspects: first to create 'theoretical sensitivity' toward the background of these new methods; and second to facilitate processing the data (empirical aspect). Five aspects from the literature were selected for particular analysis: design process and methods, defining and presenting real-world problems, complexity and system thinking, scenario building, and strategic planning. Each of these aspects comes with a proposed concept that provides new insights and details to the present thesis. Finally, an operational framework was synthesized by collecting different methods in a 12-step structural model to be implemented in the empirical study (see Table 5.7). This table was flexible and open to modification – in a process of mutual reflection of theory and practice – by the empirical data.

The selection of *Al-Darb Al-Ahmar Revitalization Project* (DAR) as a case study served to explore the problem under real circumstances. Through the 'Design intervention story' it was concluded that design intervention is urgently needed and appreciated from the DAR organization's perspective – not just on the activities level but on a strategic level too. The operational framework developed in the preceding chapter was applied with the intention of visualizing the design thinking process needed for tackling poverty in Al-Darb Al-Ahmar and to indicate the kind of solution that could be expected.

Data was collected and processed in three phases: analysis, projection and synthesis. Starting with the ANALYSIS phase, data was collected from expert Interviews and Project Progress Reports. Data processing was undertaken using Vester's Sensitivity Model. The output of this phase was the selection of 'local craft development' as the most appropriate intervention point, in addition to choosing 'civil society' and 'family development' for constructing context scenarios.

In the PROJECTION phase, new data was collected from different sources: reports, surveys and scientific papers about civil society and family development in Egypt. This information was then analyzed and interpreted by applying Schwatrz's scenario technique. Two different factors related to the social contexts were chosen in order to focus on people's real needs, and two extreme values were expressed for each of these. Then four scenario logics were established and the core vision of each scenario was expressed in an 'end-state' description.

Applying design strategic thinking, in the SYNTHESIS phase led to a focus on people, both as consumers and as producers, in a participatory approach. The 'Break their burden' scenario was chosen as a concrete desirable future, and this triggered a return to the present in order to determine required incremental improvements to the actual situation. Relevant information about user needs and market forces was collected and a problem system-map designed in order to frame the problem. The outcome of this phase was a 'social business design model' followed by a user scenario to illustrate the implementation strategy.

Chapter 7 broached related research questions, discussed the findings of the case study, and indicated how the research has fulfilled its predetermined purpose. Different dimensions of interventions, roles, and skills that the designer should adapt in order to tackle poverty in Egypt were discussed. A model of design intervention to tackle poverty in Egypt was developed, and three significant contributions were discussed. Finally, research limitations, recommendations, and implications were outlined.

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Producer (carpenter created by Dan Hetteix, US, adapted from (https://thenounproject.com/search/?q=carpenter&i=23826, accessed 2July 2015)
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Shopping Cart by Fellipe Camara, BR, adapted from (https://thenounproject.com/search/?q=marketing&i=35521, accessed 2 July 2015)
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Interviews:

A.A. (2009): see appendix II for interview's questions (in Arabic)
A.S. (2010: see appendix II for interview's questions (in Arabic)
H.I. (2010): see appendix II for interview's questions (in Arabic)
A.K. and A.E. (2010): see appendix II for interview's questions (in English)

Appendix I Variable Descriptions

1. Health care accessibility
    - It is not about providing a healthcare but improving physical and mental health among the population
    - Placing proper healthcare out of reach for most households
    - Health Centre: to raise awareness through campaigns and visiting the center
    - Diagnostic services for groups & individual, followed up by referring individual patient to local specialized clinic and hospital

2. Raising Education skills
    - Opening literacy classes for adults directly or in collaboration with NGOs
    - Empowering people with the knowledge and skills that are necessary to improve their well being
    - Setting up libraries for children and adults to provide them with educational, cultural and entertaining activities:
        1. Reduction of school dropout level
        2. Computer courses
        3. English Language courses
        4. Arabic language courses

3. Vocational training
    - Vocational training programs to enable people to raise their living standards (architectural carpentry, stone shaping and masonry work, plumbing and sanitation, metal work and lime workshop...)
    - Developing administrative skills (bookkeeping, secretarial skills, using PC programs)

4. Local craft development

    Carpentry Training Centre:
    - As a training workshop for carpenters to enhance their skills
    - As a production center of woodwork pieces and furniture for DAR project ‘s relative activities.

