Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences

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

Personal information	
Name	Maria Sutherland
Student number	6058337

Studio		
Name / Theme	Transitional Territories/Altered Nature - Poetics of Change	
Main mentor	Diego Sepulveda-Carmona	Spatial Planning & Strategy – Metropolisation processes; Climate change adaptation and mitigation strategies; Societal processes in spatial planning
Second mentor	Alexander Wandl	Environmental Technology and Design – Circularity; Peri-urbanisation processes; Sustainable urbanism; Territorial metabolism
Argumentation of choice of the studio	The studio selection reflects my initial interest in a systemic and multi-scalar approach to planning and design when entering this programme, as well as my personal values regarding the indivisibility of societal and natural processes in urban development. As my research develops, I hope to investigate how spatial planning and design can influence practices and acts of care to promote convergence, build transformative capacity and reorganise territories for disaster-resilient futures. Additionally, I aim to explore design pathways that emerge from engagement driven transformations. The methodological approach of the Transitional Territories studio offers a critical perspective on processes of change, mirroring my interest in uncovering interdependencies and roles of actors engaged in territories that built disaster-risk as they were urbanised. The diverse expertise of the studio's tutors can inform my research by shaping different perspectives to approach my hypothesis. Furthermore, a history-informed approach, as the one the studio follows, conforms with my research's focus on process-based risk and the evolution of its parameter. An environment built on shared values, as the one in Transitional Territories is, can help me structure my ideas, explore different representational methods and develop a research with contribution to the field of climate adaptation and mitigation strategies.	

Graduation project	
Title of the graduation project	**Cascades of Catastrophe:** Caring Pathways to Transformability
Goal	
Location:	Northern Mediterranean region Case study in Marathon, Greece

The posed problem,	The Mediterranean basin is recognised as a climate change hotspot, facing increase in air and surface temperatures, decrease in precipitation rates, longer drought and fire seasons and rise in rainfall extremes. (IPCC, 2022; MedECC, 2020; UNEP/MAP, 2017) The region is characterised by its geomorphology that juxtaposes high mountain peaks and low-lying coastal zones, creating climate variability and suitable conditions for highly interconnected climate risk. (IPCC, 2022; Lionello et al., 2006) As population grew rapidly in the 20th and 21st century, Mediterranean cities began expanding and stroked the development of dispersed and low-density territories in the peripheral areas that also serve for the increasing demand of resources. As a result, these peri-urban territories, that are in continuous urbanisation, function with conflicting land-uses that interfere with natural processes and degrade land quality. An amplification in intensity and extent of interrelated natural hazards, like fires and floods, has become prominent in peri-urban zones, straining resources even further and posing threats to human well-being, culture and biodiversity.(Imbrenda et al., 2021; Mimikou et al., 2013) The existing climate of uncertainty and instability has risen urgent calls for climate action, local transformations and risk management that interconnects hazards and integrates diverse practices, to shift away from inadequate static risk approaches that focus on preparatory and responsive actions.(Serra-Llobet et al., 2023; UNDRR, 2020) Peri-urban zones of the Mediterranean, that are under high pressure from interconnected disasters, face difficulty in building capacities and reducing disaster risk due to their multiple and highly related functions. Segregation, disparities and conflicts created by these conditions hinder such environments from building transformative capacity and acting towards disaster-resilient futures. Therefore, convergence between local actors towards a common goal that rebalances socioenvironmental processes is a key aspect for risk-based planning and risk reduction strategies to build more robust, but flexible peri-urban environments.
research questions and	Main Research Question: How can actor-relational theories enter spatial planning and design to cultivate practices and acts of care that reorganise peri-urban Mediterranean zones towards disaster-resilient futures? Sub-Questions: In the context of peri-urban zones of the Mediterranean basin, [Hazard] 1. How do hazard interactions increase risk? 2. What limits do hazard interactions pose for territorial organisation? [Exposure] 3. How did peri-urban expansion alter local conditions that increased disaster risk? 4. Which elements in the built environment influence most disaster risk by intervening with natural processes? 5. How do all engaged beings with these elements interrelate?

