Integration of three important urban spaces in the city of Patras: a design research on the relationship of characteristics of space and the enriched environment

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Abstract

This contribution presents a design project that focuses on three important urban spaces in the city of Patras. The contribution deals with some of the fundamental problems which depict in these particular areas. Two of the most essential issues of these abandoned and isolated places are the accessibility of pedestrians and the lack of identity. A design experiment is developed, identifying disadvantages of the space and taking into consideration groups of people that are interested in an upcoming change, This experiment is based on knowledge of neuroscience about space and it deals with human's experience and senses. It focuses on open urban spaces and the consolidation of a cultural and historical place into daily life.

Keywords

Patras, sites of archaeological interest, accessibility, pedestrians, enriched/extended environment.

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Introduction

Due to the constant process of urban development, city centers are being transformed continuously. Along with this process the historical traces created by the cultural identity are fading away. Patras is a city of significant historical and economic contribution to modern Greece. As a major port in the western Greece, Patras constitutes a crossroad of civilizations and acquired commercial importance in the contemporary Greece during the 1900s. In the case of the city of Patras after the 1900s the historical remains of each era come to light gradually and they create an undefined whole in the urban space of its center. The existing traffic system provokes major problems which lead to degradation and isolation of public spaces and consequently loss of their identity. Even the most significant historical spaces of the city, like the Roman Odeon, transform to an indifferent place surrounded by anonymous spaces as a result of contemporary urban transitions. Therefore the aim of the design project is to create an integrated urban space by developing a harmonic relationship among the predominant elements of the existing urban heritage.

Social interactions in a transitional urban zone

The study area is a neighbourhood with neoclassical buildings and an urban space renown for social interactions between the citizens as well as for commercial activities. It consists of three different but significant public spaces: a historic square known as 25th of March, the Roman Odeon and the ancient Roman stadium (fig. 1). The historic square of 25th of March, symbolizes the beginning of the revolution against the Turkish enslavement which occurred a hundred years ago. The Roman Odeon and the Roman stadium indicate the history of the city through the centuries. They are situated in the center of the city of Patras, but we can also recognize their supralocal value for the citizens. The Roman Odeon was discovered in 1889, and after 1960 the whole region, including the Roman remains, was gradually revealed and preserved. The Roman Odeon, as a tourist attraction, makes the neighbourhood vivid occasionally; while the public school, the orphanage and the elderly center, situated around the place, constitute the daily routine of the area and help us define the target age groups. These historically important places are located in the center of the city and, more specifically, they signify the transition from the Upper city to the Lower city (fig. 1).

Topologically, the Odeon and the historic square are situated in the Upper city, at a higher altitude and they are separated with a steep slope from the Lower city where the stadium is located. The route from the Upper to the Lower city is part of residents' dai-

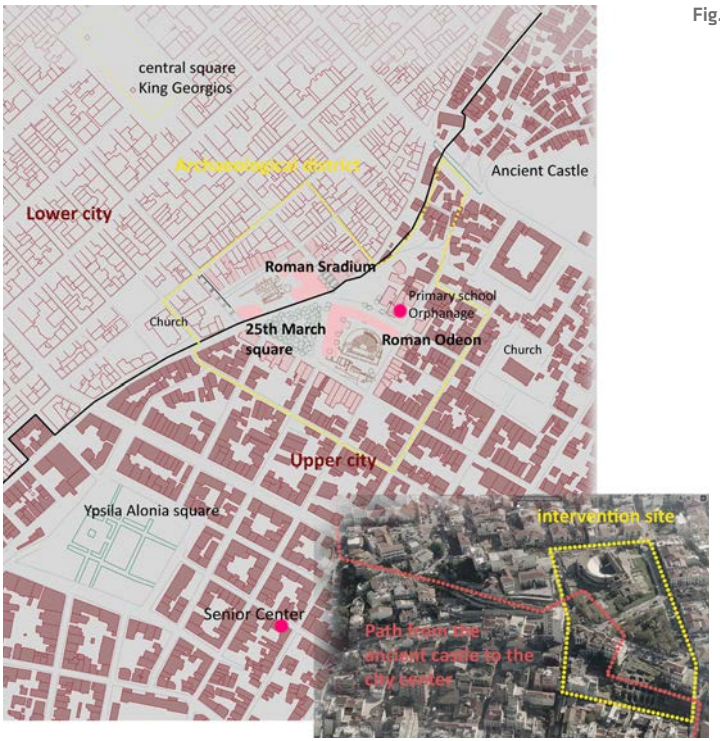

Fig. 1 – The study area and the new trace of the pedestrian's path in the map of Patras (elaboration by the author).

