

Itineraries through the landscape, different experiences

Enzo SIVIERO*, Fabrizia ZORZENON^a

*Professor at University IUAV of Venice,
Department of Constructions, Venice, Italy
siviero@iuav.it

^a Phd Student at University of Nova Gorica, Slovenia
f.zorzenon@yahoo.it

Abstract

The relationship with the landscape, the proportions of the constructions and the materials that are used are features that must not be overlooked neither in architecture nor in infrastructural design, but with the difference that where bridges are concerned nothing is hidden and everything is on view. Even a road can have a certain architectural and aesthetic value, and not just technical or functional.

The projects that we are presenting in this paper were for three different international urban improvement competitions, and are based on architectural considerations in terms of designing the infrastructure considering the tracks leading to them with the natural landscape value of the areas concerned. In fact, the construction must be linked to its surroundings and the tracks to be fully understood.

Keywords: conceptual design, morphology, bridge, structural design, aesthetics, landscape

1. Competition of ideas to improve the access to the village of Civita di Bagnoregio. (2007)

The competition aimed at comparing ideas and proposals to improve the area around the entrance to the village of Civita di Bagnoregio, a village dating back the ancient early Middle Ages in the northern part of the Lazio region between Lake Bolsena and the River Tiber.

Civita di Bagnoregio is situated in the heart of a large valley set against an insular hilly platform, and when seen from a distance it creates an unreal and fascinating panorama that seems to have been created by an imaginative artist, secured on the spur of a rock dominating the large valley that is run through with gullies. This image is given by the unusual geology of the land (clay with thick layers of tuffaceous material), which over the centuries has helped the rapid erosion of the slopes, causing landslides from the rocky walls down to the village, slowly and unceasingly ruining the village which year after year got smaller.

In the past, the only access to the village was along a pedestrian track which ran along the hill ridge and joined Civita at the gate of S. Maria. Over the centuries this track has

constantly been changed and has always been a crucial problem for Civita, because there was the constant risk of the village being cut off altogether. The new footbridge was built in 1963 with absolutely no respect for its surroundings and is a typical reinforced concrete construction of the 60s, totally out of fitting with the village and now no longer adequate for its purpose. Consequently, the project aim was to propose a new image for the entrance road into the village, which has to be saved, that is set in an extremely interesting cultural site, keeping alive the historic, architectural and environmental values.



Figure 1: The bridge in the Landscape

Our idea was inspired by the hill ridge, which was the only link between Civita and the rest of civilisation for so long and which man's work gradually eroded until the last modern construction was needed which, for its geometry, has absolutely no relationship with the origins of the land, rather it totally depletes them. Our project aims at reaffirming the link with the ridge by rejoining it to the aerial route and, therefore, reaffirming the memories of the site and the materialisation of the Genius Loci. The current plane-altimetrical route remains, including the secondary bearing structures, while the cumbersome, out of place concrete piers of the old bridge are removed and replaced with new vertical prefabricated supports. The close weave of vertical supports branches off, "sprouting" from the ridge giving the vegetation a natural opportunity to reach the route at the top, aided by a stainless steel net parapet that the vegetation can cling to. The seemingly disorderly conformation of the parapet is inspired by the idea of delicacy and fragility that Civita suggests, with the brief glimpses of the landscape that are seen as you climb up to the top.



Figure 2: Virtual model of the footbridge

2. International ideas competition for construction of a new bridge on Pertusillo Lake (2006).



Figure 3: General plan of the area with placement of two bridge

A few years ago, Basilicata Region advertised a competition to realize a new bridge on Pertusillo Lake in order to connect town centre of Spinoso Municipality to S.S. 598 (Fondo Valle dell'Agri), actually provided by Pertusillo dam. The achievement of competition was comparing ideas to identify best and optimal solution to fit the new bridge to environmental and natural context, bringing green area of Pertusillo Lake out and making it recognizable. The aim was comparing the work with issue of nature, place of meeting, passage and dialogue for people. Therefore, became very important, the study on relationship between landscape and architecture, and between art and nature. Study draft hereinafter illustrated is

a summary between the function of connecting lake's banks and making people aware of landscape value of this area, not only seeing but also crossing the bridge.

