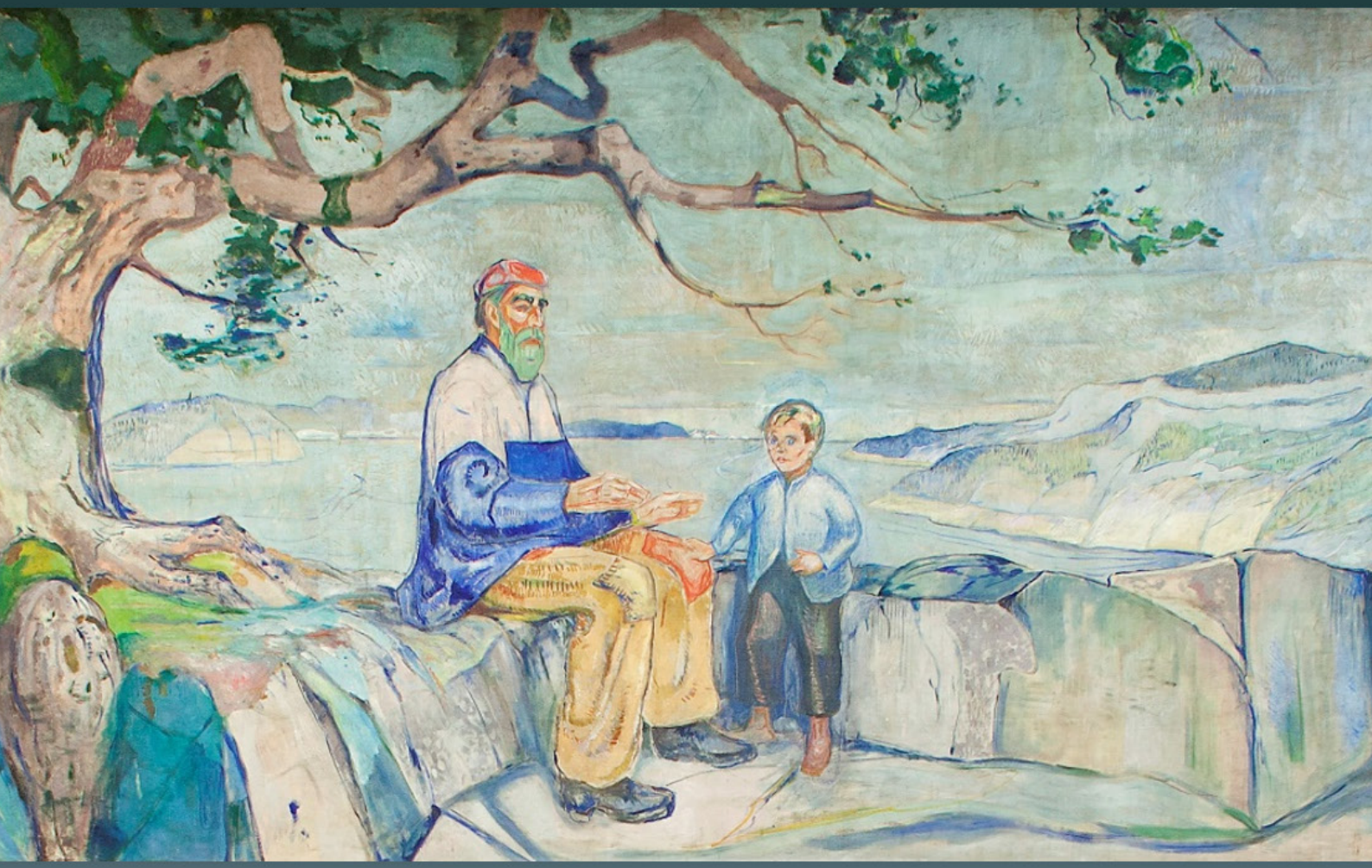

LESSONS FROM THE PAST, VISIONS FOR THE FUTURE

Celebrating One Hundred Years of Landscape Architecture Education in Europe

Norwegian University of Life Sciences
Ås, Norway, 16-17 September, 2019

NMBU ECLAS UNISCAPE

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LESSONS FROM THE PAST VISIONS FOR THE FUTURE

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PARALLEL SESSION #1

Scenario thinking in landscape architecture education

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University of Ferrara, Italy

