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Overlapping Layers: a representation and learning landscape code for Dropull

Key words / integrated survey, cultural heritage, stratification, layers, landscape.

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Abstract
This research paper provides a base for drawing up the development of a general strategy and "acupunctural" experiences to identify and record liminal landscape potentialities of the Municipality of Dropull, located in the South-eastern cross border area between Albania and Greece. According to this key objective, the study looks at the liminal characteristics and potentials of Sofratikë, one of the four villages of the valley of the Drinos River, in order to achieve the knowledge and understanding of many positive features related to the liminal dimensions of landscape, metaphysical landscapes, and landscape experience. The analysis moves from two main driver-topics - "Landscape" and "History", to a general strategy that defines acupunctural interventions at a later stage. The acupunctural systems – water, roads, mountains, valley, archaeological area, and Sofratikë village - are those landscape and design strategies aimed at identifying specific sub-areas of intervention in the macro landscape unit. In fact, they are independent parts of the landscape, which - if interconnected - allow an overview of the macro landscape unit. Therefore, the acupunctural interventions become actions of modification and sustainable development of the territory, because of levels of the same landscape unit, or rather of the same milieu. In the order to achieve these aims, the research identifies a specific methodology, by focusing on Sofratikë's landscape' layers, classifying different stratification layers of the area: archaeological area, historic-settlement, rural and agricultural landscape.
A first approach to analyze Sofratikë's landscape is aimed at mapping and – at a later stage - overlapping the main physical layers, which have been defined and distinguished as the following stratification levels: the mountains, Sofratikë city, the quarry, the agricultural fields, Hadrianopoli. Starting from this investigation and after an overall photo screening, a first, possible general strategy has been outlined, focusing on the identification of two main liminal development directions. Within the first direction, the longitudinal liminality has been analysed, connecting Sofratikë's historical and rural city with the archaeological area of Hadrianopoli, through the main physical infrastructure - the national road - and natural systems – agriculture landscape and Drinos River. The second direction highlights the transversal liminality developing the connection between the SofratiKë system (just embedded the historic city, Hadrianopoli, natural, rural and infrastructure systems) with other archaeological sites like Antigonea and Melan. Once this framework has been established, the main acupunctural strategy to achieve the revitalization of this site has been investigated. Four principal clusters have been identified as driver-systems to plan the punctual redevelopment strategy and related following acupunctural activities.
These potentials, which characterize the rural and cultural context, are in contrast to real and current area's conditions, which is mainly abandoned. Therefore, to promote a coherent revitalization of Sofratikë, which could involve the adjacent villages, and to identify appropriate acupunctural actions, this first analysis – that of using the integrated survey approach and procedure would need to be improved. Indeed, this approach can achieve an analytical knowledge of the city system, thorough documentation and data collection (using different devices and methodologies according to the purposes of the survey). Moreover, this

procedure will allow transferring and aggregating the main aspects - "layers"- of the historical, cultural and landscape Heritage using "semantic" models (connecting different information - documentation, plans, historical data, etc. - to survey drawings or models), making possible an increase of landscape's valorisation and the fruition of the whole area. Furthermore, through this methodology, which allows one to connect and overlay different levels of data and information, it's possible to verify the general strategy, while checking and strengthening related acupunctural interventions. The integrated documentation and survey procedures, using a multidisciplinary approach, allows "reading", analysing and explaining the main layers characterizing this area. In fact, involving in this process many actors with different and specific skills, it is possible to open new research avenues towards the knowledge, understanding, conservation, safeguard, redevelopment and valorisation of the architectural, urban and environmental heritage of the whole Municipality of Dropull.

Introduction

The liminal landscape is configured as a morphing space, an overlapping of sedimentary layers in continuous physical, social and cultural transformation. Analyzing a liminal landscape means, therefore, adopting a multi-scalar and interactive approach, precisely because it's possible to recognize different stages of physical space - natural and perceptual, in which the social dynamics, the complex internal and external relations to this specific social-spatial ecosystem play a special role. In this dimension of "limen", the landscape, as a place built and transformed by human action, becomes a flexible and adaptable organism, far from being a linear and deterministic process. It is conceived as a dynamic perceptive process in the representation, organization and classification of space, an element of an order of the community conflict that is reflected in the transformation, or rather in the new definition of the physical, natural and cultural features of a place. From this perspective, analysing the liminality of a landscape means asking which models of stratigraphic, morphological and geometric representation and interpretation should be adopted. Which are the codes to read and identify the conflicts, therefore, the potentials of the site? Could these decoded and represented potentials be in harmony with information for the planning and development of an entire area and its community?
The landscape dimension contains the concept of limen. In fact, Landscape, as Couquelin states, "is a representation of the unrepresentable, the visible form of the invisible, which is typical of our representation of nature, the prodigy of an invisible for an instant that is seen" (A. Couquelin,1995). This means that in the landscape all the figurative and cultural signs of traces, sensations, sedimentary lines that find physical correspondence are in harmony with each other. The landscape, as will be also seen in the case study analysed, includes complex relationships, not hierarchically organized and trans-disciplinary - natural, anthropic, historical, urban-architectural,