	[Vulnerability] 6. Which actors within these interrelations are more susceptible to disaster effects? 7. What characteristics and/or processes hinder stakeholders from actively engaging in local transformations? [Capacity] 8. What strategies can enable processes of local transformations by incentivising stakeholders to practice and act with care? 9. How can design reveal and strengthen relations between actors to facilitate practices and acts of care? [Transferability] 10. How can the emergent strategies and principles be transferred in other territories that face similar climatic conditions and geomorphological structure?
design assignment in which these result.	The overall assignment of this research is the development of a methodology on transformative capacity building in Mediterranean peri-urban zones through engagement driven practices and acts. This methodology results from the progression between research questions, the re-evaluation of their outcomes and their synthesis. During the analysis and assessment, where I investigate the processes involved in hazard and exposure evolution, the following outcomes are expected: [a] An analysis and representation of the cascading effects of natural hazards on natural processes in the territory of Marathon, [b] A multi-hazard assessment of Marathon, indicating units with specific environmental sensitivities in the area, [c] A review of the extent and spatial distribution of changes in the territory regarding key risk factors in the cascade of fires to floods. This review will lead to an identification of urbanised areas with critical role in disaster-risk formation, [d] The identification of factors that permit harmful alterations. Following this stage the research will develop in three parts that incorporate care theories in the context of the case study. From the chapters "Caring for", "Convergence" and "Taking care of" [e] a representation of the system of care in the critical urbanised areas will occur. More specifically, "Caring for" will produce: [f] An analysis of the system's actor interrelations, interdependencies and power dynamics, [g] An identification of opportunities for co-creation and bottom-up interventions.

	"Convergence" includes: [h] A review of socioeconomic and cultural factors that restrict transformative capacity in the territory, [i] A set of strategies for incentivising and engaging attentively, [j] A design proposal reshaping actor interrelations to reinforce their system of care through lived experiences that activates a process of disaster-resilience building. "Taking Care of" integrates the previous findings and is expected to result into: [k] A set of strategies and design principles for building transformative and adaptive capacity, [l] A strategic plan for the area of Marathon that describes development pathways towards a disaster-resilient future.

Process

Method description

This research develops through a sequence of sub- questions that derive from the main research question and aim, as formed from the problem statement and hypothesis. Using a multi-scalar approach each research question unfolds a set of methods that result in outcomes. These outcomes are revised by feedback loops as key theories and concepts enter the research and new findings pose more limits. Along this process, earlier outcomes are utilised in combination with other methods to progress. Ultimately and as the aim and contributions are approaching the aim, different outcomes are collected and strategically grouped into a methodology, as well as a set of strategies and design principles. The outcomes in combination with concepts and theories develop a strategic plan and a design proposal for the case study. The following theories are introduced gradually in the research and progress as indicated below:

[1] Hazard Interactions and Cascading Effects
[2] Process-Based Risk
[3] Peri-Urbanisation
[4] Systems of Care
[5] Evolutionary Resilience

In the methodology followed qualitative, as well as quantitative methods are utilised. The methods that are expected to be used are the following and may need to be reviewed and adjusted as the research unfolds.

Expected Methods:
- History informed analysis
- GIS overlay analysis
- Literature review of theories, concepts, policies and newspapers.
- Fieldwork
- Interviews
- Stakeholder mapping
- Power-interest grid
- Design experiments
- Transferability check

Literature and general practical references

Hazard Interactions and Cascading Effects:

- Gill, J., & Malamud, B. (2012). Reviewing and visualising interaction relationships for natural hazards. 708.
- Tsoutsos, M.-C. (2023). Cascading Effects of Major Natural Hazards in Greece. https://doi.org/10.3390/IECG2022-13958

Process-Based Risk:

- Serra-Llobet, A., Radke, J., Kondolf, G. M., Gurrola, L., Rogers, J. D., Lindbergh, S., & Douvinet, J. (2023). Risk as a process: A history informed hazard planning approach applied to the 2018 post-fire debris flows, Montecito, California. Frontiers in Environmental Science, 11. https://doi.org/10.3389/fenvs.2023.1183324

Evolutionary Resilience:

- Davoudi, S., Brooks, E., & Mehmood, A. (2013). Evolutionary Resilience and Strategies for Climate Adaptation. Planning Practice & Research, 28(3), 307–322. https://doi.org/10.1080/02697459.2013.787695

Peri-Urbanisation:

- Imbrenda, V., Quaranta, G., Salvia, R., Egidi, G., Salvati, L., Prokopovà, M., Coluzzi, R., & Lanfredi, M. (2021). Land degradation and metropolitan expansion in a peri-urban environment. Geomatics, Natural Hazards and Risk, 12(1), 1797–1818. https://doi.org/10.1080/19475705.2021.1951363
- Wandl, A. D. I., Nadin, V., Zonneveld, W., & Rooij, R. (2014). Beyond urban–rural classifications: Characterising and mapping territories-in-between across Europe. Landscape and Urban Planning, 130, 50–63. https://doi.org/10.1016/j.landurbplan.2014.06.010

Systems of Care:

- Krzywoszynska, A. (2023). Taking Soil Care Seriously: A Proposition. In N. Patzel, S. Grunwald, E. C. Brevik, & C. Feller (Eds.), Cultural Understanding of Soils: The importance of cultural diversity and of the inner world (pp. 395–408). Springer International Publishing. https://doi.org/10.1007/978-3-031-13169-1_19
- Puig de la Bellacasa, M. (2012). 'Nothing Comes Without Its World': Thinking with Care. https://journals.sagepub.com/doi/10.1111/j.1467-954X.2012.02070.x

Research Bibliography (so far):

- IPCC. (2022, February 28). Cross-Chapter Paper 4: Mediterranean Region. https://www.ipcc.ch/report/ar6/wg2/chapter/ccp4/
  Lionello, P., Malanotte-Rizzoli, P., Boscolo, R., Alpert, P., Artale, V., Li, L., Luterbacher, J., May, W., Trigo, R., Tsimplis, M., Ulbrich, U., & Xoplaki, E. (2006). The Mediterranean climate: An overview of the main characteristics and issues. In P. Lionello, P. Malanotte-Rizzoli, & R. Boscolo (Eds.), Developments in Earth and Environmental Sciences (Vol. 4, pp. 1–26). Elsevier. https://doi.org/10.1016/S1571-9197(06)80003-0
- MedECC. (2020). Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future. First Mediterranean Assessment Report (Version 1). MedECC Reports. MedECC Secretariat, Marseille, France. https://doi.org/10.5281/ZENODO.7224821
- Mimikou, M., Makropoulos, C., & Papathanasiou, C. (2013). An Innovative Approach to Floods and Fire Risk Assessment and Management: The Flire Project.
- UNDRR. (2020, July 31). Climate action and disaster risk reduction | UNDRR. United Nations Office for Disaster Risk Reduction. https://www.undrr.org/climate-action-and-disaster-risk-reduction

- UNEP/MAP. (2017). Regional Climate Change Adaptation Framework for the Mediterranean Marine and Coastal Areas. Climate-ADAPT Sharing Adaptation Knowledge for a Climate-Resilient Future. https://climate-adapt.eea.europa.eu/en/metadata/guidances/regional-climate-change-adaptation-framework-for-the-mediterranean-marine-and-coastal-areas

Data Collection Bibliography (so far):