5. Water accessibility
    - Providing access to proper sources of water at secondary level (individual street) and at the tertiary level (individual houses)
    - In cases where drinking water and sanitation facilities are available, but insufficient in number, the focus may be on increasing accessibility

6. Sanitation improvement
    - Improving sanitation
    - In cases where drinking water and sanitation facilities are available, but insufficient in number, the focus may be on increasing accessibility

7. Solid waste removal
    - Starting up and helping to sustain community-based initiatives for garbage collection
    - Maintenance of a clean and healthy environment
    - Helping kick-start periodic cleaning campaigns with volunteers to clean roof tops where garbage has been accumulated

- Raising awareness amongst the public about problems associated with solid waste
- Showing technical innovation in treatment and removal for ex. making use of organic waste for rooftop gardening.
- Preparation of contingency plans for solid waste collection in case of strikes or other types of interruption for regular removal
- Helping to draw up plans for allocating temporary depots in neighborhood, where solid waste can be deposited during emergencies and periodically be trucked off.

8. Housing rehabilitation
    - Finding donors, through whom the local agency CDC and with assistance of AKAM, can provide grant/ loan packages to local occupants (75% grant/ 25% loan)
    - Offer the necessary technical assistance, legal & administrative support
    - Respond to most urgent needs in terms of: safety, hygiene and comfort

9. Public space development
    - Public Building:
      - Choosing public building according to its historical significance for neighborhood, accessibility & potential for socially adaptive re-use
      - Giving it a new function after the restoration
    - Public open space:
      - Better use of limited public space
      - Enhancement of the surrounding
      - Creation of additional areas
      - Development of urban parks
    - Green public spaces
      - Developing of squares, streets and Alleys

10. Employment opportunities
    - It is consequence of vocational training& income-generating activities
    - Its affiliated local companies help trainees to find work once the training has been completed
    - Offering training possibilities in life skills and personal presentation
    - Finding better Employment Opportunities
    - Scanning the market for vacancies and updating the database
    - Conducting counseling sessions
    - Improving / upgrading the skills & competencies according to labour market requirements and individual's needs
    - Matching employment opportunities with individual skills and competencies

11. Access to micro-credit
    - Providing productive loans to increase family income (including professional services, workshops & retail business, can also include education or professional training)
    - Providing loans to improve living conditions in the house
    - Providing social loans for crucial medical operations

12. Strengthening civil society

- Capacity building of local institutions and improving their competences to assist in providing quality service to community members
- They play an important role in the project context through sustaining the project activities
- They are central to all institutions that are part of the Aga khan Development Network

13. Gender development
    - Women: to enhance their overall health and social status and that of the whole community
    - Community leaders: developing a cadre of women and adolescent leaders to voluntarily participate in the implementation of different prevention and health awareness program.
    - Listening and counseling assistance: to prevent all types of violence against people regardless of their sex or age

14. Family development
    - Brides/grooms-to-be: providing males and females with the basic knowledge and skills needed for establishing healthy families
    - Working with government schools: raising the overall health awareness and utilizing the efforts of school children, parents, and supervisors of the health activities in schools
    - Better life for working children:
      Short-term:
      - Improving the overall health status of working children, their families and their working environment
      - Strengthen their skills
      - Develop them socially, economically, and physically
      Long-term:
      - Improving their families' standard of living
      - Prevent school drop out until they complete the basic education stage at least.
    - Elderly primary health care:
      - Providing the elderly in the community with basic medical, social and psychological care
      - Improving the skills of their family members to better care for
      - Dealing with the elderly
      - Supplying elderly with movement aids

15. Environmental protection
    - Improving the overall environment
    - Spreading the public and private environmental initiatives
    - Encouraging participation of the concerned parties in the various activities in order to ensure continuity and coordination among themselves
    - Raising environmental awareness among residents, specially housewives, women community leader and workshop owners
    - Working with children and schools to raise their environmental awareness

Appendix II interview's questions

A.A. (Egypt, 2009) in Arabic

- What is your definition of the problem of poverty?
- What are the limits of this problem?
- What are other factors related to this problem?
- What kind of methods are currently used to address this problem?
- What are the obstacles that stand against solving this problem? And how they can be overcome?
- Which role should be played by the individuals and the community to solve this problem?
- How do you predict the future?
-

Dr. A.K. & Dr. A.E. (Egypt, 28.07.2010) in English

- How did the DAR Project establish the first contact with GUC?
- What kind of task did they ask? What did DAR want?
- What was your reaction?
- What was your expectation before the cooperation?
- What was the GUC plan in order to support DAR project?
- What was the outcome from this cooperation?
- What kind of challenges you were facing in this cooperation?

A.S. & H.I. (Egypt, 19.08.2010) in Arabic

- You are graduated from Applied Arts Faculty, how did you get your position here?
- Before getting in contact with GUC, what kind of problems you were facing?
- Why did you choose GUC in specific to cooperate with it?
- Was there a specific task you have asked GUC to accomplish or was it open for any kind of cooperation?
- What was your expectation at that time?
- Did GUC have a clear plan before the cooperation?
- What kind of problems you were facing through the cooperation with GUC?
- What is the result of this cooperation and was there any documentation?
- What is your evaluation for GUC cooperation?