ECO-FRIENDLY RESTORATION AND ARCHITECTURAL PROPOSALS FOR KISSAMOS BAY, CRETE.

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ABSTRACT

This intervention in the coastal zone of Kissamos bay in Crete is founded in the theory of “Cultural Landscapes” that considers all landscapes as the result of the interaction between humankind and nature. Two levels of intervention are distinguished: landscape and architectural level. Concerning the first, the focus was set on the guidelines for designing a coastal infrastructure flexible enough to deal with the issues of touristic urbanism and landscape preservation and restoration; this level also deals with the characteristics of this cultural landscape that need to be preserved and restored and on the ways to make this happen. Concerning the Architectural level, the axes of the research were to generate a symbiotic relation between Architecture and the various landscape elements in aesthetic terms, flexibility and adaptability in programmatic terms, the use of passive and active systems in terms of energy consumption, and in terms of materiality, the use of recyclable low CO₂ producing materials. An analysis of the territory was conducted and focused on its boundaries, topography, land use, culture, soil, climate, flora and fauna, existing and possible infrastructural connections. The proposals of the research are presented according to various intervention scales. Large scale concerns program location and infrastructure policies, medium and small scale concerns the design of programmatic entities such as clusters of buildings combined with public space and beach equipment. Vehicle and pedestrian networks are configured as connectors of the city and the seashore with locations of exceptional value, in a coherent network able to serve local and visiting population

Keywords
Ecosystems – Tourism – Coastal towns – Cultural Landscape - Urbanism
1. INTRODUCTION

“The landscape is a result of the interaction between humankind and nature. It is also the lived context experienced and perceived by human beings. Therefore, in essence, all landscapes are cultural” (Papayiannis and Sorotou, 2008). All landscapes, even the seemingly most natural, have at some degree been affected by humans. “[...] even areas of exceptional natural beauty that were until recently thought to be untouched by humans have often proved to have long been inhabited and altered” (Papayiannis and Sorotou, 2008) Human activities are inscribed in the landscape and leave their mark on it as a token of our culture. On the other hand, technological progress has provided the means to undertake huge operations of local and global scale in very short time, generating violent environmental changes that can fundamentally alter a landscape’s “character” or “identity”. In the coastal landscapes of the Mediterranean sea in particular, one of the main forces behind such “violent” interventions is mass market tourism. This factor has characterized the coasts of Spain, one of the important global players in the field. Because Spain has systematically –but not always successfully – dealt with the issue of “Touristic Urbanism” (MVRDV, 1995), its coastal – touristic urbanization model can be used as a reference here since on the Northern coast of Crete a similar pressures have occurred.

The research problem in Kissamos bay occurs in two levels, namely the landscape and architectural level. Concerning the first, the focus was set on the guidelines to design a coastal infrastructure flexible enough to deal both with the issues of touristic urbanism and landscape preservation and restoration, on the characteristics of this cultural landscape that need to be preserved and restored and on the ways to make this happen. Concerning the Architectural level, the axes of the research were a symbiotic relation with the various landscape elements in aesthetic terms, flexibility and adaptability in programmatic terms, the use of passive and active systems in terms of energy consumption, and in terms of materiality, the use of recyclable low CO₂ producing materials.

For the first level of intervention, between the model of a leisure - oriented urbanization of the bay and that of landscape preservation we opted for a middle way: On the one hand, tourism is a considerable economic activity and cannot be ignored, as it is one of the largest and by some accounts the largest industry in the world (Green, 2010). On the other hand, tourism threatens ecosystems and “identities” and by doing so, tends to consume the very reason of its existence. Our position is to act in a way that seeks equilibrium between these various and often counteracting forces. The coastal landscape in particular, represents a marginal condition. It is a fluid border between sea and land under continuous change that hosts rich biodiversity and diversity of human activity. Although as researchers we possessed limited authority within a clearly defined intervention area we felt we had to provide a set of strategic guidelines through the coastal intervention, axes that should be taken into account at a later stage by the regional plan.