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Fig. 2 – The study area today (elaboration by the author).

ly routine, as the main square of the city, the market, and the port are located in the Lower city. As a result the citizens use the public wide stairs which unify the two topologies (fig. 2a). The inclination of the ground, the raw and inhospitable surfaces, the dominance of cars or even the metal rail that separates the public spaces, create an area which lacks of character and structure forms that are difficult for the residents to become familiar with (fig. 2a, 2b). Despite the fact that these important urban spaces constitute a daily passage for the citizens and a cultural destination of supralocal importance, they have lost their significance in the city center. The autoroute is the predominant element of the scenery and the square has been transformed to a roundabout. Additionally, the sidewalks around the square are used as a regular parking area, which is a constant problem for the pedestrians (fig. 2b). The pedestrian's zone access to the square is limited because of the traffic and also the high level of noise makes the square unpleasant. Consequently, the square and the Roman stadium can be defined as indifferent abandoned places. Despite the fact that the Roman Odeon attracts more visitors during the summer, because of some performances and events, these are temporary and cannot maintain a significant interest to the area. Evidently, these important urban spaces have ended up fragmented as a result of contemporary urban transformations.

Using knowledge from Neuroscience into design procedure

To create a new integrated urban space we have to take into consideration all the observations about the current situation. An urban place can be considered as integrated if the different elements, from which it originates, create functionally comprehensible links, structure a clear spatial order and promote their historical and cultural importance. During the process of defining the design strategy we

used the knowledge from neuroscience about space as a coherence tool. Consequently, this design project constitutes an experiment in applying an 'enriched environment' (see hereafter) in the real context of the city of Patras.

Neuroscience studies have demonstrated that the structure and configuration of space affect people's behavior (Eberhard, 2009). Environmental features as lighting, landmarks, branching paths and visual cues contribute to different aspects of spatial perception and memory. They can also have an effect on the psychological, cognitive and emotional state (Sternberg and Wilson, 2012).

For architects, the behavior of a person and especially the person's visuo-locomotive experience plays a vital role in the design process. For instance, in order to design a route, it is crucial to know that every user who explores the space creates a mental map that helps him memorize important paths (O'Keefe and Nadel, 1978). Additionally, neuroscience has provided evidence that the environment not only has a basic role in neuronal processing of perception, but it can also enhance this process (Praag et alt, 2002; Praag et alt, 2000). The term 'environmental enrichment' is associated with stimulation of the brain by its physical and social surroundings (Rosenzweig, Bennett, 1996). Hence, the study area can be used as a vessel for a number of spatial activities and thus be transformed into an enriched environment. Taking into account the capacity of the brain to respond to environmental stimuli, this research focuses on creating the spatial opportunities for the enhancement of mental activity for age-specific target groups.

Basic points of a new design strategy

Two different age groups, the elderly and the children, who are more sensitive to enriched environments, are selected as target groups (Nelson et alt., 2009; Nussbaum, 2011). The potential benefits

Fig. 3 – Design strategy for an enriched environment according to the needs of the specific target groups (elaboration by the author).

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Fig. 4 – Design strategy diagrams (elaboration by the author).

Fig. 5 – Spatial translation of the neuroscience knowledge in practice (elaboration by the author).

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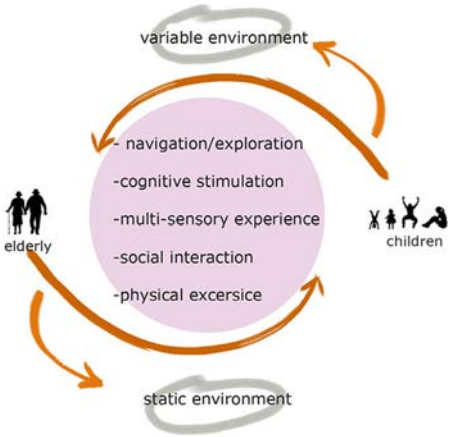
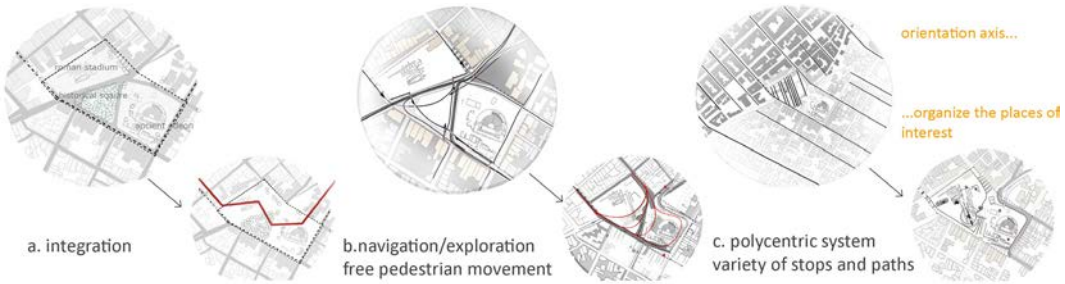
Fig. 6 – Aerial view of the intervention area (elaboration by the author).



from an enriched environment, which are common to both target groups, are what determined the design objectives. These include dictating the main routes, accessibility, and allocating a large variety of functions in the available space. The differences of the two target groups suggested the development of two distinct and contrasting activity areas a) a static one and b) a continuously transformable field (fig. 3). Specifically, the key elements of the expected experience of the users in an enriched environment, namely 'navigation, exploration, multi-sensory experience, cognitive stimulation, social interaction, physical exercise/action', suggested a design approach that involved three space organizing principles: 1. the polycentric system; 2 the exploration/navigation experience; 3. the social and sensory interaction. These three spatial organizing principles are used as main design strategies in order to deal with the needs of the places.

