STRATIGRAPHY OF INNER SPACE - A METHOD OF INVESTIGATING PREEXISTENCES

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Abstract. Since the beginning of the last century, the term stratigraphy has been associated with archaeological research through various references to the analysis of all the layers constituting a pre-existence.
The historical monuments present this duality by which the exterior and the interior can initially be studied separately, to recompose the reading of the whole in a second phase. The stratigraphic method is defined as an overlapping relationship between the disciplines of architecture and archaeology with deconstruction, which becomes the analysis key to understanding how the interior space was designed. The process by which an element, structure or construction is initially decayed for examination and later recomposed is part of a quasi-repetitive, mathematical investigation system.
The present article intends to emphasise the analytical way each addition, completion or modelling of the original material may be revealed and interpreted by explaining and defining the stratigraphic method. Such an approach often appears in contemporary interventions associated with historical monuments, where the material limit of each layer is clearly demarcated. Like the hypothesis of Christian Norberg-Schulz, taken from the Swiss theorist Heinrich Wölfflin, Scarpian architecture, for example, does not consist of simple geometric shapes but starts from an overall spatial vision, a "topology", in front of which the detail becomes a subordinate element.
In-depth knowledge of all the elements that make up the interior architectural space is comparable to deciphering an archaeological site. Using a grid that repetitively sequences any structure, it will be possible to identify each intervention's meaning and importance over time by juxtaposing the negative (gaps in the material) and positive (traces in the solid), respectively, of memory and anti-memory spaces.
Thus, it can be considered that the interior architectural space is constantly fighting between the closed-tectonic Piranesian forms and the open, poetic ones represented by its original essence. We can associate the stratigraphic method with Franco Purini's definition of the design practice as a composition of elements. It can be thus considered that the interior architectural space is constantly fighting between the closed-tectonic, Piranesian forms and the open, poetic ones, represented by its original essence. We can associate the stratigraphic method with Purini's definition of the design practice as a composition of elements and implicitly an a priori knowledge of all the context fragments.
Introduction. Reuse and integration of a historic monument refers to the process of regenerating the vestiges, through a functional integration into contemporaneity, seeking to maintain unaltered its physical conservation. The preserved remains give the intervention scale of conservation and establish the object-visitor relationship. Although considered and integrated as inner museum spaces, archaeological areas support: restoration, reinterpretation and reconstruction processes, transformations into a permanent source of excavation and research, constructive destructions and modernizations. The lack of connections with the city leads to the introspection of sites and the exclusive dialogue with the place topology. The preexisting connection with their context is often represented by tissue planning and social fragmentation. Starting from the principle of continuous use, the paper will present new ways of approaching archaeology through integrative vision and contemporary intervention. Archaeology operates by excavation, bringing thoughtful contributions to the territorial changes as design proposals induce physical and functional transformations of space. Daniele Manacorda explains that excavation is a stratigraphic "disassembly", a destruction of previously generated order by each, intervention turns into open knowledge. Otherwise, the ruins absorb and change the whole context, becoming, through alienation, a conflict urban zone in which the structured city faces the archaeological gap. Contemporary materials, facilities or ephemeral scenography lead architecture to dialogue with its historical forms.
The close relations between humanities and computerized disciplines generate a new mechanism of analyses based not only on anthropological, historical and archaeological research but also on the introduction of digital theories, which seek "scientific" answers to issues related to the nature of dwelling. Generally, the visitor incurs difficulties while observing vestiges in reconstructing the antique representations mentally. The musealization process may use reconstruction as a didactic modality by which the monument presents its original image without destroying the existing remains.