An analysis of the territory was conducted in terms of its boundaries, topography, land use, culture, soil, climate, flora and fauna, existing and possible infrastructural connections. There is considerable potential in the area, in terms of tourism, agriculture, industry and the development of the tertiary sector which is further intensified as the town of Kastelli towards the west of the bay, together with the adjacent port of Kavonissi could further and more intensively assume their role as the western gate to the island of Crete, and as the administrative economic cultural and commercial capital of the region.

The proposals of the research are presented according to various intervention scales. Large scale concerns program location and infrastructure policies, medium and small scale concerns the design of programmatic entities such as clusters of buildings combined with public space and beach equipment such as canopies, showers, changing rooms. Vehicle and pedestrian networks are
configured as connectors of the city and the seashore with locations of exceptional value, in a coherent network able to serve local and visiting population.

2. SITE ANALYSIS

The proposal concerns a sustainable development of the 14km coastal line of Kissamos Bay in the Northwest of Crete. The bay is geographically an autonomous entity and is defined by two peninsulas: the peninsula of Gramvousa to the west, and Rodopos to the east. Both peninsulas belong to “Natura” network as landscapes with exceptional natural beauty, shelters of wildlife and rich biodiversity. The south boundary of the bay consists of the foothills of the White mountains. Typically the Northwest shores of Crete are characterized by sandy beaches, followed by fertile alluvial soil fields and a mountainous hinterland. The coast of Kissamos bay is no exception. In terms of land use, the plains have mainly agricultural use (vegetables, vines and few high yield crops) and are characterized by small land parcellation. Limited, dispersed tourist activities (rooms to let, campings) as well as small industry also exist in the plains. The hinterland is based in the agricultural (olive oil, honey) and stockbreeding economy, that develops around small villages. Major urban center is the town of Kastelli (4000 inhabitants) There are also two settlements (Nopigia and kato Korfalonas) with very few permanent inhabitants. As the 1968 -not implemented-masterplan had predicted, (Papayannis et al., 1968) the city of Kastelli together with its port – Kavonissi has indeed become a small industry and service oriented city albeit without the population, the organization and planning that the master plan was anticipating. Nowadays, with the increased pressure for touristic exploitation the need for a new master plan is more than evident.

FIGURE 1. Topography of the NW part of Crete, with the intervention area (rectangle) major human settlements (circles, radius according to population) rivers and streams (blue lines) and main vehicle arteries (red lines). Photos, from top to bottom of the cultivated land, Kolenis delta
The principal pressure on the landscape comes from tourism. This pressure is mainly a question of urbanization. The Northern coast of Crete accommodates most of the tourism on the island which represents 20% of Greece’s tourism in terms of arrivals. This equals to 2,000,000 tourists per year (2009). There is a concentration of this seasonal population in a few centers, namely Malia, Hersonissos, Stalida, Platanias, towns that are near the two international airports of the island. Despite their importance as carriers of the mass market touristic product, these “urban” centers have emerged mostly through a non planned process after the erection of all-inclusive hotel complexes by filling the space between them. These “towns” are mainly addressed to mass-market tourism, meaning tourists mainly interested in the nice weather with no particular interest for the culture of their location. Another pressure coming from tourism is the holiday home market which “consumes” vast areas of the landscape and has not so far been addressed in terms of policy. In Kissamos bay, which for the moment is one of the few places of Northern Crete without significant touristic infrastructure, various stakeholders are waiting to transform the cultivated land into a sprawl of hotels, rooms to let and holiday homes, skyrocketing land prices. Within this context, when researching ways to equip the coastal zone of the bay with infrastructure one is forced to take a position regarding the symbiosis of anticipated human activities – namely urbanization and tourism- and landscape: decide which parts of it should be preserved and favor the most important connections.

