

DESIGN RE-THINKING: FROM ITALIAN RENAISSANCE TO STRATEGIC DESIGN ARCHITECTURE

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Keywords: strategic design, renaissance, disegno, complexity, design theory, architecture

1. Introduction

In a global and unpredictably changing market, companies and organizations face increased challenges in developing successful products. Consequently, they search for new ways to gain competitive advantage. Within this context, design and its ability to differentiate and to innovate can make an important contribution to businesses. For example, it has the power to increase the value of products, to create unique brand identities, to develop creative ideas and to shape corporate strategies.

However every coin has two faces, and we similarly see a big risk in this development. While the role of design continues to increase in business, the design activities are getting more and more complex. The demands on the designer are growing rapidly and are becoming increasingly difficult to meet. Hence, a recent design discipline, Strategic Design, has been developed to manage complex design activities. Nevertheless, due to the novelty of Strategic Design, there is a lack of systematic descriptions and clear responsibilities [Commission of the European Communities 2009].

Along the lines of the Italian composer Giuseppe Verdi *'Torniamo all' antico e sarà un progresso'*¹ (Let us go back to the past and it will be a step forward) the paper first analyzes the past in order to understand the original meaning of design. Then, based on this analysis, we structure our findings in a possible design system of the past (*'Ordine Disegno'*) with focus on its basic processes and components. We then combine *'Ordine Disegno'* with Strategic Design and developed an overall design system. Finally, according to the overall design system, we introduce the concept of the Strategic Design Architecture which aims to manage the current complex design activities.

2. The origin of design – *'Ordine Disegno'*

Historically, design has its origin in the Italian Renaissance with the Italian term *'Disegno'*, which means *'drawing'* [Hill 2006]. But at least since Giorgio Vasari's definition of *Disegno*, it was much more than drawing the external appearance of things. He placed *Disegno* over the three arts Architecture, Sculpture and Painting. As a consequence, Leonardo da Vinci and Michelangelo were the "designers" (*'artisti del disegno'*) *par excellence* in his eyes [Vasari 1960]. *Disegno* was one of the central concepts of that time.

2.1 Overview of the analysis

For understanding the concept of *Disegno*, we selected six books – beginning with the treatise *'De Architectura libri decem'* written by Marcus Vitruvius Pollio who is known as the father of

¹ written by the Italian composer Giuseppe Verdi in a letter to Francesco Florimo [Budden 2008].

architectural theory and ending with the book *'Le vite dei più eccellenti architetti, pittori et scultori italiani'* of Giorgio Vasari, the father of art history and design. In addition, to understand the meaning of the books, it was necessary to consider other works like Plato's *Theory of Form*, Aristotle's *Metaphysics*, Plotinus' *The Six Enneads* and Marsilio Ficino's book *'Theologia Platonica'*. The selected books are listed in Table 1 followed with a short description of their relevance for Renaissance and Disegno.

Table 1. Selected books

ID	Author	Book	Year	Period
1	Marcus Vitruvius Pollio	<i>'De Architectura libri decem'</i>	22 BC	Classical antiquity
2	Cennino d'Andrea Cennini	<i>'Il libro dell'arte'</i>	1400	Middle Age
3	Leon Battista Alberti	<i>'De Pictura / Della pittura'</i>	1435	Renaissance
4	Leon Battista Alberti	<i>'De re aedificatoria'</i>	1452	Renaissance
5	Filarete (Antonio Averlino)	<i>'Trattato di Architettura'</i>	1464	Renaissance
6	Giorgio Vasari	<i>'Le vite dei più eccellenti architetti, pittori et scultori italiani'</i>	1568	Renaissance