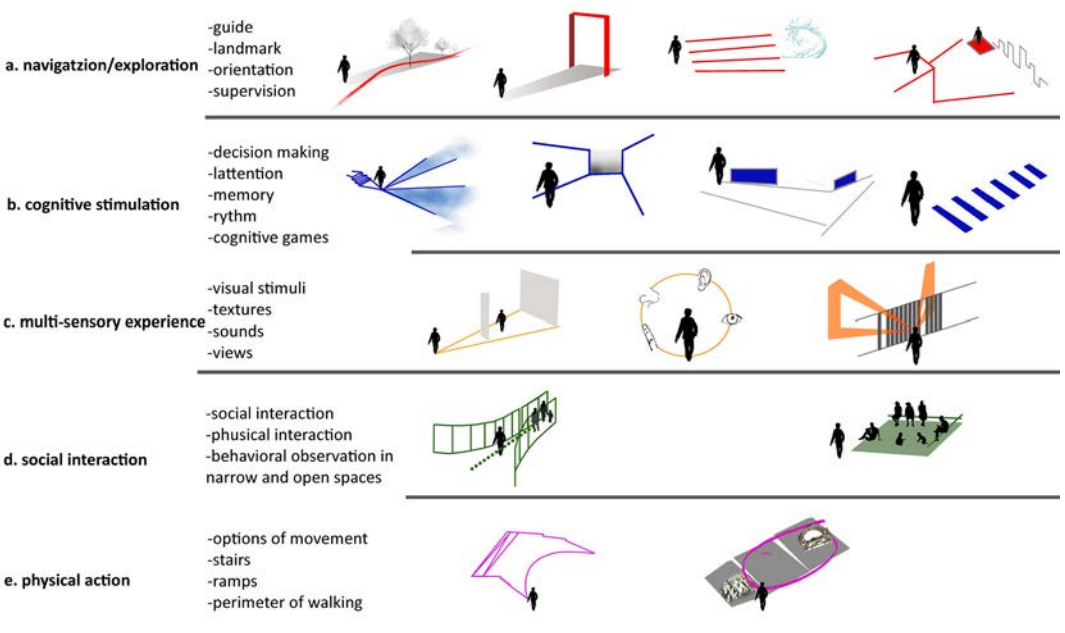
1. Integration of these three urban spaces
   The integration of these public spaces of great cultural and historical importance in the city center seems to be the most appropriate contributions of design options for the regeneration of the region and the borderline between the Upper and the Lower city. Two abandoned urban spaces, the archaeological site of the Roman Stadium and the historic square of 25th of March, will be unified with the territory of the Roman Odeon (fig. 4a). These separated places will be transformed to an 'Archaeo-Park' in order to highlight the importance of these archaeological monuments and to promote a new identity. This new 'Archaeo-Park' will regenerate this significant urban park in the city center and it will encourage social interaction among visitors as well as sensory interaction between them and the environment.
2. Ensuring of pedestrians' accessibility
   The new composition of this unified urban space promotes the spatial exploration of the environment and for this reason provides a number of possible routes in the open field. Pedestrian movement branches all around the park (fig. 4b). In order to make this functioning in real life, we have to consider the problem of traffic dominance in the area. It is important not to hinder the functional routing of vehicle traffic through the city center but at the same time to establish pedestrian dominance. By regulating vehicle traffic in the area, pedestrian accessibility to the 'Archaeo-Park' will be restored. By limiting the number of cars around the park and restricting the traffic solely to the west side, the unified urban space will gain a new significance and potential. The conversion of the streets around the park to low traffic routes eliminates the noise and

