

Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information	
Name	Germaine ter Brugge
Student number	4818539

Studio		
Name / Theme	Transitional Territories <i>Altered nature: poetics of change</i>	
Main mentor	Dr. Diego Andres Sepulveda Carmona	Section of Spatial planning & strategy in Urbanism
Second mentor	Dr. Fransje Hooimeijer	Section of Environmental Engineering in Urbanism
Argumentation of choice of the studio	I am interested in the absorptive capacity of territories in climate crises and the occurrence of weather extremes, with a focus on the just distribution and exploitation of resources. Potential consequences of extreme climate scenarios for vulnerable groups and landscapes. Affection with morphology and earth sciences, social sciences, art as a manifesto, geo-politics, nature, and restoring ecosystems. The creation of long-term adaptational scenario planning.	

Graduation project	
Title of the graduation project	Counteracting desertification and abandonment in the rural Spanish landscape: revealing potentialities of regeneration through a local sensitive adaptive strategy.
Goal	
Location:	Monfragüe, Extremadura, Spain
The posed problem,	The intensifying global challenge of rising temperatures continues to worsen existing problems in semi-arid regions, contributing to reduced rainfall and increased evaporation. Particularly vulnerable areas will be further affected, adding to the challenges they already face. Human activity also plays a major role in causing desertification, particularly in Spain, where 75% of the land is at risk of becoming desertified. The additional factor of depopulation, mainly due to economic challenges, increases the vulnerability of rural areas and

	<p>triggers a damaging cycle of land abandonment and degradation. This socio-environmental challenge has far-reaching consequences for local communities and ecosystems that go beyond demographic shifts.</p> <p>In the semi-natural landscape of the dehesa, the abandonment of cultivated land is threatening its continuity, posing an immediate threat to the region. Without immediate action, the land will lose value, organic soil matter will disappear and local communities will face further abandonment. These intertwined challenges are disrupting local ecosystems and threatening community well-being, and require urgent attention. Existing strategies fall short by failing to take a holistic view of this multifaceted problem, highlighting the need for comprehensive and adaptive solutions.</p> <p>In the midst of these challenges, there is a critical need for knowledge to counteract territorial degradation, focusing on the central role of individuals and communities in this process. Actions need to be directed towards long-term viability, emphasising a sense of ownership and responsibility for place. Place attachment, a key aspect, highlights the need to empower local communities, drawing on their cultural foundations and resources, to respond effectively to immediate and future threats. Facilitating transformative pathways towards ecosystem-based adaptation, validating local conditions, preserving cultural practices and restoring semi-arid lands are crucial steps to counteract depopulation and create sustainable actions across time and space. Building resilience within communities will be central to mitigating adverse impacts and ensuring that these areas adapt and thrive in the face of impending challenges.</p>
research questions and	<p>How can adaptive strategic planning (A) be integrated in the development of a 'resilient system of care' for local communities (B) to mitigate the socio-environmental impact of depopulation and desertification (C) in rural Spanish regions?</p> <p>Sub questions</p> <p>Assess</p> <p>What are the environmental, ecological, social, and economical impacts of desertification and depopulation in Extremadura?</p>

	<p>How are local communities currently responding to the challenges posed by desertification and depopulation?</p> <p>Design</p> <p>What is a resilient system of care and how can it mitigate desertification and depopulation in rural Spanish communities?</p> <p>How can transformative adaptation contribute to a resilient care system for this region?</p> <p>What nature-based solutions can be implemented to restore landscape quality?</p> <p>Who are potential agents in developing a territorial management framework for Dehesa landscapes in Extremadura?</p> <p>How can local communities be engaged in a transformative adaptational framework for the future of the dehesa?</p> <p>How can a system of care be facilitated by local and national government?</p> <p>Evaluate</p> <p>How can the implementation of adaptive strategic planning contribute to building resilience within a system of care?</p> <p>How effective are nature-based solutions in creating resilience of the socio-ecological system?</p> <p>To what extent can local regenerative nature-based practises revert the process of desertification / restore ecosystem health?</p> <p>To what extent can policies facilitate change in the system of care of Dehesa landscapes?</p>
design assignment in which these result.	<p>The dimensioning of resilience in depopulating and desertifying areas. Through revealing constrains and potentialities of the current system and forecasting socio-environmental conditions, a strategy for land management can be formulated. This then informs scenarios that will help to develop an adaptive strategy and formulate policy recommendations that will facilitate</p>

	this strategy. In short, the formulation of recommendations for local communities and policy makers.
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Process

Method description

Adaptive strategic planning will be used as an approach: a flexible, dynamic strategy that addresses long-term objectives in the light of uncertainty and changing factors. Adaptability and the integration of diverse perspectives is central in addressing evolving environmental challenges. It goes beyond incremental changes and aims to create a more resilient and sustainable society capable of coping with and thriving in a rapidly changing environment. This approach recognizes the interconnectedness of social, economic, and ecological systems and seeks innovative and holistic solutions to build a more adaptable future. It considers both short- and long term factors and responsiveness. For long-term succession of the landscape, altered realities are explored through scenario building. These enhance the ability to respond to potential future conditions.