1. The book *'De Architectura libri decem'* of the Roman architect Marcus Vitruvius Pollio influenced significantly the renaissance thinking [Tatarkiewicz 2005] and thus the concept of design. It is the oldest book on architecture, by being the only one that survived from the Classical Antiquity.
2. Cennini wrote with *'il libro dell'arte'* the first art theory book in history. It was often translated as "The Craftman's Handbook". He defines Disegno as the basis of all artistic training.
3. Alberti's book *'Della pittura'* influenced the Renaissance Art, especially with the method of perspective drawing. His profile description of the painter was highly important for the concept of Disegno.
4. The first architectural treatise of the Renaissance was written by Alberti with the title *'Trattato d'architettura'*. It was the next major book on architecture nearly 1500 years later after the appearance of the book of Vitruvius (see ID 1). In his eyes, drawing was the main concept for the invention of the architectural idea.
5. Filarete's book *'Trattato di Architettura'* was the first book on architecture written in Italian. In his book, he designed an imaginary, ideal town called *'Sforzinda'*. Hence, he was the first visionary designer.
6. Vasari was the first Italian art historian due to his book *'Le vite dei più eccellenti architetti, pittori et scultori italiani'*. In his book, he collected artist biographies and described the theory of Disegno. Moreover, he invented the term 'Renaissance' and was one of the founding members of the first art academy (*'Accademia dell' Arte del Disegno'*).

2.2 Design of the 'Ordine Disegno'

Our research has led us to designing a system of the past which we have named *'Ordine Disegno'*. Moreover, the design of the *'Ordine Disegno'* should correspond to that time and meet the meaning of Disegno. The developed system is shown in Figure 1. It depicts the order of Disegno with its basic processes and components that will be described in the following two subsections.

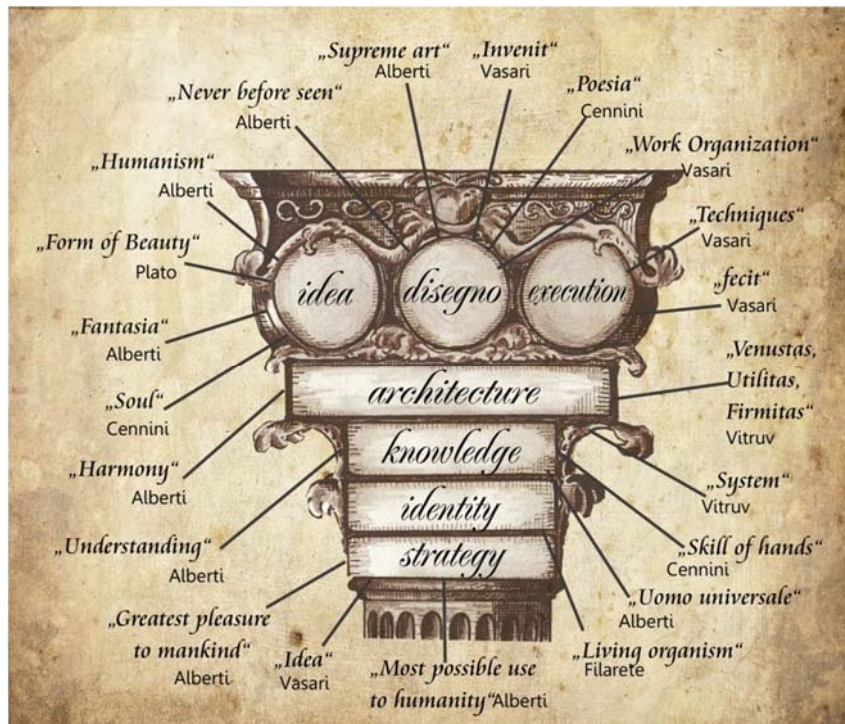


Figure 1. 'Ordine Disegno'

2.2.1 Processes of 'Ordine Disegno'

Idea:

In the Renaissance, based on the Plato's theory of form, idea was the *essence* of things. Close to Plotinus, it was the soul and the inner conception of a thing [Cennini 1400]. It was also the intelligible form of an ideal like the idea of Good, Beauty and specially humanity [Alberti 1452]. Furthermore, idea was the inspiration of the artist and the source of building things which have never been seen before. Referring to the current time, the concept of idea was to some degree comparable to the term 'vision'. Terms which contained the meaning of idea were for example 'poesia', 'utopia', 'idea', 'fantasia', 'conchetto' and 'invenzione'.

