Procedural Theory – Accomplishing design goals

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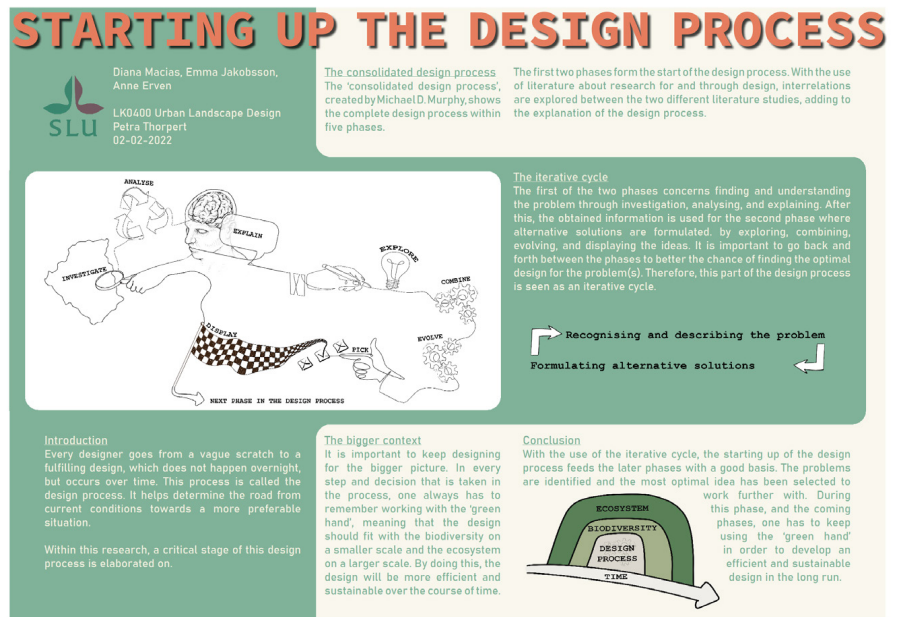
Introduction

Landscaping is the act of taking a piece of land and analysing, evaluating, and beautifying it, while focusing on maintaining and increasing sustainability, functionality, and usability for people in a resource-effective way.

The course *Urban Landscape Design* (LK0400) is a bachelor's level course focusing on design of urban green spaces, offered at the Swedish University of Agricultural Sciences, and run by the Department of Landscape Architecture, Planning and Management (LTV faculty). The course is run as a stand-alone course for national and international students and as a programme course in the Landscape Engineer Programme at Uppsala and Alnarp, and in the Garden Design, Landscape Engineer Programme at Alnarp.

The course deals with elements that, in various ways, affect the interaction between analysis and development of methods and concepts through studies of design theory via sketching to the final design proposal. Landscape visualisation is an important theme throughout the course, and contributes to increasing the student's awareness of the interplay between contextual relations and concept development. The students are encouraged to apply experimental approaches, where analyses and evaluation are mixed with theoretical reasoning. The main aim of the course is to use different ways of working with design in the urban environment, and – supported by design theory and good examples – apply, document and present design processes, both individually and in group work.

This factsheet is the product of the students' work with *Procedural Theory* in the course Urban Landscape Design during the spring term of 2022. The aim of the assignment is to reflect on and communicate

urban landscape design working processes, by studies of procedural theory. The assignment deals with elements that, in different ways, affect the interaction between method development, analysis and conceptual statements via sketching processes to the final design proposal.

The procedural theory or design process is a step-by-step procedure that takes a problem-solving approach to landscape design. Procedural theories aim to describe and explain design processes. This factsheet shows some examples of the design process, and focuses mainly on reflecting and describing useful methods for clarifying the design goals and design problems.

The following abstracts and poster presentations present the students' thoughts and reflections through visualisations and descriptive text, and show an attempt to verbalise the design process steps/phases. The assumptions made and described in this factsheet are based on literature studies of procedural theory, as well as on the students' previous experiences of the design process and through individual and group reflections and discussions.