Archiving data – the Stratigraphic Method. In archaeology, archiving the data represents one of the most important tools in researching a site. Most often, such a detection may prevent many problems caused by excavation. In this manner, the result of determining stratigraphic relations and site prospection maps, achieves the charts anomalies. One of the usual methods represents the site introspection, named periegesis, which reveals land or vegetation surface diversity for new archaeological site discoveries. After the utilization of Earth's first artificial satellite in 1950, photogrammetry became one of the basic instruments in the studies. These tools record information from the land surface through multispectral scanners [1] and panchromatic photos. Based on the presence of various phosphates, carbonates or nitrates, the soil indicates any dig-in, holes or channels that demand an excavation. The spectrozonal aerial photograms reveal these chemical phenomena [2]. Establishing the chromatic nature of a researched space may allow the identification of its archaeological potentiality. These non-destructive researches offer a real detection of a possible archaeological site.
The article will propose a series of specific terms for different disciplines aimed at understanding and interpreting the theoretical content. To this purpose, it may examine: the scientific base, the methodology evidence, the indicated disciplines and the report of various literature sources for a more complex acknowledgement. In this regard, the monument identity is associated with that type of representation that can keep alive a widely

recognized signified. Understanding a historical space means transmitting to public a series of information about the site, valuing and preserving it. Beyond the principles of (post-)processual archaeology, the stratigraphic method underlying the research will identify and systematize all the parameters of the context analysis.
The method is defined as an overlapping relationship between the disciplines of architecture and archaeology with deconstruction, which becomes the analysis key to identifying how the interior space was designed. Eduard C. Harris is the first archaeological researcher to find a stratigraphic investigation method (Figure 1). His surveys initiate from the entire area of the site. Previous researchers' theories (examples as Sir Mortimer Wheeler square analyses) decomposed the plan in various independent surfaces. It represents and functions as a unitary assembly, which uses digital instruments as the basis of its prototype model. The end of this process concludes with a 3D computerized model. From the field data, he operates with the horizontal and vertical sections of the whole complex. By this thinking, Harris eliminates the non-excavated zones, which results in the end of traditional digging. Through the method he describes a diagram sequence of all relations presented in a layer, without including other research parameters as the geographical and the anthropological ones. This approach represents the connection between the site, its limits and its possible reconstruction, through geophysical data. Sometimes, the prospection may encounter numerous problems due to excavation [3]. The most known method of remains analyzing is that of radioactive carbon 14C [4]. We experience a moment of denying the machinists, bionic and zoomorphic architectural interpretation variants, by examining a computing system whose parameters can actually generate errors in appropriating and understanding historical civilizations. Quantitative methods for determining spatial coordinates and dissemination of cultural heritage are presented by the New Archaeology movement and Computational Archeology. GIS system archives provide for this purpose aerial maps, which show the connection of the site to the surroundings and presents the detailed study of different evolutionary habitation phases. A special form of investigation is "archaeological informatics" (archaeoinformatics or computational archaeology), which structures the site information as an algorithm.
The Method of Edward Harris, which determines the so-called Harris Matrix, works for the first time with the tetra-dimensional space or Minkowski [5]. Any point from this plan is termed „event". A mono-dimension curve representing the „world line" underlines its history, defining its evolution along time by a succession of moments [4]. In this manner, the stratigraphic sequence is regarded entirely, as a sum of chronological relations. These do not refer to the ground's composition, but to the analyses of the contact surfaces between layers. Harris Matrix follows the four principles of stratigraphy: the superimposed elements, the original horizontality, the initial continuity and the stratigraphic succession. It is considered that the lower level is the oldest one. Due to gravity, all layers are initially horizontal; therefore, each mutation of earth surface is identified by this positioning. Various graphics present the relation between units based on the site data. Thus, Harris Matrix relates levels, interfaces and chronologies.
"The conceptual maps" of GIS are, most of the time, the appropriate graphic instruments to synthesize the archived data and the site relations (control method). Therefore, from an archaeological point of view, a Corinthian capital represents a singular stratigraphic unit; meanwhile, for the architect, it is important to analyze the relation between volutes and leafs levels or between abacus and echinus. An optimum division of the element's structure shows its proper nature. The research result corresponds to the fluid space that functions following the principles of the peer-to-peer network, regarding the equivalence of relations.
The lacunar and fragmented remains of the past periods become the research thesis on sites. For this purpose, regressive methods investigate the contemporary forms of the actual territory and identify, through stratigraphy, the present traces. GIS system is used from the microscopically to a macroscopically database. The method has the advantage of creating not only an information archive but also a thematic map with each one of the parameters that interest the stratigraphic unit. The Italian archaeologist Tiziano Mannoni said that there is no archaeology without archigraphy. He introduced „interpretation" as a new coordinate in the studying process. The information archive represents an unrepeatable practice, so the database should remain open to other research works.