Disegno:

Disegno was a creative forming process which transformed an intelligible idea into the material world. Hence, it can be described as the synthesis between idea and form. Vasari defined Disegno as follows:

„Seeing that Drawing ('disegno'), the parent of our three arts, Architecture, Sculpture and Painting, has its origin in the intellect, draws out from many single things a general judgement, it is like a form or idea of all objects in Nature, most marvellous in what it compasses, for not only in the bodies of men and of animals but also in plants, in buildings, in sculpture and in painting, design ('disegno') is cognizant of the proportion of the whole to the parts and of the parts to each other and to the whole. Seeing that from this knowledge there arises a certain conception and judgement, so that there is formed in the mind something which afterwards, when expressed by the hands, is called Design ('disegno'), we may conclude that design ('disegno') is not other than a visible expression and declaration of our inner conception and of that which others have imagined and given form to in their ideas. [Vasari 1568]"

As we can see from above, Disegno was the visible expression of a mental image, the systematic description of the idea of things. Hence, Disegno considered not only the forming of the external appearance of things but also their essence. The artist could only construct and present his idea through the process of Disegno.

Execution:

Vasari differentiated between invention (*'invenit'*) and execution (*'fecit'*) [Vasari 1568]. On the one hand, inventions had been achieved through the process of Disegno and thus Disegno was more important than their execution. Disegno was the supreme and preliminary art. It was also a form of work organization in which many craftsmen can work together on a joint project [Vasari 1568]. It was not necessary that the artist realized his own invention. On the other hand, technical skills were the prerequisite of Disegno [Cennini 1400]. Only after a long technical training, the artist had the ability to innovate. Hence, he must be a master of execution in order to be a master of invention. As we can see in all selected books, the process of execution was a main part of their work.

2.2.2 Components of 'Ordine Disegno'

Architecture:

At the beginning of our research, we recognized the important role that architecture played in the Renaissance Thinking and design. Therefore, three of the six selected books deal with architecture. According to Vitruvius, architecture consisted of three parts: “the art of buildings, the making of timepieces, and the construction of machinery“ [Vitruvius 22 BC]. Hence, the concept of architecture was not limited to building but was based on developing complex things. All complex things “must be built with due reference to *'firmitas'* (stability), *'utilitas'* (utility) and *'venustas'* (beauty)” [Vitruvius 22 BC]. Alberti, who wrote the next major work on architecture, characterized the aim of architecture as to serve humanity [Alberti 1988]. Based on the influenced book of Vitruvius, he divided *'utilitas'* (utility) into three different types: *'necessitas'* (needs), *'opportunitas'* (fitness for a given purpose) and *'voluptas'* (enjoyment) [Kruft 1996]. Vitruvius influenced the renaissance thinking and Disegno also with his analogy between buildings and a “well shaped man” [Vitruvius 22 BC]. He described that the human body had the attributes of perfect natural proportions [Agrest 1991]. In his eyes, the architecture should orient towards the natural laws of Beauty.

Knowledge:

As Vitruvius wrote in his treatise, the architect should be “equipped with knowledge of many branches” [Vitruvius 2005]. Apart from knowledge of art, science, economic and technique, the architect should also have a good understanding of philosophy, medicine and music [Vitruvius 2005]. This profile description influenced the renaissance and was responsible for the birth of the ‘Renaissance Man’, the *'uomo universale'*. The Renaissance Man should receive universal education. According to Alberti, knowledge is the source that elevates the artists from craftsmen to intellectual ones [Alberti 1435].

Identity:

Disegno was a creation process which brings “never-before-seen” things or new ideas to life [Alberti 1435]. Based on Plato’s Theory of Form, the Renaissance differentiated two different kinds of identities: the unchanging identities of the immaterial world (*ideas*) and the ever-changing identities of the material world (*things*). Filarete wrote an interesting analogy of architecture to living organisms. He described buildings as if they had similar identities to a living man.