Starting up the Design Process

By Diana Macias, Emma Jakobsson, Anne Erven

Every designer goes from a vague idea to a fulfilling design, which does not happen overnight; this takes place over time. This process is called the design process. It helps determine the road from current conditions towards a more preferable situation. This research elaborates on a critical stage of this design process.

Michael D. Murphy has shown and explained numerous design processes extensively. He has summarised all findings into one design process, known as the 'consolidated design process'. This is subdivided into five different phases, the first two of which form

the starting up of the design process. With the use of extra literature about research for and through design, interrelations are found between the steps taken, adding to the explanation of the design process.

The first of the two phases concerns finding and understanding the problem through investigation, analysing, and explaining. The obtained information is then used for the second phase, where alternative solutions are formulated by exploring, combining, evolving and displaying the ideas. It is important to go back and forth between the phases to improve the chance of finding the optimal design for the problem(s). Therefore, this part of the design process is seen as an iterative cycle.

To obtain an understanding of what needs to be designed, the problem(s) must be identified. The location is investigated and literature studies conducted, followed by analyses on larger and smaller scales. These two steps lead to the identification of the problem(s). The findings are used to describe the design aims to be achieved and the design criteria to be met.

To achieve optimal design, problem identification is used to discover concepts, originating from the generating and sharing of ideas. The concepts are then developed by sharing ideas and combining them, thereby generating new ideas. These ideas are then used for the step of selecting, where the ideas are compared to one another and evaluated to choose the best one. Ultimately, this idea is displayed. After this step, the next phase of the design process can be entered.

However, the next phase is not entered immediately after the process has been completed once, because the starting up of the design process that is described is not a linear process. It works as an iterative cycle, as it is encouraged to go back and forth between the steps. This part of the process is open to parallel solutions and has a wide review of the problems to be identified. New idea generation is stimulated, creating better and more optimal ideas.

It is always important to keep designing for the bigger picture. In every step and decision that is taken in the process, it should always be remembered to work with the 'green hand', meaning that the design should fit with the biodiversity on a smaller scale and the ecosystem on a larger scale. By doing this, the design will be more efficient and sustainable over the course of time.

Supportive references: Lenzholzer, S., Duchhart, I. and Koh, J. (2013); Murphy, M.D. (2016).

Problem definition and ideation
By Ehab Zarifa & Myrthe Rijksen

Landscape architecture's primary function is to assemble the complex systems of the landscape and its inhabitants. The designer must not only have a thorough understanding of the landscape to accomplish this effectively but must also be able to apply the design process correctly. The procedural theory is concerned with the methods and strategies to be used in accomplishing design goals. It addresses the mechanics of designing, which is equivalent to the design process.

The focus of this assignment is the problem definition and ideation phases of the design process. These phases are widely discussed in the literature, but their role in the process varies between different theories. The two phases are essential, since the designer keeps going back to the first steps in the process and has to continuously reconsider the interrelationships between factors.

The literature review was used as the methodology of this assignment. By investigation, learning and discussion of the different theories and approaches concerning the problem definition phase and the ideation phase, we derived our view of the 'beginning' of the design process.

The flowchart on the poster presents our result in a sequential and detailed matter. The designer needs to both familiarise with the clients, people and environment concerning the design assignment during the problem definition phase. After defining the design programme, they can move to the next phase, the ideation phase, to create and explore primary ideas, followed by a hands-on approach and evaluation.

This means that there are three sub-steps for the problem definition phase, providing a convergent process. First, the problem is globally investigated. To ensure an even more thorough understanding, the second step is introduced, in which the context and relations are researched in greater depth. The final step, the design programme, introduces a synthesis of the previous research, giving clear and concise goals for the design.