Fig.1 / Sofratikë's city landscape. Source / the author

socio-economic. In this framework, it is necessary to define a matrix, a structure, a figurative synthesis, as per Eisenman (L. Prestinenza Puglisi, 2001, p. 68-69), which can facilitate the understanding of the real dimension. This matrix is composed of signs, which in the current study become layers of the landscape. By representing, classifying and organizing these layers, it is possible to decode the entire system and its features, extending the methodological approach to the other villages of the Municipality of Dropull. Intrinsically, the landscape will be broken down into its characterizing elements: specific layers will narrate the specificity, criticality, and potentiality of the site. Through these components, following longitudinal liminality and transversal liminality, many natural, historic, cultural, economic and social layers are defined. Mapping and overlapping landscape levels, the whole organism of the landscape of Sofratikë will be outlined. This leads to a framework view suggesting guidelines for sustainable social, economic and cultural development and valorisation of the area under investigation.

Strategy: liminal layers

In the landscape "dimension" of the Municipality of Dropull the concept of limit should be understood as a possibility to identify new meanings that raise real possible directions of development of the area. Liminality shall be understood as a mark, an interactive and dynamic container in which all the social, cultural and economic tightness are included and where new landscape frameworks with their identities are built. "Limits are not set as clear signs (...); instead they represent elements of the passage, transitory dimensions, able to mark the difference between what is now, and what, instead, is not yet there or that maybe there will be tomorrow" (A. Balzola, A. M. Monteverdi, Milano 2004, p. 526).

Considering this context, the first step to analyse the liminal potential of the municipality of Dropull, starting from the pilot case of Sofratikë' s village, is to apply an integrated approach. This procedure allows reading and analysing the main factors characterizing the liminal unit of the territory: crosswise and longitudinal liminality. A process of description and representation of the entire complex landscape system aims to decode the main stratigraphic signs, meanings, and signifiers, within the longitudinal landscape and the transverse landscape systems. The longitudinal landscape system holds together the architectural and urban system of the village, with the rural and infrastructural system and the archaeological area of Hadrianopoli. The transverse landscape system connects the described longitudinal unit with neighbouring systems having similar geomorphological, socio-economic and historical-cultural characteristics.

The identification and definition of the layers characterizing the territory is a fundamental action. These levels are physical and metaphysical boundaries, geometric-morphological, historical, cultural, natural, rural and socio-economic signs of Municipality of Dropull. Therefore, a relevant step is defining a matrix of layers allowing the multi and inter-scalar reading of the landscape, translating and interpreting the complexity, in order to decode the stratigraphic limits of the landscape unit and trace the existing spatial-temporal interconnections and interrelationships. This reading and representation approach should help to build a new strategic development view for the community of Drinos valley. Therefore, in order to achieve this aim, it is necessary

Fig.2 / Sofratikë's landscape. Stratification levels: the mountains, Sofratikë city, the quarry, the agricultural fields, Hadrianopoli. Source / ilmages developed by B. Nika, E.Petërçi, M. Suppa

to start mapping the landscape layers, build a system of overlapping thematic maps, and then restore and interpret the complexity of the liminal components. In this context, it is relevant to use and apply integrated survey methodologies and procedures. The purpose of using integrated surveying systems is to get digital databases, through the use of geo-information systems GIS and three-dimensional models, through laser scanning or digital photogrammetry connected with interoperable and integrated platforms. For instance, BIM platforms allow connecting physical elements (represented as parametric entities) with semantic elements of the landscape. The integrated approach could encourage planning a more efficient restoration, improvement and upgrading activities to revitalize Drinos valley's villages, and promoting more conscious documentation, conservation, protection and enhancement of the cultural heritage and landscape of Municipality of Dropull.