The touristic capital of this territory lies on its beach, the mountainous hinterland and its connections (existic and potential) with places of natural beauty (beaches of Elafonissi, Falassarna, Topolia gorge among others) and archaeological sites (Polyrrinia, Falassarna etc). The port of Kavonissi has already transformed the area into a gate to Crete from the West. The planned intervention will be a coastal park that will eventually connect the peninsulas of Spatha and Gramvousa, via a network of bicycle and pedestrian roads. The landscape on the coast itself is characterized by eroded sand dunes, destroyed mostly due to human intervention (illegal collection for construction purposes). These dunes, characterize not only the particular beach, but the coasts throughout the island. They attract a special kind of flora, namely the tree species of sea-cedar and Tamarisk. The famous lily of the sea (Pancratium Maritimum) is a plant that grows on the dunes. (Rackham O., Moody J., 1996)

The assignment was not to research the development of the whole area, but to intervene within a specific zone next to the seafront in order to make it accessible. However, it was clear from the beginning that such an intervention needed a wider approach in order to establish connections with the surroundings and provide guidelines for future development.

3. CIRCULATION NETWORK AND PROGRAM

Regarding the vehicle circulation, a network of roads in the shape of a “comb” is proposed. This shape does not allow direct transversal of the coast by car. The vehicle network, exploiting an already existing though incomplete network, consists of a road parallel to the coast at a distance of about 500m and vertical roads at regular intervals that reach the shore. The idea of a road parallel to the coast at a distance of 250m from the beach was immediately rejected since it would contribute to the creation of a dynamism of uncontrolled construction, which in turn will completely alter the character of the area in a very short time.

A decision of primary importance was that the seashore is to be crossed only via a bicycle and pedestrian road. This fact is expected to allow a non intensive development that will protect the natural assets of the coast and preserve its “wild” character. The bicycle and pedestrian path network, not only connects parts of the shore, but also has vertical connections to the hinterland.
mainly via the banks of the rivers where one can visit by foot, horseback riding or bicycle, various locations of special interest, like the ancient Polyrrinia or the Topolia gorge.

FIGURE 2. Diagram showing the vehicle and bicycle road network (yellow and red respectively), the Northern Crete highway (pink), areas of beach recreation (dark blue=current light blue=projected) and location of sports and cultural activities (rest of circles). Zone A:1, Zone B2-3.

The beach bicycle road is at the same time the programmatic backbone of the proposal: on every intersection with the vehicle network, parking is provided; on every intersection with a river there is a crossing, and in two cases two “programmatic” bridges are proposed: An “archaeological” and a “natural” bridge. Along the course of the path, a hierarchy of “stops” accommodates the various programs: from bigger plazas hosting “larger” programs, to small scale “plazas” accommodating basic beach infrastructure.

The legal framework that allows for program implementation is the variable depth of the zone behind the foreshore line, which is public property. The depth of this zone varies from 10m to 70m, thus allowing us to use the wider areas for larger facilities whenever this is necessary. Placing the bicycle and pedestrian road along the coast on the border between private and public property is expected to put an end to the phenomenon of trespassing of public land.

The site is divided in different zones according to their specific characteristics. Three zones differ the most: The area west of the port (Viglia), leading to the Peninsula of Gramvousa, the area between the port and the town of Kastelli and the area between Kastelli and the village of Nopigia next to Rodopos peninsula. This last zone is characterized by a beach 10.5 km long. (figure 2)

The proposed program consists mainly of culture and recreation and is distributed along the coast according to different local conditions such as topography, proximity to road network, etc.

4. LARGE AND MEDIUM SCALE INTERVENTIONS

In the eastern zone, three centers are located marking the start/end of the bicycle paths. These are also the main bicycle renting stations. Near the town, is a plaza that functions as a landmark and attraction point for Kasteli residents. From there, one can park, his car, get maps and information from the information kiosk and proceed to renting his bike and start his journey.
In the middle of the big coast, in a recess of the foreshore line an athletic and recreational park is proposed. Football fields of 5x5, basket ball, beach soccer, all combined with bicycle renting facilities, locker rooms and café, offer a sports enclave aimed to function all year round. This “enclave” is expected to attract mainly local population. At the easternmost side of the coastal zone, the trajectory ends in the delta of Kolenis river, one of the most attractive “natural” landscapes of the area. There, the pedestrian bridge over the river, a bike renting station and a small café mark the last threshold to the village.