The internal archaeological space. The character of the antique life and the importance of architecture in past periods are derived from trace studies, which determine space usage. During the Roman-Greek period, the streets were already conceived for "jus eundi", which indicated the right of passing, a Roman norm that regulated the urban areas. In that period the street was designed for strategic commercial reasons and presented important esthetical plan values. Through researchers, the Space Syntax British group provides a new methodology for studying the internal archaeological context. The observations identify a new layer, established by a series of categories of space relations, that condition, depending on distribution, the way of passing of individuals and the category of place manipulation. Built limits usually configure the internal connections of the site. The first analyses on edifices' signification for the city's life will establish the basic elements of the graph, as a schematic representation of existing trails. Space Syntax has developed an informatics graphic system that investigates the inner space of a site and the relationship between its morphological elements, by axial maps. The methodology found is that of representing all the convex spaces and the relation between similar units. The segments that unite them will underline paths, starting with the statistics to demonstrate that the straight direction (the visual one) suggests the followed itinerary. The axial space, the convex space and the "isovist" [6] one, are the three applied methods that explain the city street network, the distribution of the main buildings, their relations with the center and their functions. The study of movement in antique cities is fundamental because it reveals a series of new interpretations to the initial archaeological information. Fridell Anter and Weilguni detailed the method in their study of Pompeii's paths [7], offering qualitative data and quantitative evaluations (through distances). The interior of each building defines a convex space, no matter the wall divisions. The uses by superposing of all known paths excavated or not, identified various types of roads: orthogonal streets, spontaneous circulations and crossing site streets, to connect the forum with the city's gates. The union of more convex spaces through a singular axis configures

the initial design of a various environment, which visually interests the passenger [8]. The studies on integration and spatial segregation continue, relying by association the two moments of Pompeii: today and in the past, as visited and crossed.

Like the hypothesis of Christian Norberg-Schulz, taken from the Swiss theorist Heinrich Wölfflin, Scarpian architecture, for example, does not consist of simple geometric shapes but starts from an overall spatial vision, a "topology", in front of which the detail becomes a subordinate element. Scarpa can be considered an anti-designer since he does not create architectures but unique prototypes whose details cannot be separated from the whole. He exchanges architecture from the post-war political issues, to a personal one, distanced from the late principles of the Italian rationalists and from previous -isms. Starting from Scarpian's example, Giulio Carlo Argan considers that archaeology may live through its exhibition role. He seeks a type of restoration, in order to recover authenticity and search traces. Behind the walls of the enclosure facing the Adige River, Scarpa discovers medieval frescoes and a series of windows, which he opens, thus defining the plan of the internal staircase which connects the two levels. In the ancient walls facing the city, the discovery of the Morbio gate represents an element that facilitates the dialogue between the internal museum space and the pre-existing building [9].