Moreover, the aim of the project was not to mitigate successively the presence of new infrastructure, but at first making it connatural with characteristics and various needs of a populous territory, but without adequately structured relationships among the different parts.

In order to do this, the first project's phase has been separating and also differentiating the run suitable for vehicles from pedestrian, considering the different speed and consequently the different way of perceiving the surrounding environment.

The choice of crossing point, reverted in the line of the lake characterized by a small peninsula, has allowed to realize such purpose, throughout a road layout in curve, that opens a perspective "to surprise" toward the longitudinal axle of the lake refolding toward the opposite bank, from the other side with a layout unique pedestrian cycle, separated and raised again in comparison to the road plan and from which separates to centre of the lake to lean on the West side of the peninsula, in the middle of the trees, according to a rhythm run-vegetation continuing on stemming banks.

The select material for the realization of these two bridges is steel, considering strong light of two lines of crossing, workmanship and assemblage of the whole work.



Figure 4: Rendering of bridges in the landscape

The pedestrian run through the two bridges, as previously described, is developed to a superior level in comparison to the road line, reaching double objective: turning the run toward the side of the lake, enjoying the park sight and visual and acoustic cars mitigation.

The image of arc structure is reflected on the water giving rise to a familiar view in ours imaginary; tense zones become compressed and, through pressing power of the arc reduces up to turn in a highly tense and fleeing metallic ribbon.

A couple of tense arcs perfectly prepared on two vertical floors in comparison to water surface but cross among them, composing a dynamic design. The structure is suspended and sustained by an order of vertical droppers and is made by a longitudinal large case, section of which is produced by the study of migratory birds flight that often find shelter on Pertusillo Lake as Coots, Mallards, etc.

Roadway foresees dual carriageway of 3.75 m each one, two side shoulders of 1.50 m, the new jersey and two side safety runs. The circle reserved to pedestrians and to bicycles has the shape of a wide terrace on the water surrounded by nature, occasionally equipped for markets, local shows and fairs. The external parapets, at handrail level, detach over the estradosso of deck and principal steel beams, allowing to the observer of the bridge both from outside that from inside of the work, to gather the essentiality of bridge's shape, arcs profile being perfectly visible.

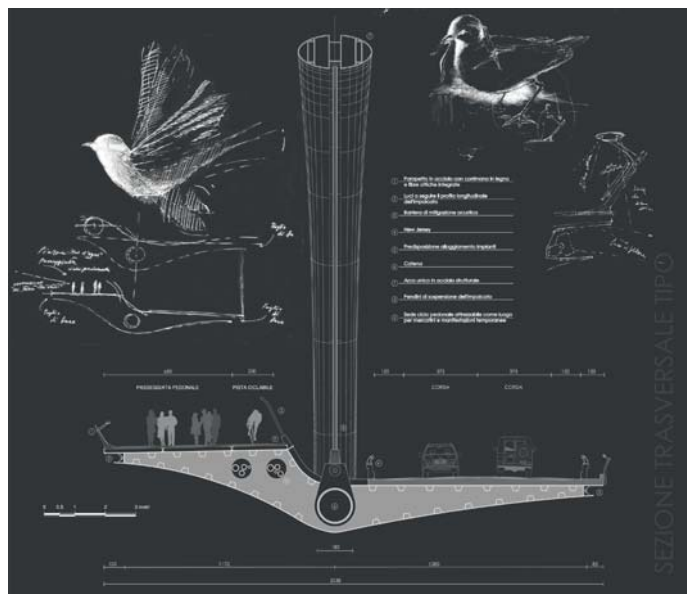


Figure 5: Cross-section of the bridge

The parapets of the pedestrian runs have covered with glass stratified in order to give the maximum continuity with the context. The edge of catwalk foresees the insertion of lighting fixture able to reflect on water shape dynamics also in the darkness.