This research, starting from the Sofratikë's case study, proposes to elaborate a decoding and representation code of the liminal landscape. The aim is to support new approaches for the conservation, preservation, restoration, management of landscape system of the villages of Dropull and, as future steps, to promote all the possible actions to achieve an effective revitalization strategy proposal of the whole territory, and support and enable collaboration among local people and all different actors active in this field. First, the main layers characterizing the territory can be identified: the archaeological stratification in the area of Hadrianopoli, the historical settlement of the urban centre, natural and environmental values in the rural area and the quarry adjacent Sofratikë. These tangible layers are strongly linked to the social and economic productive structure of the place, a structure which, today, is almost completely disintegrated. In this direction, the study will analyse integrated survey methodologies and technological approaches to carry out and apply effective strategies for the conservation, valorisation, and enhancement of a unified vision of the area by interlacing and superimposing its specific identity layers (Fig. 2).
Therefore, by applying survey devices such as 3D laser scanning, digital photogrammetry, GIS system, it is possible to integrate collected data in

an H-BIM environment (Historical or Heritage BIM: parametric modelling applied to Cultural Heritage). These digital data can be structured and fed into integrated platforms, which can then be used to analyse, decode and represent liminal layers surveyed within the area in a diachronic dimension, allowing to collect in one digital model all the information needed to manage sustainable development and regeneration of this Region. To achieve this goal, integrated survey systems and procedures will be adopted; different survey devices will be used during all phases of documentation, acquisition, representation, analytic interpretation and data management, depending on intrinsic specific landscape features under analysis. Through the GIS information systems, it is possible to realize cartographies and map specific layers of the area. They could be identified in four main units:

- the environmental system, which includes the Drino river canal system and the mountain system; - cultural heritage, namely the system of churches of Sofratikë and the archaeological area of Hadrianopoli;
- historical settlement system, including the consolidated urban fabric with its typical buildings, the traditional terraces and the typical paths built with local stone;
- the productive economic system in the area connecting Sofratikë with Hadrianopoli.

Applying this integrated methodology, it is possible to achieve a first syntactic reconnaissance of the landscape unit, through a thematic map for each of the four main liminal layer and its sub-environments. These layers are liminal levels; in fact, each of them represents a singular system. Therefore, through cartography, it is possible to overlap them and allow the transversal reading of the specific identities - archaeological, historical, landscape, settlement, socio-economic.

GIS cartography allows implementing a multi-scalar reading of all aspects of the territory: different landscapes, described by different layers integrated into single matrix cartography, will be represented and decoded within a single landscape unit.

Furthermore, through GIS cartography it is possible mapping a connecting spatial limit and lead it back to spatial objectives that respond to specific cultural and socio-economic needs, which can be understood as starting points for an appropriate strategy of enhancement and regeneration.

This system allows managing the monitoring of the ongoing urban and social transformations and future possible actions of cultural and socio-economic development, defining efficient programs of restoration, valorisation, and regeneration of the whole Municipality of Dropull. Overlapping the maps of the liminal layers, it is possible to identify buffer zones and diaphragm areas where services and activities corresponding to the potential of socio-economic development networks can be inserted. Moreover, by using laser scanning integrated into digital photogrammetry, it is possible to acquire and manage punctual and accurate information on the urban, architectural, archaeological and infrastructural systems. These technologies allow achieving more precise documentation, conservation, protection and enhancement of Sofratikë's cultural heritage and landscape.

Applying these technologies and integrating them with a topographic survey could allow morphological, geometrical, structural and environmental analysis of different urban volumes, ranging from the architectural to the territorial scale. In fact, by using these devices, an integrated digital database can be carried out: many captured data can be queried, extracted, and used to organize geometrical, morphological typological and technical classification of the traditional cultural and landscape heritage. The role of data captured and processed to support systematic and accurate documentation, representation and interpretation of the cultural and landscape assets is evident. 3D models related to other integrated digital and geographic systems guarantee knowledge and representation of geometry and morphology survey of each landscape element allowing to represent data at the architectural and territorial scale and morphological landscape sections. In this direction, through the 3D model containing laser scanning, photographic, and topographic data, an integrated and implemented database can be realized. The integrated survey becomes essential to support the creation of a comparative model - available in real-time - through which it is possible to decode the architectural, urban, archaeological, infrastructural, sedimented signs of the village's landscape and support documentation, representation, conservation, restoration, enhancement and maintenance projects.