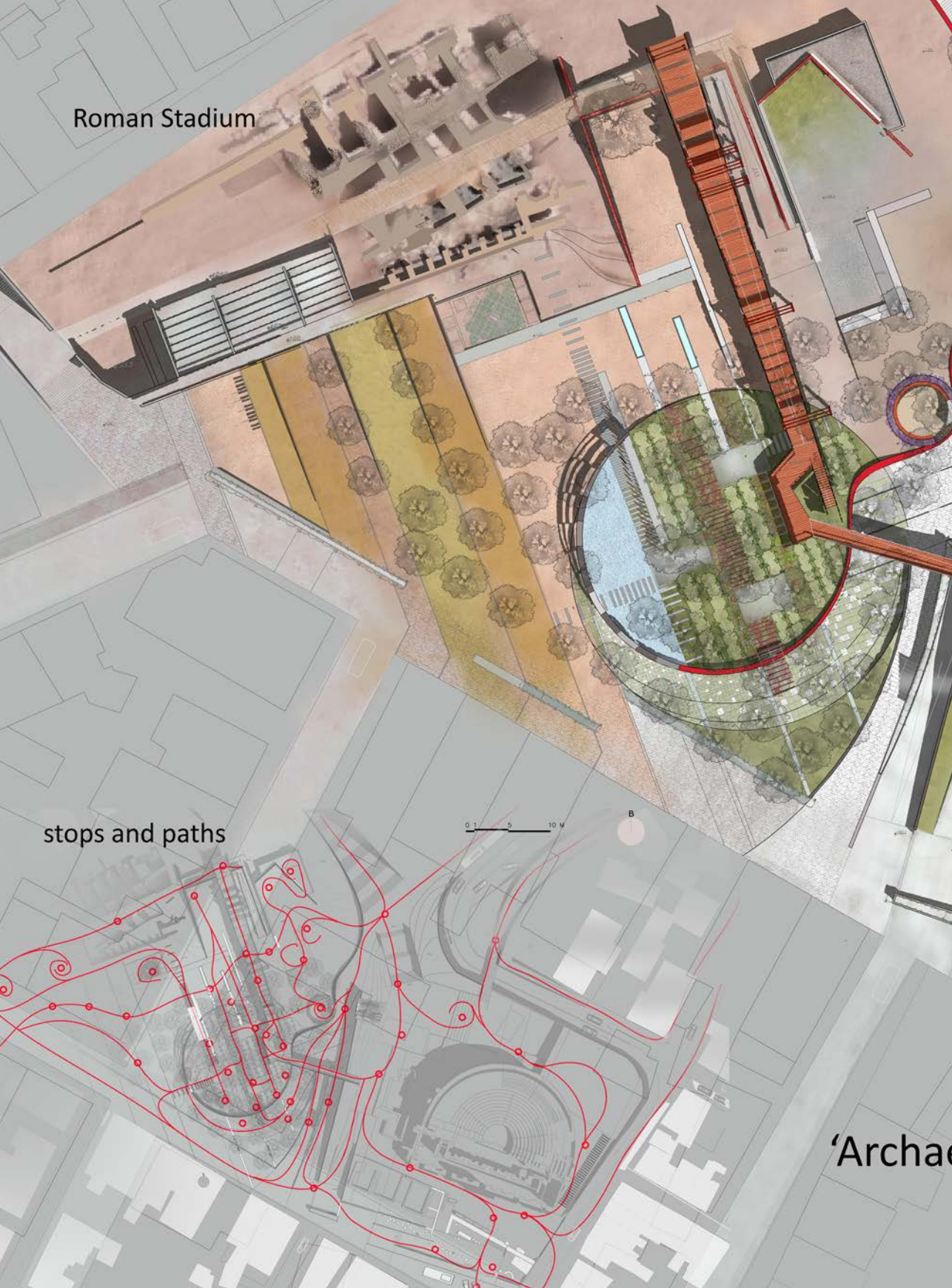


promotes the freedom of pedestrian movement. Moreover, new bus and taxi routes facilitate the public transportation in the area and link the park with the whole city. Bicycle trails and stops in the east area of the park also boost the use of bicycles in the city center. Consequently, the flow of people in the park will be undisturbed and this new situation presents the opportunity of freely navigation and exploration of the place.

3. A new identity as a place of interest

The proposed interventions certainly facilitate the pedestrian movement into the whole area, and provide for more choices. In order to manage this freedom of movement and give a new abundance of spatial experiences, we designed a number of different places for relaxation, socialization and activation of senses by working on a larger scale (1:1000-1:500) and in detail (1:100-1:20),




Roman Stadium
stops and paths
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pedestrians' path
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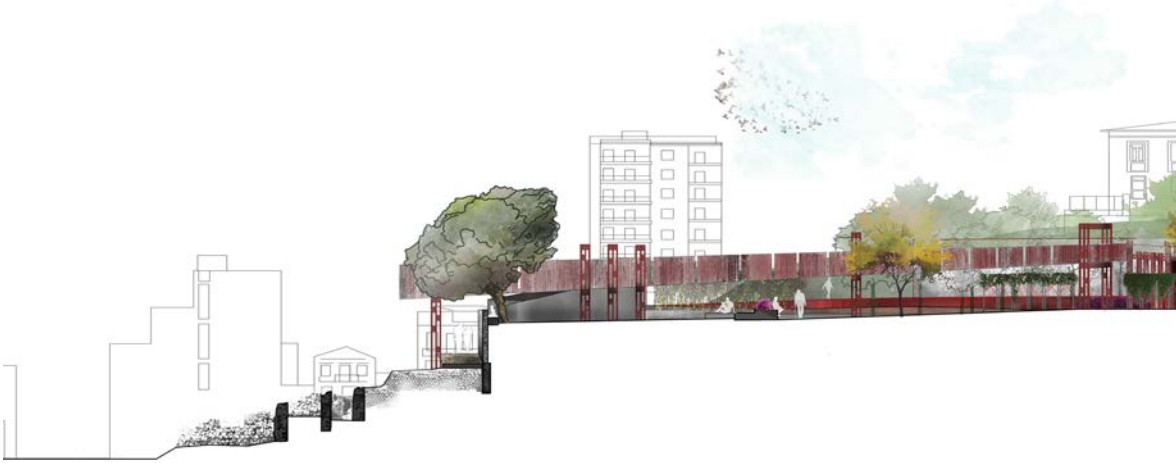