“I will then show you that the building is truly a living man. You will see what it must eat in order to live, exactly as it is with man. It sickens and dies or sometimes is cured of its sickness by a good doctor [Averlino 1464].”

Furthermore, he explained that the role of an architect is comparable with the role of a mother. The architect was not only responsible for the conception and birth of the thing but also for the education.

“As the mother is full of love for her son, so he will rear it with love and diligence, cause it to grow, and bring it to completion if it is possible, if it is not, he will leave it ordered.” [Averlino 1464]

Strategy:

According to [Gälweiler 2005], the word ‘strategy’ is etymologically derived from the compound word (‘strataegeo’ = ‘stratos’ and ‘igo’) from the Ancient Greek. The first word part ‘stratos’ means “something that covers everything else, overlaps, contains within itself”. The meaning of the second word ‘igo’ is “to act or to do”. Therefore, strategy is the alignment of actions in order to achieve the overall goals. Based on this definition, we found a strong strategic thinking in the Renaissance Art. The orientation of the artist was towards the ideal, the ‘idea’. A good artist was somebody who strived for the most beautiful and good things [Averlino 1464] or for the most possible use to humanity [Alberti 1452].

3. Strategic design architecture

A recent design discipline, Strategic Design, has been developed to manage and understand complex design activities in a global and unpredictably changing world. Brigitte Wolf [Wolf 2011] argues that “Strategic Design is a design before the design”. According to [Boyer et al. 2011] it is to shape decisions to operate better in a time of uncertainty. Moreover, Meroni [Meroni 2008] describes that Strategic Design “is needed by all those who have to deal with design decisions in a turbulent and uncertain context”. She defines Strategic Design with the following words:

“Basically, we assert that Strategic Design is about conferring to social and market bodies a system of rules, beliefs, values and tools to deal with the external environment, thus being able to evolve (and so to survive successfully) as well as maintaining and developing one’s own identity.” [Meroni 2008]

Based on our research about past and Strategic Design, we developed the Strategic Design Architecture that should address the current design challenges. First, we present the overall design system. Then, according to the overall design system, we introduce the concept of the Strategic Design Architecture with its components and processes.

3.1 Model of a design system

In Figure 2, our developed Design System is illustrated with its basic system elements.

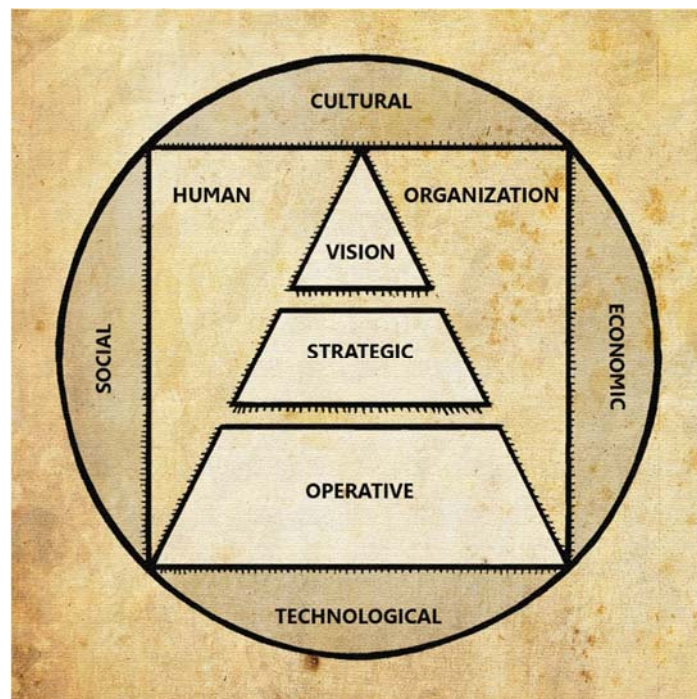


Figure 2. Model of design system

As depicted in the figure, the Design System is structured along three basic geometric shapes. Each shape describes a particular design aspect. The *circle* symbolizes the external environment which consists of four main parts (cultural, social, technological and economic). The *rectangle* differentiates between the human and the organizational design perspective. Finally, the *triangle* visualizes the design organization that is divided into three sub-elements (visionary design, strategic design and operative design).