The ideation phase is also convergent, and is divided into four steps. One very important step is brainstorming, in which a large number of possibilities are explored. In the next development stage, the designer returns to the constraints and determines the potential of each idea. Finally, the designer evaluates the ideas according to goals
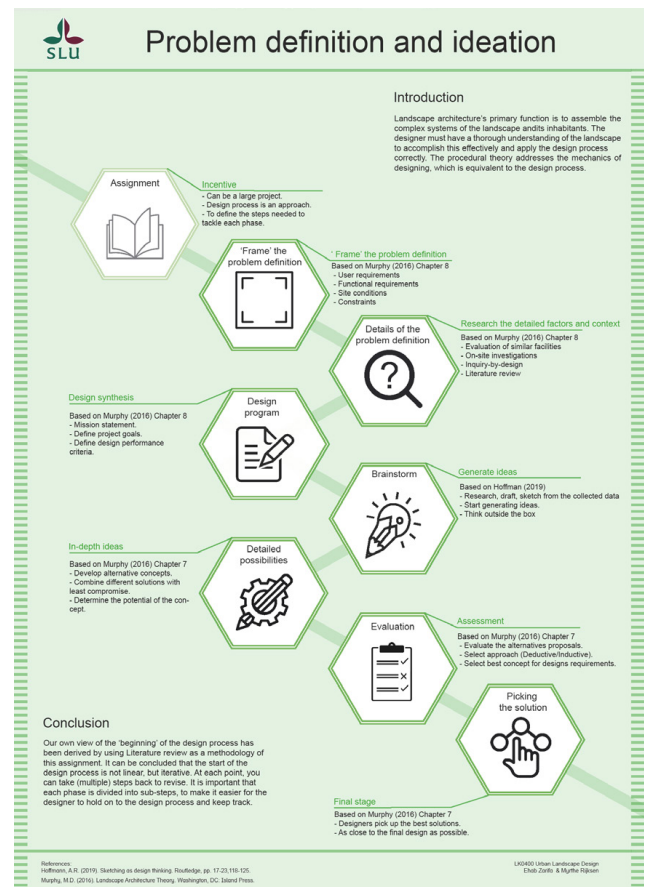
and criteria set in the design programme phase. The designer applies this to choose the best available solution.

To conclude, the starting phases of the design process are not linear, but iterative. At each point, the designer can take (multiple) steps back to revise. Also, it needs to be taken into account that our result adds one new vision to the ever-growing mountain of theories about landscape architecture.

As Murphy stated, we as a new generation have a great opportunity to take advantage of contemporary technology and move forward with the development process of landscapes through our thoughts, research, and outcomes.

Supportive references: Hoffmann, A.R. (2019); Murphy, M.D. (2016).

The problem definition in a design process

By Lina Törnqvist & Pierre Martin

Since the emergence of the post-modernism movement in the 1970s, the vision of landscape design has largely changed. Whereas the focus was mainly on aesthetic, financial and political aspects, interest in environmental, social and sustainability issues has increased. These new parameters have manifested themselves in a greater emphasis on research and a search for knowledge.

The problem definition phase is important in the design process because it is the phase that guides the design. Being the first step, it will influence all subsequent steps. A poorly defined problem can result in a design that is inconsistent with the development site. In contrast, a well-defined problem will lead to more efficient subsequent steps and more relevant projects.

We have considered the design process in four stages: problem definition, sketching, presentation, and implementation. Our work has focused on knowledge acquisition before embarking on sketching and thereby problem definition. Visiting the project site is the first thing to do – each site is unique and the best way to understand it is to see it with your own eyes and walk through it to find the best possible solutions This will allow the designer to see the constraints and qualities of the site, which are usually close together, as it is often the constraints that determine the design. It will then be possible to understand the mechanisms on the

ground, the ways in which the site operates.

Research can be conducted in various ways. One way is intrinsic research that concerns personal experience, such as understanding human values and social intelligence, as well as searching the literature for information relevant to the problem and the review of precedents and case studies. This involves learning from successful situations that can be reused if adapted to the new problem, although each project is unique.

There is never a single solution to a problem, but an infinite number of solutions. To define a problem, it is then essential to prioritise certain aspects. Some will have to be dealt with first because they are the biggest problems or expectations, sometimes at the expense of others because they are sometimes incompatible. It is often possible at best to find a compromise to minimise the impact of secondary constraints.