in order to focus on human body and its experience in space. This approach of a polycentric system encloses different features and gives a new role to this particular urban space. The various elements are organized in a system of parallel axes, which direct the gaze into the sea. This system is influenced by the city planning in Patras, which facilitates this orientation (fig. 4c).

Translation of design principles to space

An enriched environment can reinforce different experiences and behavioral aspects, as physical action, decision making, maintenance of attention, memory games, social interaction, navigation, exploration and orientation. These elements through the process of designing in large scale are spatially translated into architectural features. Consequently, the detailed design of this urban space reveals the way in which sensorial, motoric actions as well as social activities are influenced by elements of architecture and landscape. Particularly, the role of design process, according to the research outcome is to:

- provide guides and landmarks which help in locomotion and orientation, reduce anxiety, stress levels during the navigation process and help in configuring the appropriate path (fig. 5a);
- compose cognitive stimulation points which support the decision making process, the maintenance of attention; design memory and mental exercises like urban games and puzzles. These activities help mostly the elderly to maintain their abilities in memorizing and recalling. Moreover, adults and children can benefit from these activities by developing new exploring routes (fig. 5b);
- trigger senses, enable visual games and optical cues (fig. 5c). Our senses provide us with direct awareness of the external world and its properties. As Meyer adds, one's daily activities depends largely on the senses (www.cdhaf.org). Cognitive psychologists suggest that the main ingredient of the intellectual phenomenon is sensory stimulation that allows a human being to apprehend through its senses its environment and respond towards it. As for the memory, Damasio supports that we can be conscious of what we recall, or what we can see, hear or touch in real time because we recall not only our sensory experience but also our past emotional reactions (Damasio, 1999). Thus, multi-sensory environments can improve the development of thought but also of memory and emotions;
- promote and enhance social interaction in different places, by using different spatial characteristics such as open or narrow places (fig. 5d). Social interaction helps elderly people keep their mind alert (Nussbaum, 2011), and continuously provide new stimuli for children;

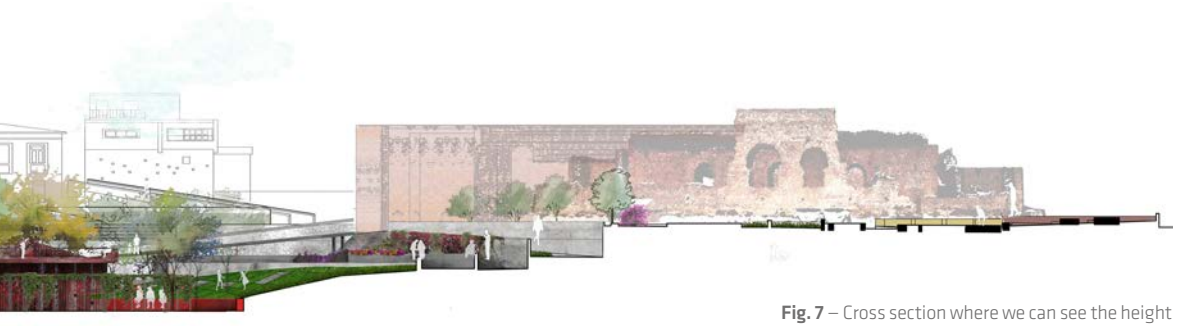


Fig. 7 – Cross section where we can see the height differences of the intervention area (elaboration by the author).

pages 44-45
Fig. 8 – The main routes and the places of interest (elaboration by the author).