Keywords: Uncertainty, scenario planning, infrastructures, explorative landscapes, master thesis

Background information
The contribution presents the experience of the Final Master Studio in 'Landscape Architecture and Infrastructures' carried out in the last seven years at the Architecture Department of the University of Ferrara, Italy. The course focuses upon the development of a single project over the last academic year bringing the students to their Master dissertation. The studio is structured on five teaching modules held by academics and experts on different topics: landscape architecture, parametric landscape & infrastructure design, coastal and hydraulic engineering, geology, and energy engineering. Such diversity has been set up with the aim of providing students with as much as possible skills contributing to their work development in the direction of an interdisciplinary scenario-based approach to the issues concerning infrastructural landscapes' evolution.

One of the main pedagogic challenges is related to the fact that the majority of the students who chose the studio, during their university career, have not been able to attend any specific course on landscape architecture. Such a situation, which is not uncommon in the Italian scene, reflects a peculiar way of considering the landscape discipline as a complementary skill, among others, for future architects. This generalist and classical conception of the profession, as it is also regulated by law, has affected academic programs and implicitly prevented the establishment of strong landscape tendencies in architecture schools. Furthermore, this lack has deeply contributed to downplay the architects' role in planning, design and management of major landscape transformations in favour of other professional profiles.

As a result, landscape architects are rarely involved with the infrastructures' design process since its beginning; only after basic strategic choices have already been taken and the infrastructure layout has been set up, they are called in order to mitigate side-effects, visual impacts and to restore some kind of 'natural' appearances (Figure 1). Such an attitude at considering the landscape just under the filter of impacts is probably grounded on two main beliefs: the first concerns a certain sense of guilt towards Nature seen as an ideal and fixed entity that is going to be violated; the second, more practical, deals with the reassuring effect of data, numbers and statistics that engineering as well as other scientific-based disciplines are able to provide the developers with describing the infrastructure as a congruent body which can range inside a predictable array of circumstances.

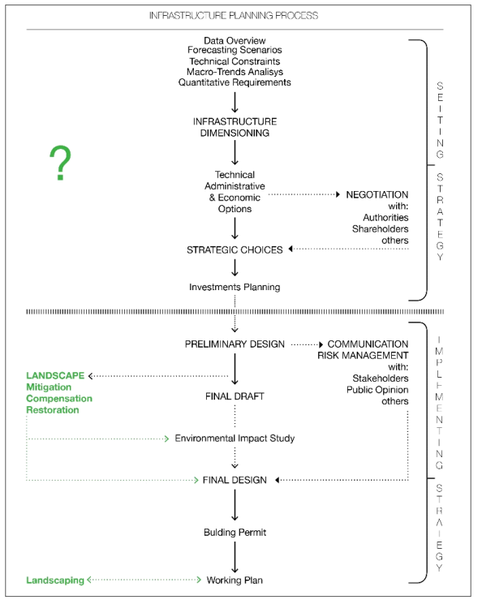

Figure 1. The flow chart exemplifies the general infrastructure planning process in the Italian context. For what concerns the developer's side, the landscape architecture advising (in green) is limited to the implementation phase.

Research questions
Against this situation, it has to be said that policy makers, managing authorities and above all infrastructure developers are increasingly realizing the strong limitations lying in quantitative-oriented approaches. Since infrastructural works, according to their long life span, require to be dimensioned in relation to complex trends of external variability, their adaption and resilience cannot only be attained through the adjustment of inner parameters and ratios. According to some studies (Hughes, Chinowsky and Strzepek, 2010), just climate change could add 10% to 20% to infrastructure costs by 2030; the same literature highlighting the impact of extreme events suggests that an effective response to these issues needs to be based on a location-specific approach and warns against standard solutions.