In-between these larger programmatic enclaves smaller programs are located: a kitesurfing center and a restaurant in Viglia, a boat parking facility in the small port “limni” next to Kastelli, a museum and a park for renewable power sources and recycling near “tyflos” river, a stud farm.

5. SMALL SCALE INTERVENTIONS

In order to encourage the use of the beach in all its length, several “plazas” are implemented. These are facilities that provide the basics for seashore recreation: changing rooms, toilets, showers, a canopy for shadow and canteen. Their size and configuration varies according to location but all belong to the same recognizable “family”. Their geometry is based in a hexagonal “tile”, a system, that is most adaptive to local differences and the various curvatures of the bicycle path. These plazas are under municipal ownership, but fall under the responsibility of each individual manager who is running them. The tile system allows their easy maintenance and also gives every individual manager the possibility to change in part their configuration by replacing tiles with others with different materials. The tile patterns are designed as a system founded on local textile patterns.

The coastal bicycle road is intercepted by five small rivers. In order to establish continuity, the rivers are crossed by special passages wherever necessary. Above the eastern and western rivers two thematic pedestrian bridges are proposed. Those bridges host program and at the same time due to their structure, they allow the visitor unobstructed views of the landscape. The western bridge, over Kamarianos river, contains a small archaeological museum, a series of information panels that allow the visitor to source the various archaeological findings and locate them along the natural landscape which stands under his feet. The eastern bridge, hovering above Kolenis river delta, has a similar concept which has to do with the ecosystem, flora and fauna of the area. Information on these subjects is displayed on various locations on the bridge, while the visitor can observe the actual species of the river’s delta.
FIGURE 4. “Archaelogical” bridge over Kamarianos river.

The materials used are recyclable whenever possible, sourced from local factories. The aim is to create either an aesthetic of blending with the landscape or that of provisional presence. Therefore, the bicycle road being a very solid “backbone” of the whole scheme, will be made of rammed earth, a material that absorbs heat, is pervious and doesn’t need extensive drainage piping. The parking lots will be paved by perforated turf stone tiles. The rest of the construction will be made of wood and metal where it cannot be avoided. The choice of wood, although it is not a local material, is eco friendly because of its renewability if sourced from renewable forestry, and under certain conditions it is also recyclable.

6. CONCLUSIONS

The “natural” landscape as such does not exist. Landscape is the result of human interaction with nature. Notions such as identity are fixed constructions (Cache, 1995) that do not take into account the fact that landscapes and eco systems are dynamic and highly adaptable entities. The question for this new intervention is not how to revert to an “identity” but rather recognize vectors acting upon the landscape and design with these in a direction of equilibrium and sustainability.

Instead of letting the urban sprawl expand along the coastal zone, the touristic infrastructure of the city should be intensified, and defined enclaves of intense habitation and tourism that can absorb the pressure for development should be created in the plain. This would let the coastal landscape coexist with other land uses such as agriculture. In parallel, an infrastructure for tourist development is proposed based on alternative modes of tourism such as sports and culture. These modes of tourism combined with urban amenities can attract visitors all year round. This fact, in parallel with the development of local economic activities and the containment of urban sprawl along the coast can contribute to a healthier environment, and the preservation of the landscape.

REFERENCES


**ACKNOWLEDGMENTS**

**Collaborators:** Emmanouil Manoutsoglou – Professor, Technical University of Crete (T.U.C.), Elias Gianniris - Assistant Professor, Technical University of Crete (T.U.C.), Dimitris Rentzos Transportation Engineer

**Students of the Architectural Engineering Department – T.U.C.**
Aggeliki Terezaki, Despoina Linaraki, Katiana Patrelaki, Thanassis Chairis. Iason Paterakis, Mina Voyatzaki

**Externals:** Flavio Zanon – Anna Tsitonaki - Eri Badouva - Elina Karanastassi, Architects