Currently, spatial references indicate a variety of systems found in theatre thinking. This change is not related to the concept of place, as was seen by phenomenology, but to experience innovation and unpredictability. Attempts in achieving major scenography effects through an economy of means are made, via abstract forms, emphasizing trails, imagining backgrounds, organizing collections, valuing vestiges and controlling perspectives. Those details may be found in ruin to express the visitor's emotions induced by the gestalt's psychology effect. The entire visible space should be sequenced depending on perceptive modalities determined by expansion, distortion or emphasis processes. Based on the concept of scenography enunciated first by Vitruvius and after by Purini and Aldo Aymonino, there are compositional gestures which integrate the context through surfaces, verticals, enclosures, environments, figures, and recoils. New scenic forms follow the communication based on media technologies. For the same purpose of protecting patrimony goods and referring to their virtual reconstruction, UNESCO adopted the "Charter on the Preservation of Digital Heritage", relying on the representation at the territorial scale of a DEM (Digital Elevation Model), used as an indicator of historical traces. One of the most representative projects is the virtual reconstruction of the ruins of Saint Mary of Tergu, a study conducted by Prof. Letizia Ermini Pani. DEM offered information about the achievable paths or indicated some historical traces. These operations gave the image of the stratigraphic layering and the correct identification of the ruins on the site [10]. With this information from 2003, the extensive excavation, the publishing of the research data and the musealization of the area, opening it to visitors, started. In this manner, it appears that the restoration from 1959 was done with concrete mortar, which degraded various structures, causing salt deposits. It was also discovered that there have been build ex-novo walls which didn't appear in the old complex and that the mechanized digging ruined some monastery parts. The advantages of such a working process are the immediate archiving of data, the conception of different evaluation models of all superimposed layers and the permanent identification of vestiges on a site. The end of the project consists of the integral musealization of the complex, starting with its history and continuing with aspects of quotidian life, which was totally neglected before. The communication manner is that of an installation, which puts together the entire archaeological divided fragments. As a procedure, the landscape is initially created through Technical Regional Maps, GIS, and high-resolution images such as satellite photos, aerial perspectives or stereoscopies. Starting from the 2D information, raster, the CAD programs draw a detailed mesh of the area, the equivalent of a DEM. A rectified photo will give the real texture to indicate a realistic image of the virtual model. This program works as the laser scanning both at a territorial and a detailed scale, reproducing interior objects or other elements meant to illustrate the ambience of a complex. Various sections present all data, from the geomorphic aspects of a zone to its vegetation, hydrology or paths.

Since 1970, the idea of a diffused museum has spread all over the world. In this way, the archaeological museum may integrate new exhibition functions through the on-site antiquarium during the excavations and also when the digging process is finished. Corbusier talks about the necessity of the diffused building. Any edifice should present a flexible composition that allows its extension. The divided modules define the space, which respects the requirements and necessities of the public. The taxonomy of stratification method uses extensive surfaces. In this way, Turin became, from April 2011, the first model of a "diffused museum" in Europe, functioning as a virtual city of museums connected by technological platforms. The stratigraphic superposition generated by its reconstruction may potentiate the archaeological value of a site and communicate those aspects that led to the occurrence of marks and the disappearance of some historical levels. For a long time, the simplest and most useful way to provide information to all users in a comprehensive way, simulating the scientific ambience of the numerous professionals involved, was the virtual reconstruction. The archaeologists and other professionals from the field do not accept any more the idea of the restaurateur architect, who, from a fragment, succeeds in recomposing the entire building, giving a personal image to the operation and offering a deformed perspective over the past. Archaeologist-architects like Italo Gismondi created the image of the Antiquity that we have today through their reconstruction. A continuous form of renovating concepts and critical thoughts defines the notion of history. The importance of vestiges derives from its original relation with the context. Thus, "opened museum", as the city spaces that hold commemorative works, here should be quoted the case of the Alba Carolina Citadel, Alba Iulia, Romania, induce a new integration system, by its permanent and unconditioned presence of all participants that generates its dynamics, determining contemporary urban environment interaction with the history. On the site, there has been previously a Roman fortress, but the monument is better known for its Vauban model. The project managed to include the preexistences in an urban tour, revealing their best characteristics. Unfortunately, parts of the XVII century walls were lost, and in the restoration process a graph theory was needed. This procedure becomes, in this case, one of the most used ones to design or remodel an archaeological element

by a virtual process. The method is necessary to identify hidden parts of the original substance that were lost after the excavation [7]. Some researchers at The Hebrew University of Jerusalem implemented a computerized algorithm that generates all the meshes of an artefact so that it can be used directly by scanning during the site excavation. The sequence determines all the unseen scars and ridges of the object [8].