A further element weakening the developers' confidence in quantitative responses is 'uncertainty'. Contemporary landscapes have been experiencing rapid and intense transformations due to technological and cultural change, expanding globalization and new economies. Their impacts are difficult for mapping, monitoring and coordinating, but the decision-makers need anyway some tools allowing them to anticipate future transformations and assess resources availability in order to be effectively prepared for dealing with complexity. As literature points out (Madanat, 1993; Feinberg and Genethliou, 2005; Flyvbjerg, 2005), mathematical forecasting has been long time the preferred method attempting to predict the future, in part due to its scientific

credibility. However, although often effective in the short term, the accuracy of mathematical forecasts decreases exponentially as the time horizon increases. So their capacity for illuminating future changes is correspondingly reduced for long-term planning and thus especially for infrastructures.

Methods
In order to fill this gap, the use of the 'scenario thinking' has been emerging as an effective tool for testing potential strategies against unknown and unpredictable futures. Successfully used in the business world, such an approach is returning to infrastructural planning which is actually the field where it was consistently tested as a method for the first time, during the 1970s, at Royal Dutch/Shell (Wack, 1985). The advantages of scenario planning are reflected in the reduction of uncertainty by creating and identifying possible alternative paths of future infrastructures' development. By running multiple narratives within alternative models of next social, political, economic, and environmental conditions, unexpected outcomes could be anticipated and complex feedback loops discovered.

Within this framework the role of the landscape architect can actually be reconsidered in the light of a decision-making process that needs to physically visualize different alternative future scenarios (Steinitz et al., 2003) whereby a limited number of possibilities are created and systematically compared against one another (Deming, 2011). In fact, an alternative landscape futures approach (Steiner, 2000) or more simply put, the development and evaluation of prospective landscape scenarios, should extend beyond data analysis and impact assessments to encompass the systemic relationships between environment, society and infrastructure.

The main hypothesis behind the Master Studio in Ferrara is that such 'prospective landscape scenarios' can address the infrastructure planning since its decision-making process toward more adaptable, cost effective and resilient strategies. In order to attain these objectives, a radical change is needed in the cultural attitude of infrastructure developers, as well as landscape architects who have to be able to deal with new designing instruments and procedures (Di Giulio, Emanueli and Lobosco, 2018).

Landscape education can play a crucial role in this sense, addressing labour market demands by developing new professional skills for architects and actively involving private and public bodies in their training paths. For that reason, several theses developed in the final studio during the last years have been formulated in cooperation with companies and institutions which have acted as virtual clients.

Results
Students are asked to design, visualize and compare the physical implications of alternative future scenarios processed upon the inputs and forecasts provided by the client in the raw form of data and technical alternatives. They elaborate through the thesis a sort of Landscape Format for Scenario Planning aimed at integrating contextual issues and higher-level uncertainty into design proposals. The presentation discusses a selection of pilot experiences carried out according to this scheme within some exemplar and challenging contexts (such as touristic areas or fragile ecosystem like lagoons and river basins), chosen for their being pressured by extremely variable dynamics. These projects' aim has been to understand how data and forecasts could effectively be converted into 'landscape exploratory scenarios' which could represent an integrative landscape-based platform assisting decision makers' choices. Following a 'research-by-design' methodology, these works attempt to demonstrate the convenience of overturning any idealized attitude towards the landscape in the common process of designing and planning infrastructures (Figure 2).

Conclusion
The early outcomes have demonstrated the vivid interest of stakeholders in such a methodology due to the chance of being able to rely their future strategies on more qualitative projections synthesised and processed by the means of landscape visions to be evaluated at the beginning of the decision-making process for addressing more resilient and comprehensive choices. The value of future landscapes' arrangements is increasingly conceived by developers as a useful and proactive outlook rather than a consequence of just technical implication. In this framework, landscape architects, if well prepared, could reach a key role in the infrastructural planning shifting their position from the bottom to the top of the 'project chain' (Figure 3).