- Data.europa.eu. (n.d.-a). Retrieved 13 November 2024, from https://data.europa.eu/data/datasets/ypogeia-ydatika-swmata?locale=en
- Data.europa.eu. (n.d.-b). Retrieved 13 November 2024, from https://data.europa.eu/data/datasets/da-ydatopidakes?locale=en
- Data.europa.eu. (n.d.-c). Retrieved 13 November 2024, from https://data.europa.eu/data/datasets/da-onomasia-koinoxristoi?locale=en
- Earth Resources Observation And Science (EROS) Center. (2017). Shuttle Radar Topography Mission (SRTM) 1 Arc-Second Global [Tiff]. U.S. Geological Survey. https://doi.org/10.5066/F7PR7TFT
- ERMIS-F Geoportal. (n.d.). Retrieved 12 November 2024, from https://geoportal.ermis-f.eu/layers/geonode:Perifereiakes_enotites/metadata_detail
- Global Human Settlement—Download—European Commission. (n.d.-a). Retrieved 26 November 2024, from https://human-settlement.emergency.copernicus.eu/download.php?ds=ucdb
- Microsoft/GlobalMLBuildingFootprints. (2024). [Python]. Microsoft. https://github.com/microsoft/GlobalMLBuildingFootprints (Original work published 2022)
- Γεωπύλη. (n.d.). Retrieved 14 November 2024, from https://www.ktimanet.gr/geoportal/catalog/search/browse/browse.page
- ΟΜΒΡΙΕΣ ΚΑΜΠΥΛΕΣ – 2ος ΚΥΚΛΟΣ – Σχέδια Διαχείρισης Κινδύνων Πλημμύρας. (n.d.). Retrieved 13 November 2024, from https://floods.ypeka.gr/sdkp-lap/omvries-2round/
- Όρια Δήμων (Καλλικράτης)—HELIX. (n.d.). Retrieved 13 November 2024, from https://data.hellenicdataservice.gr/dataset/63786e9f-7be9-4d1e-99c9-48ff45d0962f
- Περιφέρειες Ελλάδας—Περιφέρειες Ελλάδας—HELIX. (n.d.). Retrieved 12 November 2024, from https://data.hellenicdataservice.gr/el/dataset/28121643-d977-48eb-a8ca-a6fac6b4af6d/resource/acc93c28-1efd-4306-953c-7616e8d211e2
- Σύνολο δεδομένων—Κυρωμένοι δασικοί χάρτες 2022—Ελληνικό Κτηματολόγιο. (n.d.). Retrieved 20 November 2024, from https://data.ktimatologio.gr/dataset/277ae323-104f-43d4-b1ac-446ed7da2a8e
- Ψηφιακά Χαρτογραφικά Υπόβαθρα—ELSTAT. (n.d.). Retrieved 14 November 2024, from https://www.statistics.gr/digital-cartographical-data
(N.d.). Retrieved 14 November 2024, from https://gis.floods.ypeka.gr/?lon=23.853038915532352&lat=38.14956453329846&zoom=9

Additionally, data is retrieved from fieldwork and interviews.

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)?

   The thesis revolves around the alterations posed to nature through peri-urbanisation that amplify the highly interconnected disaster-risk in the Mediterranean basin. By approaching risk as a process in this research the effects of growing natural scarcities that trigger cascades of natural hazards are addressed. Additionally, the hindered ability of society to

re-organise the processes of its socioecological systems for a structure aligned with natural processes, can be perceived as a scarcity of social learning and preparedness that the thesis investigates. The theme of the studio "Altered Nature – Poetics of Change" is, therefore, closely connected to the explorations the research aims to undertake. While the thesis tackles topics that belong in the fields of geoscience and social science when looking at processes that build-up risk, the role of urban studies, spatial planning, governance and urban design in disaster-risk becomes evident in the problematisation and theoretical framework. This indicates how the thesis relates to the master track of urbanism. The lenses taken progressively in the research to address nature, society, economy and form in an urban-rural context cover the different realms of urbanism, landscape and building sciences that the master programme (MSc AUBs) aims to integrate.

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

Scientific relevance:

This thesis addresses, in the existing climate of uncertainty and instability due to climate risk, the importance of understanding risk as a process. This conceptualisation of risk highlights the role of local management of land, water, innovation and risk. Aiming for disaster-resilient futures, this research builds a theoretical body that portrays how phenomenology can enter urban studies, spatial planning and design to activate local systems of care and attentive engagement as a process of building capacity. Taking this perspective of practices and acts of care as a key to territorial transformations contributes to bridging a broad research field of climate adaptation and mitigation strategies with local practices.

Societal relevance:

The thesis arrives to conclusions and proposals with a focus on actor relations and interdependencies. It investigates strategically how the re-establishment of the relationships between society and nature can build transformative capacity. Ultimately this addresses issues of socioenvironmental and climate justice, while reimagining ecosocial relations that pave the way for safer environments that can sustain local communities and biodiversity. The expected methodology, along with the planning and design proposals suggest ways for a caring society to live with uncertainty instead of fighting it.

Professional relevance:

This research forms a methodology which is developed analytically across the whole body of the thesis. Methods of analysing, assessing, representing and integrating socioecological processes inform practice on how it can approach risk-based planning and design. The expected outcomes form a set of tools that address land-use management, stakeholder engagement and multi-hazard adaptive design. The focus on local practices addresses how multi-disciplinarity can be achieved in co-operative risk management and develops roles for multiple professional fields.