Strategic Design is arranged in the center of the Design System. In the following list, the responsibilities of Strategic Design are described, together with its relationships to the other system elements, i.e. to:

- *Visionary Design:*
Similar to Disegno, Strategic Design should form the essence of identities (i.e. product, organization) and give them a soul. Furthermore, these identities should correspond to an ideal.
- *Operative Design:*
As with '*Ordine Disegno*', Strategic Design establishes the connection between the immaterial (i.e. visions, ideal identities) and the material world (i.e. products). The aim of Strategic Design is to create design strategies and thus to give a clear direction for the product development. Next, the design strategies should be translated into product requirements.
- *Human Design Perspective:*
Just as today, in the Renaissance, the human was placed into the center of Disegno. The developed things should serve the humanity and increase the quality of life. For this reason, Strategic Design needs to understand and specify the human design perspective and to design appropriate strategies to meet the human's current and future needs.
- *Organization Design Perspective:*
According to Vasari [1568], Disegno was also a tool for improving communication with the clients. One of the architectural drawings by Leonardo da Vinci about the '*Casa Guiscardi*', in which the requirements and desires of the client were described [Zöllner 2007], is of high interest. Strategic Design should consider not only the perspective of the human but also the structures, resources, opportunities and risks of the organization.
- *Social and culture environment:*
One of the main fields of Strategic Design is to learn from the external environment and thus to adapt their design strategies. As Alberti [1967] points out, knowledge about the environment is necessary to make the correct judgements. Strategic Design should understand the values, beliefs and patterns of the social and cultural environment to create more meaningful products.
- *Economic and technological environment:*
The role of Strategic Design is also to understand the context of the market. It should identify ways to differ from competitors and to gain competitive advantage. For this reason, Strategic Design must learn from the economic and technological environment.

3.2 Strategic design architecture

By studying the oldest books on architectural theory, we found similarities between architecture and Disegno. Both authors Vitruvius and Alberti described architecture as '*supreme art*'. Hence, the term 'architecture' is etymologically derived from the Greek words '*arché*' ('beginning', 'origin', 'first', 'supreme') and '*techné*' ('craft', 'art'). For example, Alberti [Alberti 1452] described architecture as the "most honorable of the arts" which gives "comfort and the greatest pleasure to mankind". Even Vasari [Vasari 1568] defined Disegno as a 'supreme art' and formalized architecture as a main part of it. Therefore, Disegno had to deal with architectural concepts. Currently, because of the complexity of the current design activities, we include the concepts of architecture in design again in order to manage it. The aim of the Strategic Design Architecture (SDA) is to develop and maintain opportunities for success from the perspective of the human and the organization. In addition, SDA should give design activities and its organization a direction where to go in the future. In the next sections, we shortly describe the structure and the activities of SDA.

3.2.1 Structure of strategic design architecture

Based on 'Ordine Disegno', we define the following three main components: Design Knowledge, Design Identity and Design Strategy. All components have both 'Forming' and 'Informing' processes. While the 'Forming' process gives shape to, for example, identities, ideas and strategies, the 'Informing' process is responsible for the communication between them. Below, we explain the responsibilities of each component and their processes, which are visualized in Figure 3.