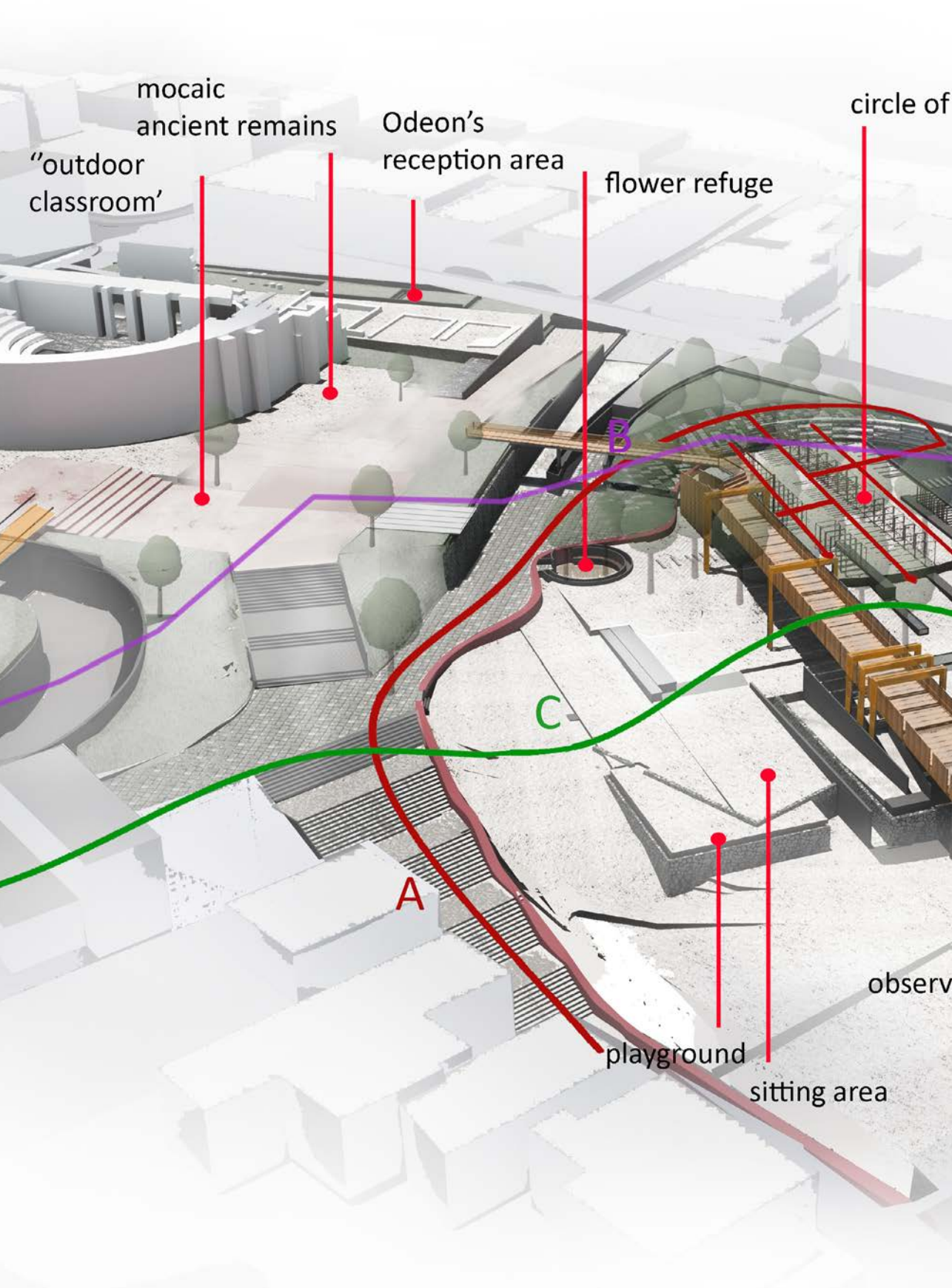
- promote different types of physical action by designing stairs, ramps and walking paths all over the park (fig. 5e). Socialization and communication for adults becomes more effective when coupled with an overall healthy lifestyle, including a nutritious diet and physical activity.
- By examining the master plan two main components are easily identified: the linear axis of the bridge (fig. 6) and the circle. These two elements act as landmarks and also unify the 'Archaeo-Park' with the rest of the city.

The bridge is part of a walk that starts from the ancient castle and arrives to the port. This pedestrian path unifies many important archeological places in the city, passes through the intervention area and consolidates the archaeological sites with the park. The bridge enables visual contact with the upper parts of the city and leads to an observatory where the visitor has an overall view on the lower parts of the city and the port. After that, visitors walk towards the Lower City from the archaeological sites of the Roman stadium (fig. 7).

The circle is called 'the circle of the senses'. It consists of the destination point of another path that starts from the Lower city and is highlighted by a continuous multi-functional red-colored bench. The circle, with orthogonal patterns inside, simulates the street planning of the city of Patras, with straight lines toward the sea. The linear paths and the small glades among trees give the impression of the city in a symbolic way.

Every trip through the ''Archaeo-Park'' is unique as the visitor can choose from among multiple paths, approaching and exploring the same places in a different way (fig. 6). There are three main paths. Each one of them has a distinctive role in the composition. The first is a path towards 'the circle of the senses'. The second is the bridge that provides an overview of the city and the third promotes communication and socialization among the visitors (fig. 8). During the design procedure each snapshot of these routes was analyzed according to the main design principles.