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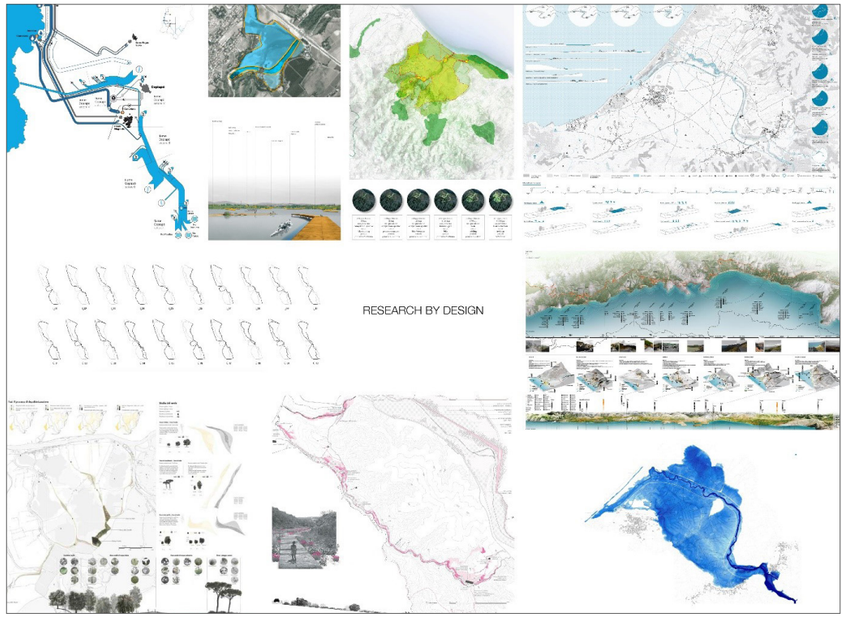

Figure 2. Some examples of the 'research by design' approach applied in Master Thesis projects by building alternative scenarios concerning infrastructural landscape development within high-sensitive contexts in touristic areas, coastal regions, lagoon and river systems.

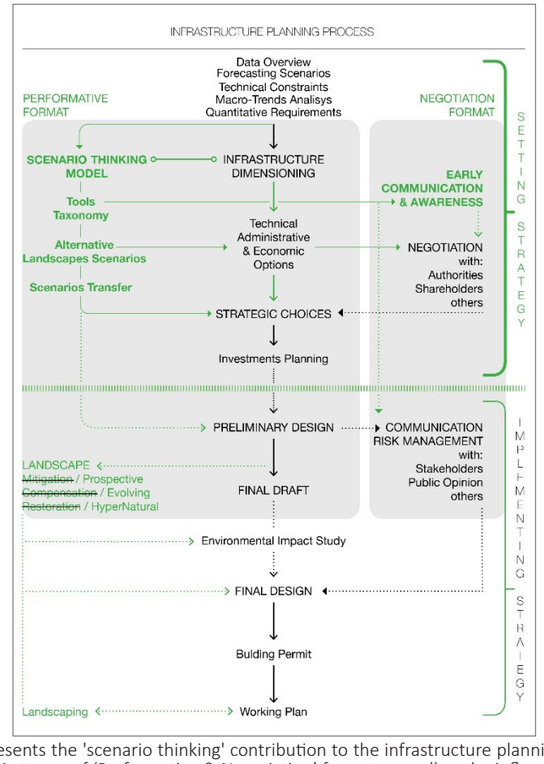

Figure 3. The flow chart presents the 'scenario thinking' contribution to the infrastructure planning process showing the impact on the strategic phase in terms of 'Performative & Negotiation' format, as well as the influence on the attitude at considering landscape architecture as a side-effects mitigator of the infrastructure implementation.

An evaluation of a systematic teaching approach to evidence-based design in landscape architecture studios

Andreas Wesener, Wendy McWilliam, Anupriya Sukumar, Louise Bailey, Marcus Robinson
Lincoln University, New Zealand

Keywords: Evidenced-based design, systematic studio teaching, theory application, UV radiation, design guidelines

The pressing need to teach evidence-based design (EBD) as part of landscape architecture students' regular curricula has been convincingly argued (Brown & Corry, 2011). The paper evaluates an EBD approach to teaching a studio project at the School of Landscape Architecture at Lincoln University, New Zealand. The project was taught within the 2018 Sustainable Design and Planning third-year studio of a four year Bachelor of Landscape Architecture (BLA) programme. The project used an EBD approach based on the Brown and Corry (2011, p. 328) four-step process: 1) formulate clear design goals; 2) use relevant literature-based scholarly information; 3) evaluate the evidence for usefulness; and 4) apply the evidence and translate it into suggestions for design.