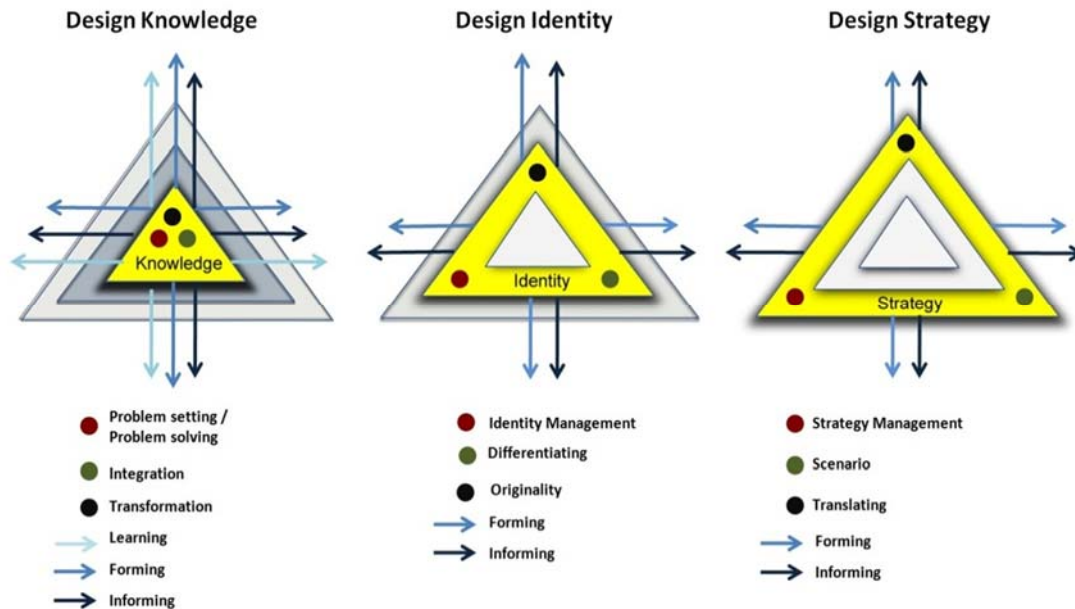


Figure 3. Components of the strategic design architecture

Design Knowledge:

The component of Design Knowledge is the heart of the SDA. It is responsible for the creation, visualization, integration, communication and transformation of design knowledge. Figure 3a indicates that there are three internal ('Integration', 'Transformation' and 'Problem setting / Problem solving') and one external process ('Learning'): The task of the 'Integration' process is to combine different perspectives and meanings and to create a shared understanding of visions, strategies and values or of the problem situations. The 'Transformation' process synthesizes different perspectives and ideas to create new outcomes. The process of 'Problem setting / Problem solving' is about understanding problems and sketching solutions. Finally, the 'Learning' process acquires knowledge from the environment.

Design Identity:

The Design Identity component is responsible for the management and communication of identities. There are three internal processes ('Identity Management', 'Differentiating', and 'Originality'): While the 'Identity Management' process analyzes, creates, changes and maintains identities, the 'Differentiating' process tries to distinguish between identities and their competitors. The 'Originality' process is responsible for proposing new product meanings.

Design Strategy:

The aim of this component is to define design strategies. The component has three internal processes ('Managing', 'Scenario', and 'Translating'). The responsibility of the 'Managing' process is to create and change design strategies. Next, the task of the 'Scenario' process is to creating possible scenarios of the future. Finally, the 'Translating' process transforms strategies into product requirements.

3.2.2 Activities of strategic design architecture

Based on the developed structure of the SDA, we have identified seven main design activities. As depicted in Figure 4, the design activities are structured in an iterative fashion. Each stage is defined below:

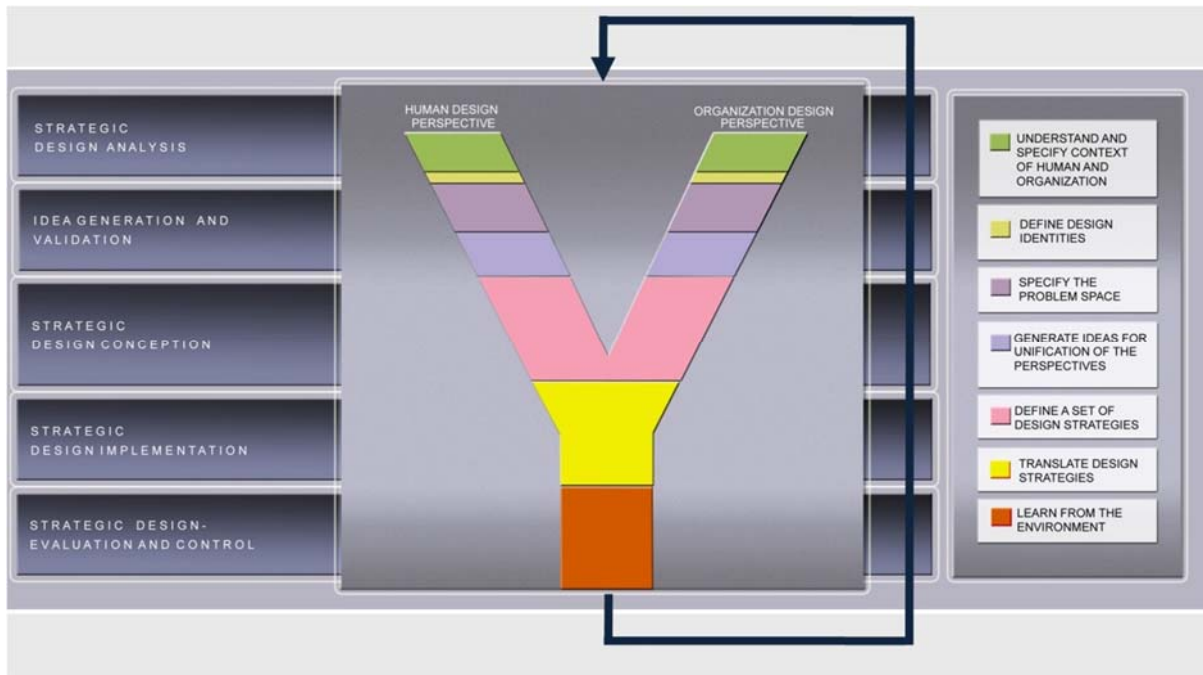


Figure 4. Design activities of the SDA

1. *Understand and Specify Context of Human and Organization*
As described in section 3.1, the Design System distinguishes between two design perspectives: the 'Human' and the 'Organization Design Perspective'. Hence, the aim of this design activity is to understand and specify both in order to get a holistic view of the design context.
2. *Define Design Identities*
On the one hand, the goal of this design activity is to define all relevant 'archetypal human identities' with their needs and desires. On the other hand, it is necessary to define the corporate identity of an organization.
3. *Specify the Problem Space*
According to Meroni [2008] Strategic Design is more problem setting than problem solving. She argues that the role of problem setting is to "primarily open new issues before trying to solve them". Hence, this design activity is important to expand the understanding of the problem and looking for new sources.
4. *Generate Ideas for Unification of the Perspectives*
The aim of this design activity is to find new ways and creative ideas for unification and harmonization of both design perspectives in order to achieve the highest possible success for them.
5. *Define a Set of Design Strategies*
This design activity transforms ideas and visions into possible scenarios about the future. In addition, it must set the direction into which the human and organization want to go and build corporate vision and strategies.
6. *Translate Design Strategies*
In order to link design strategies to the operative design, the design strategies must be translated into product requirements.
7. *Learn from the Environment*

Finally, as described in section 3.1, the aim of this design activity is to learn from the social, cultural, economic and technological environment to evaluate and control design strategies.

4. Conclusion

In summary, the aim of the present paper was to discuss how design should be structured and organized to manage the current complexity of design activities. We therefore first analyzed the original meaning of design. Based on our research, we structured our findings and built a possible system of the past which we called 'Ordine Disegno'. We then combined the past with the current challenges of design and developed an overall design system with its basic system elements. According to this system, we developed the 'Strategic Design Architecture' which aims to manage the current complex design activities. Clearly, further studies are required to further develop these concepts. Hence, we are currently testing the 'Strategic Design Architecture' in collaboration with different companies.

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