Conclusions – Strategic usage of archaeological database. In order to achieve an accurate knowledge of the archaeological goods, it is mandatory to emphasise differences between research information and reuse and between narrative forms of a survey experience and its authentic cultural values. The EngLald project, developed by Oxford University and the Strategic Environmental Archaeology Database Inter-linking Multiproxy Environmental [11], are one of the first programs to detect the continuity, transformation and identity of a landscape. In this sense, the reconstruction may begin from a story, not a report. The introduction of a digitalized system eliminates a number of inaccuracies, but it becomes accurately applicable only when linked to a subjective system generated by human nature. Its scope is to read archaeology by linking the artefact with its original environment, from climate to geographical characteristics, from ethnography to faunal properties. The studied element cannot be removed from its location before having a complex understanding of the process that generated it. For easier comprehension, it may be used the BugsCep Application [12]. It represents a Microsoft Access Application used to create various databases and taxonomies based on a SEAD information that connects more archives in the same time. The result is a realistic image of an archaeological remain from a certain historical period. This new manner of study led to the emergence of a new investigation field - Environmental Archaeology.

In 2007, the European Parliament adopted a directive called INSPIRED (Infrastructure for Spatial Information in the European Community), which became an international database for all Protected Sites. The benefits of the network are the publishing of the research data, its online access, the implementation of similar procedures in archaeology, and the development and sharing of new research projects by connecting similar sites [13]. The British and Scottish Parliament embraced the procedure from 2009, having ten years to accomplish the main processes. Unfortunately, in Romania the archaeologists represent an isolated community, where data is presented only in some enclosure environments and even if published, the studies are not shared with professionals. This attitude brings Romania to the limit of survival of heritage, a place where most of the monuments are at risk and where the digital theories are far away from their appliance. Following the law of museums and public collections, a new legal system was regulated. Ioan Opris emphasizes new perspectives in the research "Museum management and its applications". In Italy, however, legislative proposals have been replaced by charts. Three types of charts have changed the relationship of archaeology with the city: the constraints charts, archaeological charts, charts of archaeological potential and risk. These represent a way of revealing the preexistences after classifications related to typology, dating, and degree of conservation. They occur where there is a stratification of knowledge induced by the tutelage authority, as well as that of planning.

The linguistic rupture of professionals involved in the heritage sector may induce numerous trauma to the buildings, many of them showing negative effects over time. The article is interposed as a form of reconciliation between archaeologists and planners, trying to restore discipline report to preexistences and the city. The stratigraphic research method applied both to the urban and inner levels of a site and will function like a database where information can always be integrated. The process is considered a flexible form of recovery, which increases the monument's value without affecting its essential parts.

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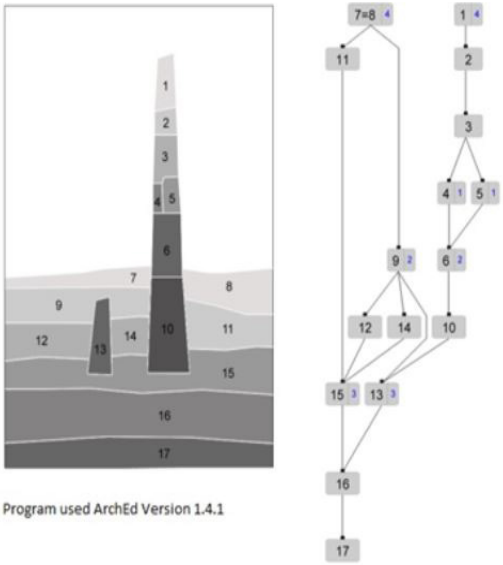
Figures.

FIGURE 1 - The stratigraphic relations as presented by Edward Harris
FIGURE 2 - The inner archaeological space, Carlo Scarpa

1.



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