The chosen design problem is highly relevant to the New Zealand context: how to protect school children from over-exposure to UV rays in school yards. School children often receive too much sun exposure (particularly ultra B (UVB)) leading to sunburn (erythema), skin aging, and melanoma (a very deadly form of cancer) (Holick, 2004; Yagura, Makita, Yamamoto, Menck, & Schuch, 2011). Over-exposure also causes cataracts (eye damage), and the suppression of the immune system which can increase the frequency of illness (Kripke & Morison, 1985; Heisler & Grant, 2000; Dumay et al., 2001). In terms of skin cancer, New Zealanders have one of the highest incidence levels in the world (Kruse & D., 2013). Primary school aged children are particularly vulnerable (Seidenari, Giusti, Bertoni, Magnoni, & Pellacani, 2000), and excessive levels of exposure during childhood increase the risk of skin cancer in adulthood (WHO, 2003). In New Zealand, the Cancer Society of New Zealand (CSNZ) runs the 'Sun Smart Accreditation Programme' for schools in line with the recommendations of the World Health Organization. However, few schools have been accredited (Reeder, Jopson, & Gray, 2012) and many school yards do not adequately protect children from UV ray over-exposure.

The studio project was divided into two parts. Firstly, students were asked to develop EBD guidelines for landscape architects in support of UV protection for public school students located in the Inland South Island Region of New Zealand. Secondly, they applied these guidelines to redesign a school yard within this region.

The project was designed to address three main barriers to teaching EBD identified through an evaluation of previous studio projects. First, there is often a lack of student clarity around design objectives needed to drive a literature review in support of a goal. This lack of clarity often leads in students developing too many goals, supported by shallow and inadequate evidence. They run out of time prior to identifying relevant evidence. We provided students, initially, with one design goal, followed by a seminar that demonstrated how to translate goals into relevant, clearly expressed objectives that can be used to effectively locate theory in the literature.

Second, design students are often not very experienced in finding and evaluating evidence in the literature in support of their designs. Rather, they focus on precedent design work to provide them with spatial ideas for which the supporting theory is often absent. In consequence, students do not know where to look for, or how to identify, theory in support of their designs. In response, we provided students with an initial summary of evidence in support of designing for UV protection. In addition, a seminar taught students where this information came from, and how it was relevant to meeting their design objectives. Students did not have to spend as much time searching for relevant information, but developed skills to analyse the literature and search for additional literature to add to their evidence.

Finally, students frequently struggle to translate literature-based information into spatial form implications. Theoretical information in the literature is often only communicated via text. We responded to this challenge by introducing a step-by-step approach to translation, reinforced by demonstration, within individual and group tutorials. The studio provides the perfect environment for this teaching and learning style. Students were asked to demonstrate this translation in their guidelines, which required evidence-based text and conceptual spatial diagrammes to illustrate the evidence. Students described and illustrated through conceptual drawings key factors determining UV exposure at different spatial scales that responded to sun angles, materials and land uses during key times of the day and school year.

As part of the preparation of the design guidelines, students were asked to demonstrate their application to a generic school yard located in the Inland South Island Region of New Zealand through the use of SketchUp 2017 software. The resulting 3D model was particularly useful in generating evidence where it was lacking, and in translating text-based theory to spatial form (Figures 1a,1b). The preparation of the relatively simple and concisely communicated design guideline increased the accessibility of the theory in the literature, whose complexity was initially a key barrier to students learning an EBD process.

In the second part of the project, students were asked to prepare a landscape concept for an existing real-world school ground based on their design guidelines in support of activities at key times of the day and year (Figure 2). The project required site inventory and analysis with respect to design objectives, and the further use of Sketchup modelling, to locate and evaluate existing and proposed site design in support

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Edvard Munch, 'Historien', 1911, Universitetet i Oslos aula (Photo: UiO / Terje Heiestad. Reproduced with permission from UiO)

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