Bridge enlightenment was studied in order to encourage functional perception and to put emphasis on bridge's shape by night. In fact it has been provided the positioning of headlamps able to fairly and softly exalt work structure. Particularly will be put lighting at base of metal arcs and at base and top of droppers to connote "whiskers" night's light and

others, placed inside a hollow between lower carter and the seat and pedestrian carriage will light up catwalk board lengthwise. The cycle-pedestrian routes on bridge and on the ground will be illuminated by headlamps at walking surface level and by optical fibres integrated into linings to underline catwalk pattern. During planning stages were considered all those functional aspects, cultural and for landscape, fundamental for a work that should be included in a very naturalistic context.. The concept behind our reasoning, is not to mitigate subsequently the presence of the two bridges but making natural to characters and various use needs of a populous territory, but still without adequately structured relations between its different parts.

In order to do this, the context of the characters were considered as "constraint-opportunity" to structure and specify the project in functional and morphology way. From a functional point of view, it has been decided the two works not only allowed, as work plan provided, to improve road condition between highway and related traffic, and relieve the traffic crossing the existing network connection between the two opposites sides, but at the same time to come near to the lake.

With particular reference to this aspect, is necessary to exam the footpaths and recreational functions lake shores, in order to integrate into an organic system that includes the new pedestrian cycle track, functions provided by an unusually large decks and encouragement to the use of different course systems, as the arrangement of paths and construction of docks for small boats propelled eco-compatible, fit for reaching otherwise inaccessible shores because of difficulty or paths lack.

Morphologically it has been planned that the two bridges harmonize with landscape and the tradition (this is the reason of arc's choice) without abandoning technological and innovative choices, resuming and rhythmically stressing wavy and free hill's outlines.

It was our purpose to study preferential point of view, from which general bridge's appearance and particularly arcs are perceived in a work integrated vision and in reflection on the water surface. The deck height was balanced on the line defined by plants along the banks, one of the most important landscape feature.

Finally, we tried to extend the fluid line of two arcs joined to the peninsula that overhang the lake in a morphological harmonious way.

3. Design Contest for Passo Mendola road (2008).

The route of the national highway n°42 of Tonale and Passo della Mendola in Alto Adige - South Tyrol, shows a wonderful view over Caldaro: in fact between its bends we can admire a spectacular view hiding and reappearing behind the rocks and the spurs. The historical value-landscape makes important the journey as itinerary cycle-tourism, but the road shall act as also connection for the pendular traffic between "Adige" and "Non" valleys.

The stretch of "Rocette" overlooking Caldano is visible from valley as outlined artificial slope retrieved by mountain with the original road stone work that maintain a section of highway several times in the time enlarged with reinforced concrete superstructures.

The current track is developing entirely by shore, with tortuous trend and very close bends between rocky walls on slopes very steep. Starting with the priority given to making the



Figure 6: Relation between work and landscape

road safe, marked by narrow and dangerous bends and a protection system from falling rocks are not sufficient to ensure its viability, the project is composed of three main parts: a protection tunnel from falling rocks (instead of safety nets against falling rocks), the renovation of road layout with special enlargements and the new bridge of about 80 m. Project's morphological choices constitute an integrated system, where the technical solutions for the various safety objectives, are parts of a single landscape project. The route project has a development of 845 m. and is prevalently winded near coast on foundations of the existing highway. The road is developing less marked curvilinear pattern compared with the existing design speed, set at 30 km/h, fitting work context. A very slow speed allows, in addition to travel in safety conditions, a perception "delayed" of the surrounding landscape from part of those travelling on the road, and travel becomes not only a shift between two places, but also a cognitive experience. The tunnel is instead designed in such a way to not override natural landscape, characterized by a geometry continuously changing, a structure repeated and uniform, typical of concrete prefabricated tunnels. This design solution presents a continuous sequence of variations of a structural scheme fit to the morphological structure of mountain. In this way the sinuous pattern characterizing the road also becomes tridimensional matrix that gives fluidity to the new stone protection system of tunnel, or to a reinforced concrete prefab mantle being max 50 cm thick, designed in such a way so as to form a series of archs, with keystones variable and proportional to span and road surface.