The first route starts from the stairs of the Lower city and cross a pedestrian walk full of sounds, smells and textures. There are various stops where visitors can relax and communicate, and numerous crossroads where visitors can change a path and explore another particular place (fig. 9a). The second path, is routing to the intervention area from the Upper city and passes through the Roman Odeon. Subsequently, the visitors can follow the bridge towards the city. The bridge provides a completely different experience from the open archeological site. While walking across the bridge the walker's attention is focused at its end, where the city is framed,


mocaic
ancient remains
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B
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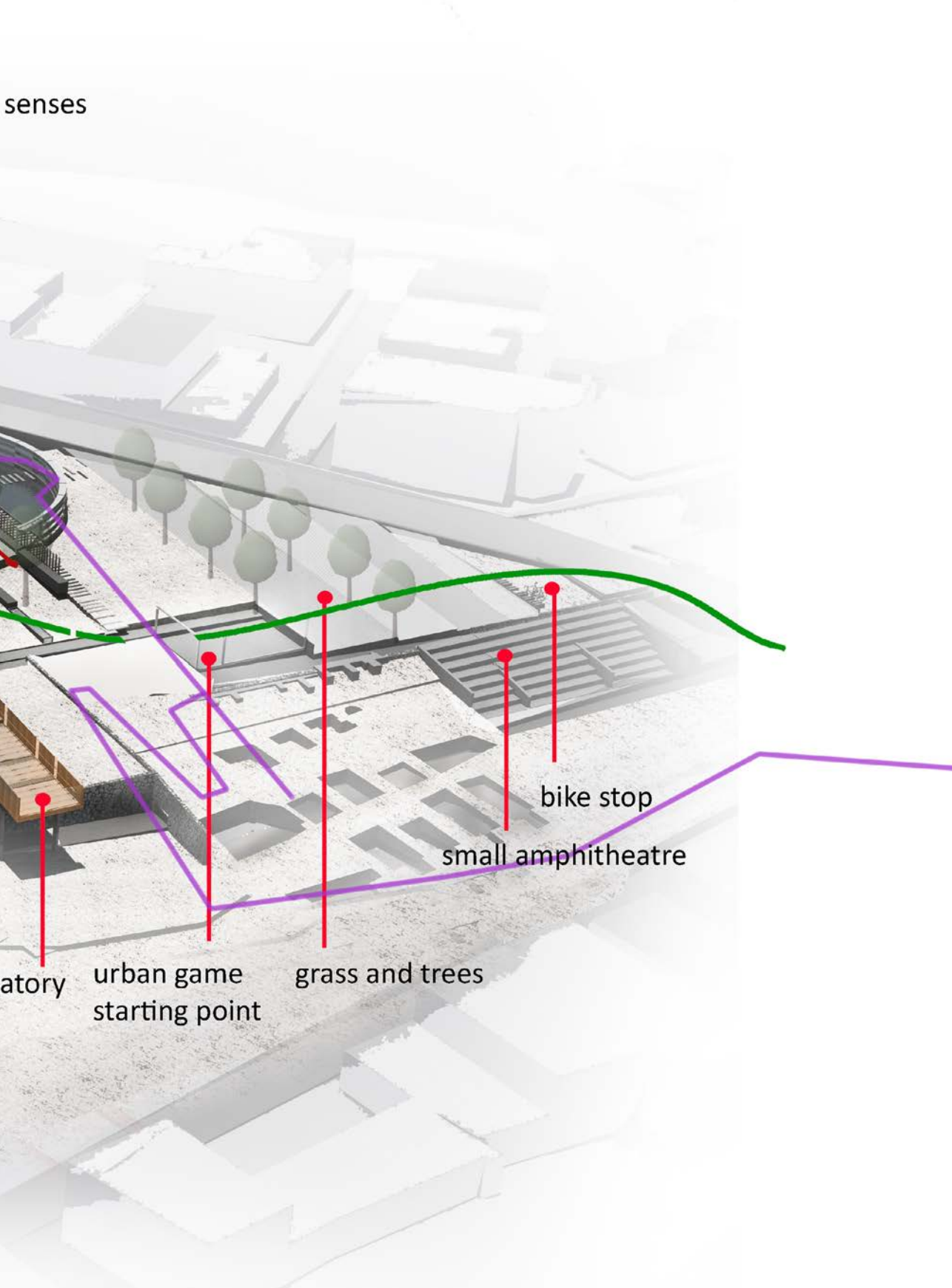
bike stop
small amphitheatre
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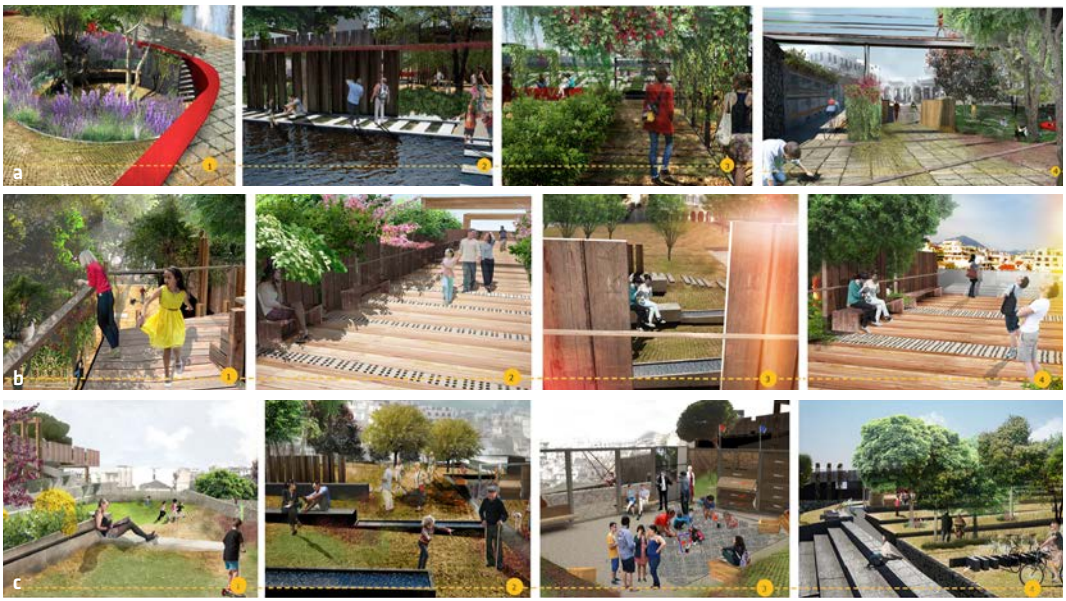
urban game
starting point
grass and trees