Methodological framework

subquestion	subjects	data collection			method	output
What are the environmental, ecological, social, and economical impacts of desertification and depopulation in Extremadura?	land cover	historical cartography analysis with GIS data	fieldwork on cultural landscape elements		layered landscape reconstruction: integrating historical map data with observations.	1 historical geo-spatial synthesis, a cartographic timeline and review on layer restoration
	management	literature on local vernacular practises	theory on Dehesa management	fieldwork and interviews on practises	systemic land management evaluation: assessment of vernacular and current practises including risk identification.	2 atlas of vernacular practises and land management in photo's, system diagrams, maps
	ecosystem health	data on water availability and quality	soil quality assessment through fieldwork	assessing bio-indicators with fieldwork	environmental quality assessment	3 holistic understanding of the environmental status shown in infographics and diagrams
	community identity	interviews on non-physical resources	interviews on community identity		community cultural resources assessment, qualitative data analysis	4 inventory of cultural identity and resources through story telling
	adaptability	analysis of physical resources and infrastructure	economic situation and additional values data	interviews on current flexibility to changes	resilience capacity assessment, combining inhabitant's perspectives, physical aspects and economic aspects.	5 comprehensive resilience report showing risks and opportunities
What is a resilient system of care and how can it mitigate desertification and depopulation in rural Spanish communities?	heat and drought	precipitation and heat projections			assessing the risks and hazards of drought and heat	6 forecast of the living conditions regarding heat, that can be used for different scenarios
	demographic change	National Institute of Statistics (INE) data projection	interviews with residents about consequences		synthesis of consequences of demographic changes	7 timeline with consequences of changing demography and key indicators
	economic activities	potentialities of semi-arid areas	interviews about local potentialities with stakeholders		synthesis of consequences and opportunities of economic activities	8 forecast of economic opportunities and pathways
	increasing resilience	literature review on developing adaptability	expert interview about active participation	literature on strengthening landscape identity	integrating qualitative and quantitative research, synthesize insights in a strategy	9 strategy for resilience based upon local conditions
	future management	theory on nature-based solutions	nature-based solutions best practises		integrated nature-based solutions strategy development	10 strategy for future land management: a system of care
How can the implementation of adaptive strategic planning contribute to building resilience within a system of care?	adaptive strategic planning	best practises of adaptive strategic planning	flexible points in current landuse	scenario testing through interviews	integrating adaptive strategic planning tools into the system of care through scenarios	11 location based scenarios and concluding adaptive strategy
	policy measures and alignment	vertical and horizontal bottleneck definition	interview with local actors		critical political review of the collaboration between governmental bodies and local actors	12 policy impact on management practises and guidelines for the future

Literature and general practical references

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Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?

Within the AUBS program, I am reflecting on the overarching theme of designing for pluralism. I am committed to raising the voices of those who are typically marginalised. This theme aligns with the Transitional Territories studio's stance on the plurality of life. The studio also provides a systematic approach where complex relationships can be explored and active engagement with the future can take place. The studio and urban design share a transdisciplinary approach, bringing together a variety of expertise: a richness of perspective that allows us to push the boundaries of what urban design should be.

What is the relevance of your graduation work in the larger social, professional and scientific framework.

Social impact

This research addresses the impacts of climate change on communities, focusing on the well-being and quality of life of people in vulnerable areas. By assessing current liveability, vulnerabilities are identified for both human and non-human species. It emphasises both socio-ecological justice as socio-environmental justice, recognising the interdependence of nature and humans, advocating against the disproportionate exposure of marginalised communities to environmental hazards. The research adds to existing studies on the impacts of climate change at the local level, demonstrating the capacity of communities to contribute to the mitigation of the effects of climate change. It also empowers communities and contributes to the preservation of local cultures, traditions and identities by detangling the cultural landscape.

Scientific impact

In addition, the research contributes to the paradigm shift of a non-anthropocentric design, an integrative approach to our existence and to the interdependence of different systems. It also elaborates on the new adaptive planning paradigm, which is responding to emerging challenges and capable of adapting over time. Bridging the gaps between urbanism, ecology, environmental science, geography, economics, politics and sociology, the research contributes to the field that advocates integrative multidisciplinary approaches to address today's complex challenges. By exploring best practises and assessing risks in a specific context, this design will contribute to ecological design and resilient planning with place-based solutions in semi-arid regions.

Professional impact

The findings of this research contribute significantly to the formulation of strategic approaches in the field of human-nature integration. The proposed multifaceted methodology can be applied in different contexts facing similar challenges, incorporating local perspectives and values into effective strategies. The study reflects on the responsibilities and skills of designers and advocates the inclusion of different scientific fields within the discipline of urbanism. It highlights the value of acquiring knowledge in management and landscape design as an urban designer. The research proposes tools that could be used in the professional sphere, broadening the scope of urbanism and emphasising its wider social and environmental impact.