ARCHITECTURAL HERITAGE

MUR DM 118 - Heritage Risk-knowledge documentation protection

Funded By	MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] Politecnico di TORINO [P.iva/CF:00518460019]

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Context of the research activity	The proposed research intends to deepen the study of heritage at risk both on a national and international level, through a multi-scale interdisciplinary approach (from the small scale to the single architectural artefact), with the intention of developing and testing strategies for the analysis, documentation and conservation of cultural heritage. It fits perfectly into the research topics that characterise the PhD programme in Architectural and Landscape Heritage and envisages synergic work with some of the bodies responsible for the protection of the heritage itself, such as the Superintendencies and international bodies such as ICOMOS, ICOM and UNESCO. Progetto finanziato nell'ambito del PNRR – DM 118/2023 - CUP E14D23001880006

	Cultural heritage constitutes a resource whose preservation is motivated not only by being "testimonianza materiale avente valore di civiltà", but also by the important role it plays in actions aimed at promoting the regeneration and economic and social development of those territories that are currently in a critical condition. As stated by the Cultural Heritage Counts for Europe Report (2018), "Cultural heritage is a significant creator of jobs across Europe, covering a wide range of types of jobs and skill levels: from conservation related construction, repair and maintenance through cultural tourism, to small and medium-sized enterprises (SMEs) and start-ups, often in the creative industries". More recently, the PNRR also highlighted how investment in the protection and enhancement of landscape and cultural heritage also offers the opportunity to create synergies with strategic priorities such as green transition, environmental sustainability, social inclusion and regeneration. Safeguarding and enhancing the heritage requires action both to promote its conservation by mitigating the risks of natural and/or man-made origin to which it is subjected, and to promote its more widespread use and enjoyment. In this perspective, starting from the analysis of the criticalities

Objectives	affecting small urban or rural centres (in line with what is promoted by the PNRR, Mission 1. Digitisation, Innovation, Competitiveness and Culture), as well as the sites whose outstanding universal value has been recognised by UNESCO, it is considered important to develop strategies for the documentation, analysis, conservation, restoration, regeneration, use and management of the landscape and cultural heritage. The specific objective of the PhD study is to train a researcher profile that can recognize, in the critical and interdisciplinary approach to heritage knowledge and documentation, as for all BAP candidates, a fundamental point of any type of possible intervention. In particular, the 3-year research will aim to develop a technical and methodological approach that exploits advanced strategies related to the knowledge, documentation, and protection of heritage at risk. The specific applications and interests will be identified according to the Ph.D. students' profiles. They can be identified at the urban scale or on extensive architectural complexes isolated or disseminated in the territory or on single buildings. Some of the possible objectives could be: - Analysis, digitalization, classification, and interpretation of archival sources; - New approaches to the study of the built environment in its constructive and material connotations; - Costruction and transmission of a cognitive documental apparatus; - Critical knowledge of the built environment and recognition of values - Participatory processes for value recognition and heritage protection; - 3D digitization using range-based and image-based techniques - SLAM based mobile mapping techniques (UAV and terrestrial) - 3D GIS and BIM/HBIM - 3D modeling - Artificial Intelligence machine learning for cultural heritage (CNNConvolutional Neural Networks and/or GAN- Generative Adversarial Networks) - Development of strategies to increase heritage resilience; - Experimentation of new materials, products and methodologies of intervention for the conservation of landscape and cultural heritage.

Skills and competencies for the development of the activity	DPA Ph.D. candidate's work will be planned as a shared schedule: partly in the Polytechnic of Turin and partly abroad (minimum of six months) according to the requirement of the present scholarship (the location of experience abroad will be defined during the first year of the Ph.D.). The candidate should hold a Master's Degree in Architecture, Archaeology, buildings Engineering, or Civil Engineering. Competencies of candidates are requested in the main sector of the Ph.D. course.