with other distractions removed. (fig. 9b). The bridge ends up in the observatory where the experience is completed. The third path consists of social and transitional areas that offer a variety of actions and promote social interactions (fig. 9c).

The urban game

It has been proven that memory and learning can be developed faster in children who are raised in complex or enriched environments, as their experiences can develop their skills (Nelson et alt., 2009). Moreover, many studies in neuroscience support that an enriched environment can also help the elderly to prevent and restrict the effects of many important brain diseases such as Alzheimer, and dementia (Nussbaum, 2011). Basing our design experiment on neuroscience research, we invented an urban game according to these principles. The urban game is designed in such a way as to satisfy both the children's continuous need to explore new environments and to motivate different age groups to come together. The square adopts composing characteristics from the city (like parallel lines, rectangles) so it can act like a projection of the city, but at the same time the square is the starting point for an urban game. The main goal of this game is to help the player learn the city using his senses and his personal experience. This process is very useful for developing children's abilities in navigation and exploration of new environments.

The game is related to treasure hunt games and takes place in two levels, the playground in the 'Archaeo-Park' where a map can be found, and the city center. The game is designed for multiple teams consisting of people from both target age groups. In the playground, the older players have to solve puzzles, and answer questions related to the history of the city. The objective for the older participants is to design a new course on the map, and to find the optimal route towards the target location. The use of maps helps the elderly reinforce their memory skills for the city. Children are then tasked to go to the target place by bicycle and find the booths which signify the puzzle solution. When a puzzle is solved the group earns a hoop. The first team to earn five hoops is the winning team. The game can be played

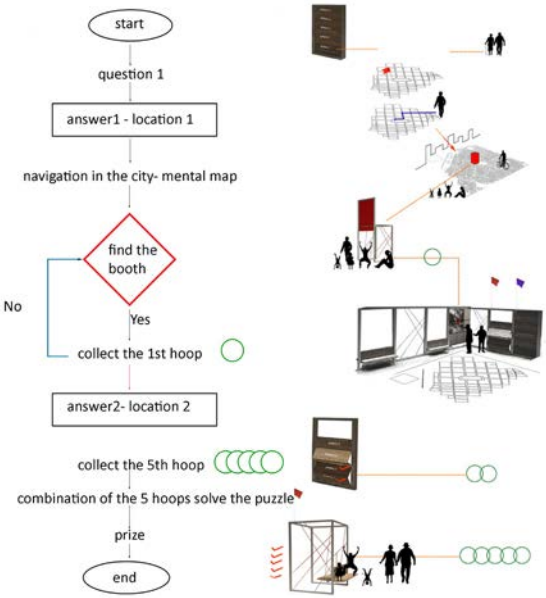


Fig. 10 – Flowchart of the urban game (elaboration by the author).

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Fig. 9 – Images along the three main routes:
A) the first route
B) the second route and
C) the third
(elaboration by the author).

several times a year and the temporary constructions used can be transferred in different places and transformed into public furniture (fig. 10).

Conclusion

This study analyses the contemporary transformations' impact on a particular urban space in the city center of Patras. We examined the deterioration of the cultural and historical urban places and the needs of groups of people that experience these locations on an everyday basis. Dealing with the main problems that take place in this area we applied a new methodology and a new approach in design process. This approach stems from the theory of neuroscience and it takes into account mainly the elderly and the children. Our effort was clearly directed to decoding the relevant neuroscience research and examining in practice the design outcome of this particular methodology in an urban space that is in need of renovation. During this study the pedestrian regains dominance in the space. The main project's guidelines were the unification of three significant urban places, the improvement of pedestrian accessibility and the variety of activities. These design principles lead to the development of an urban space with a well-defined identity. The new urban place can be characterized as an 'Archaeo-Park' that integrates three historical places and create a new pole of attraction for the city center.

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