The project reduces the presence and overall size of support and pillars of tunnel in order to show view towards the valley and keeps in the same time, the view of rocky natural wall

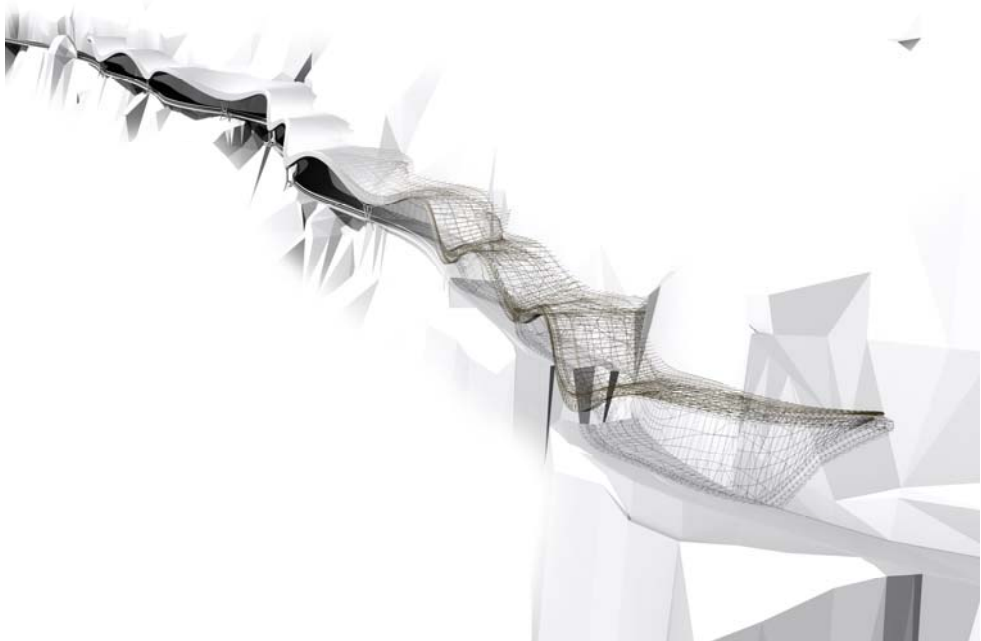


Figure 7: Morphology of project

towards mountain; means to ensure to who goes along the rocks the contact with bothelements that constitute the extraordinary value of this stretch of road. The aim is to ensure to whom scour “Roccette” the contact with both the elements representing the extraordinary value of this road. To reach this goal it is also preferred to make the project suitable to landscape conformation rather than covering the rock with a tunnel structured according to schemes and traditional technologies: it has replaced the concept and image of the tunnel slope a protection mantle that touches on the mountain slope shaped the curves. The project proposes a system of only nine pillars with variable step and structural cover of large span. The tunnel support dimension varies from a minimum of 30 metres to a maximum of 50. The structure of covering floor is made up of a beam edge that has function of support, assuming therefore a very sinuous figure in space that accompanies the design and the slopes of the road track adapted to support position, with thicknesses and heights variable. The beam edge corresponds to a reinforced concrete curb set against the rocky wall.

On these two supports, rests a series of prestressed panels, prefabricated outside work with a drawing that allows, if necessary, partial overlaps between the individual elements, with a slight effect radial on conical vault. These panels will be completed with a supplementary



Figure 8: The arch bridge

integrative jet which will be covered by soil plant. Within the same project the new bridge, made by a reticular structure of steel pipes and tubes, formally and functionally arises in continuity with tunnel/landscape-system in a way that, both these works are not the result “neutral” technological solutions overlapping in different landscapes, but specific solutions fitting particular morphology of this place. The bridge takes the image of a traditional masonry concrete arch, to be carried in steel but with the emptying of the mass of walls and putting in highlights with the grid of rods from a possible metaphor stilature that are formed between the traditional concrete bridges.

The structural bridge design research an effective and "traditionally innovative" image and in the same time research a lightness. the light of calculation is about 80 meters and arrow key of 15 metres. This bridge is made of an arc in reticular chest closed, high torsional stiffness is either lesion, consisting of tubular profiles hinged between them. Finally, the deck that will host the road will be built using a technology of prefabricated slabs factory, placed on staked structure designed with connectors that lead to secure collaboration between the static and the metal deck in through integrative project later.

The three elements become modulations of the same project. The project has not indeed mimetic character or mitigation of works which, although not necessarily have to be substantial for the adjustment of the road functional: the solutions rather seek coherent with the geometry of the territory.

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