Therefore, the laser scanner acquisition methodology connected to the digital photographic and topographical survey

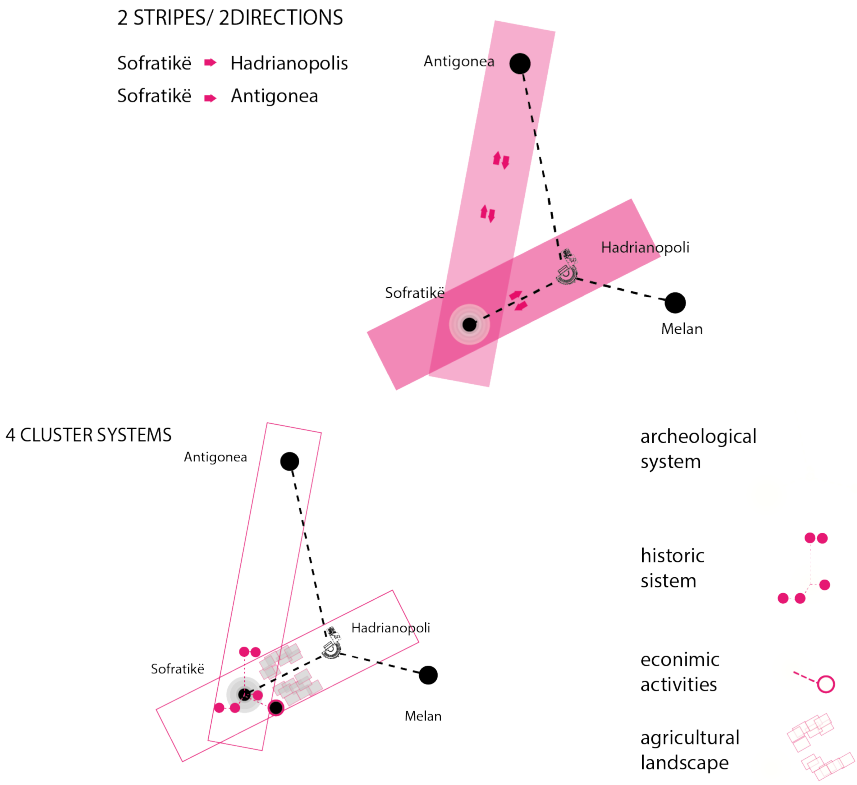

Fig.3 / Developed Strategy: by B. Nika, E.Petërçi, M. Suppa during PhD Workshop 34th Cycle_ follow up for PUBLICATION RURBAN SEQUENCES. Inquiries on Dropull's states of Liminality

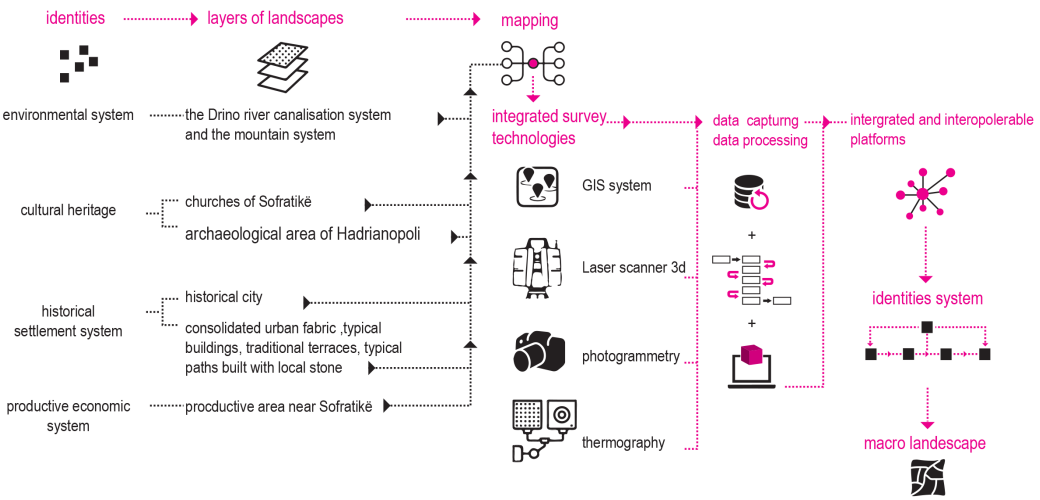

Fig.4 / Integrated survey approach. Source / Methodological diagram developed by the author