It is always possible to return to the problem definition even after the design, sketching or presentation phases. Indeed, each trial allows the designer to acquire new knowledge, learning what is possible and what is not, in order to arrive at the best possible solution.

*Supportive references:* Milburne, L-A., Brown, R.D. (2003); Murphy, M.D. (2016).

Conclusion

In the line of work of landscape professionals the procedural theories concern the essence of phenomena dealt with during the design process. The transformation during the various phases may move from a broad context to detailed information, or move in the opposite direction. According to Murphy (2016), a clearly defined design problem increases the possibility of their successful resolution. The abstracts and posters presented in

this factsheet emphasise the importance of this phase in the design process, and discuss various ways of identifying the design problems and their connection with the design goals.

There are both similarities and differences between the groups in the attempts to describe the design process in the three proposals. What they all share is that they divide the design process into different stages/phases, and describe that the process is not linear, but instead contains elements of repetition in a so-called iterative process (Murphy 2016). The presentations reflect on the need to evaluate design solutions in order to arrive at the best possible solution from the boundaries of design problems, and point out that design problems may need to be redefined during the process, thereby necessitating a redesign of the design solutions.

The role and importance of the sketch as an investigative and communicating tool is also interpreted throughout the students' attempts to describe the selected parts of the design process. In many contexts, it has
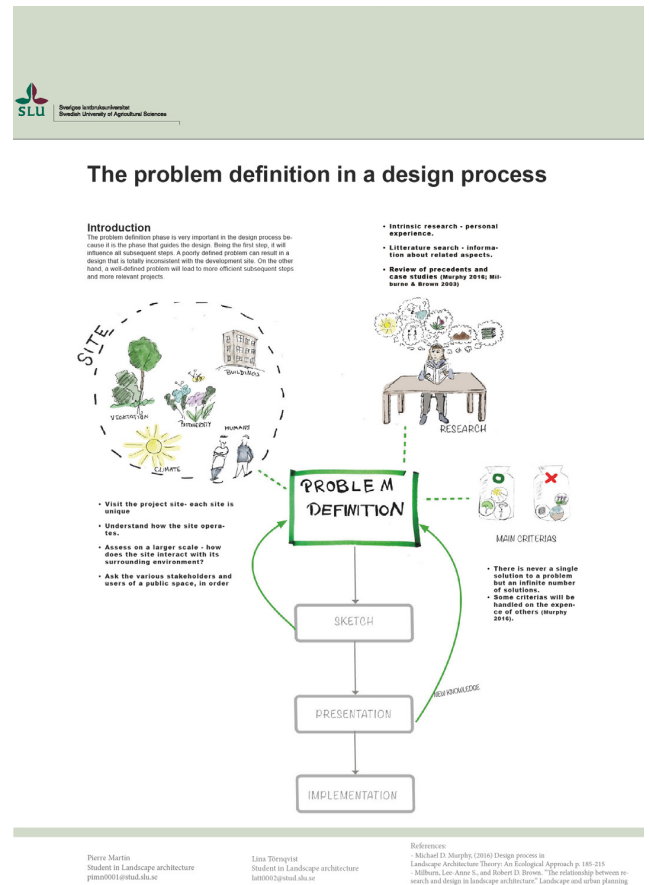
been shown that the sketch is the key factor to better communication during the design stage, and provides valuable ways to highlight opportunities and limitations in the path to sustainable solutions. The sketching process opens up the creative process where thoughts are brought to life, tested, clarified, and valuated (Hoffman 2019).

From the perspective of group activity and the task of working with a personalised process, the students have performed well and been successful in demonstrating the ability to extract the principal ideas of Procedural Theory. The presentations in this factsheet show the students' increased understanding of their own assumptions in the design process, and development of their critical approach. We, as teachers in the course and practicing landscape architects, would also like to take the opportunity to thank the students for interesting and fruitful discussions about identifying design problems and their connection with accomplishing design goals.

Further information about the course Urban Landscape Design, see

https://www.slu.se/en/education/programmes-courses/course/LK0400/30239.2122/Urban-Landscape-Design/

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