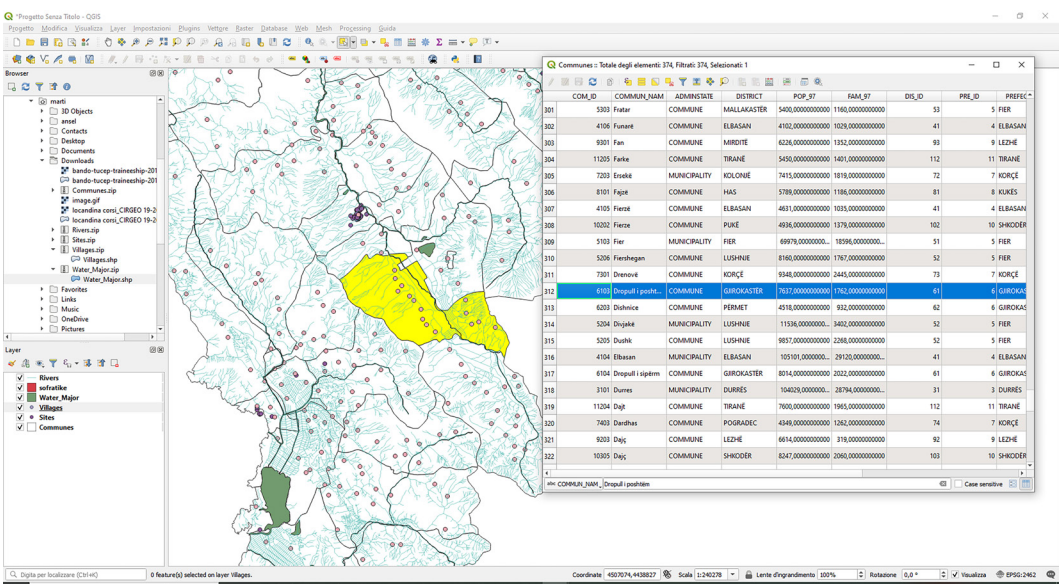

Fig.5 / Example of cartographic elaboration on QGIS of the municipality of Dropull. Source / the author

is aimed at validating the survey process integrated with a complex landscape context for morphology and its accessibility levels, since it allows to decode, define and represent the morphometric information of the landscape context modified over time by human action. Indeed, having an integrated morphometric database allows to identify some liminal layers of the natural, urban architectural landscape and to assess the transformations, losses, processes of degradation, changes. In this context, this methodology could support the enhancement of the archaeological area, both for the documentation of the amphitheatre and as a tool of preventive archaeology for future planning of a new excavation campaign. Working along the liminal diaphragm of the Hadrianopoli archaeological area could trigger processes of enhancement and regeneration pushing both towards Sofratike, and towards the adjacent archaeological areas, such as Antigonea. Therefore, experimentations with the integrated methodology could effectively be used as a resource for regeneration, where universities and higher education schools could, in cooperation with local authorities, open real processes of social and cultural revitalization for this area. Moreover, the database could be the basis for the design of a BIM digital platform, where morphometric layers are related to semantic layers. The aim is to have an implementable and interoperable platform necessary to regulate the restoration, conservation, maintenance and management of the existing cultural heritage, but also to provide an efficient tool for enhancement actions and the inclusive fruition of data and metadata, accessible to different users - from experts to tourists.

Conclusions

The research-based on this approach will be carried out through survey methodologies, integrating existing devices (3D Laser scanning, digital photogrammetry, GIS system) and integrating them with collected data in an H-BIM environment, in the perspective to analyse, decode and represent the liminal dimensions of Sofratikë. In this case, applying integrated survey methods and procedures on the case study of Sofratike could be the first validation step of this approach that could be extended to neighbouring landscape units. In fact, through integrated survey procedures and methods, a protocol of decoding and representation of the entire municipality in a single macro landscape unit can be one of the main outcomes. Therefore, starting from a mapping of the potentialities inherent in the liminal stratigraphy that characterizes Dropull area, this integrated decoding and representation code, once verified, can be applied as a knowledge tool aimed to documentation, conservation, restoration, monitoring, valorisation and planning of possible scenarios of governance, revitalization and socio-economic development of the overall Municipality of Dropull.

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Fig. 6 / Sofratikë's landscape. Source / the author

Fig. 7 / Sofratikë's landscape. Source / the author

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