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WATER AND MEDITERRANEAN CONSTRUCTION: HOW TO BUILD A SOFT AND CLEAN FUTURE

Dora Francese

Giving birth to this magazine through the specific subjects of earth and water means actualizing the philosophical reflection of the Mediterranean culture and interpreting it according to an approach which, fifteen years after the initial of the new millennium, looks like the more suitable to be adopted, both as intellectual principle and as developing action.

We are talking about the new thought – so called soft – upon which, since the 80s the Italian philosopher Gianni Vattimo, as well as other known scholars, founded their theory. It does then appear acceptable to get closer to the constructive activities with a soft approach, which, being that, is not based on strong and noisy sensations, dynamics and actions towards the buildings’ users. Conversely this approach could underline the requirement of “… only alerting, a sort of accessorital consciousness”, a potential at listening and absorbing inside oneself the weaknesses, the minor emotions; and here we agree with Dal Lago when he states that “… the use of strength upsets the human order, his nature”. It will be convenient then to get closer to the project place with a sensitive soul which is careful to scan the context, by surveying also the most minute peculiarities of the site, thus observing and listening their nature and the small biodiversities. It will be suitable to forget to be powerful, and alternatively undermining “… the unity strength” and then finally “… be able to reconvert into nature the artificial elements, if we will be allowed to survive in a world which will not entirely be dehumanized”.

Following this introductory principles, the subject of the present issue’s Focus, that is the water, represented the mediator between the various man’s works of transformation on land, and the characteristics, the elements, the qualities of Nature, within which he acts. In fact, as the Vancloue fountain had inspired Petrarch for his times ‘chiare fresche et dolci acque’, so water presence contributes to mould the landscape and the nature itself and finally it orients and inspires man, by suggesting him the more appropriated modifications for living in harmony with the place itself. In the Mediterranean area in particular the water that “… provides wellness to everyone without competing … and resides in the place that any man disdains”, contributes for large amount to land configuration, as source of health and pureness of landscape, as well as in the cities and in the small centres. And furthermore the water, life and comfort agent, is an essential resource for both ecosystems and a-biotic profiles.

According to the soft thought, then, a good employment of water in the sustainable constructions of the Mediterranean should be aimed at the safeguard of pureness, respect of watery landscape fragility, as well as at conservation and saving, in place of what happens today; land aggression with huge works of hydraulic regimentation.

The question of water as mediator between construction and nature can be interpreted under different viewpoints, by assorted expertise – hydraulic engineering, geo-technique, geology, architecture, design, representation, planning, geography –, according to the function water plays within the built landscape, that is as base-resource for the selection of the locality in which to establish a human settlement; for example regarding the wetlands, the rivers, the lakes, the sea, as element indispensable for the construction of habitation, as it is the case of the Mills, the penstocks, regimentation systems; as hazard factor in constructions at territorial scale, in presence of disarrays, rivers, and so on; at the fabric scale as possible hindrance to structures, or as rising humidity, as condensation, and so on; as design and graphic parameter for the aesthetic configuration, also taking into consideration the psychological issues; as energy source for the installation of watermills and hydraulic systems for electric energy production; without neglecting the more innovative techniques that exploit the wave motion and the tide of the sea; as resource for the microclimatic comfort, for example by using the water for the fountains, or as thermo-convection fluid for heating, cooling and humidification systems, for the Trombe-Michelle water walls or for the solar panels. Last but not least, the care for the natural hydraulic systems as dynamic resource to safeguard, save and storing pure, mainly during the integration with the constructing process, at both building-planting scale and urban-territorial one. The declinations of the water factor within the construction of human habitation are countless and variegated, for this element also affects the settlements’ selection, so contributing to the combined action of soil, air and materials and generating a number of primary and secondary effects which involve the whole cycle of the water itself and thus the vital earth processes.

In particular the territorial and regional distribution in the present magazine issue is multifaceted, as it regards the subjects of the hydraulic resources, of the rivers and the seas, both in Italy (Naples, Salerno, Grumo Nevano, Torino, Sicily, the Liguria region, the Appenine) and in Greece, in Morocco and in the nearby countries of the Mediterranean, as well as in other states of Mediterranean culture, such as the near Asia or the Argentine; finally a comparison is shown with North Europe (Holland and UK).

In general two main research currents are present here: the first facing the question from the visions of history, design, landscape, city and land regimentation; in this issue the river cities are then studied, as well as the places’ configuration, just generated by the water presence; in fact “… urban layout reflects water courses’ presence, in terms of settlements’ layout and space perception”. This research current includes examples form the past (Torino, Patagonia) as well as new architectural works (Greece, middle-European cities, parametric design), often due to various artists’ and scientists’ genius, which had provided huge transformations to land, in combination with both the superficial and the underground waters (Cilento and Marocco), also underlining the distribution techniques of the water resource to the city (Grumo Nevano); finally the modifications which affected, by means of the strong link man-water, the edified heritage of the tradition, as in the case of the watermills or the marine waterfront.

The second research current regards instead the hazard question, due to the interaction between water, land and construction, in its various physiognomies; here in fact some studies are presented which face the different danger situations: from those defined by the climatic change, in Holland, in UK, in south Europe and in the near Asian regions, which mainly depend on the fact that “… most of the more balanced and durable solutions have followed a “light” model for settlements taking into consideration the characteristics of places and the dimension of anthropic pressure related to the availability of water”; to the vulnerability conditions of the historical heritage in zones exposed to hydraulic hazard (Liguria, Naples), or in presence of humidity in the load-bearing or enveloping structures [Naples]. An additional hazard at the urban scale is shown when situations occur of difficult removal of meteoric waters, mainly those at storming character or those induced by the climate change; the latter in fact require management practices at low environmental impact, aimed also at preventing the pollution of superficial and underground waters; for example “…usually urbanization negatively impacts on water quality at least in two ways. First, many of the new materials and components used in land development contribute to higher pollutant loads during rainfall and the subsequent runoff. [The second way of impact is due to the reduction of filter-action of the vegetable soil, for it is replaced by concrete, asphalt and rooftops, which obviously offer little means for water quality improvement.”

In this issue the hydraulic hazard at territorial scale is also described, in particular regarding its effects on the inhabited centers (Sicily) and finally it contains the risk of exhausting the pure water supply for domestic use, which can be averted only by means of new typologies of analyzing and designing the residential settlement (Naples), also by adopting careful methodologies of impact assessment of the water cycle within the various materials and different employed technologies.
In conclusion the core of the magazine, already expressed through the will of orienting to sustainability any constructive action, is underlined by the papers here presented, as the *fil rouge* of all these researches, which face the water topic, lays exactly in the choice of considering the dynamic process of water as a starting point for leading again to the natural cycles the transformation activities of the civilization in the new millennium.

**NOTES**
1. Which represent together with the air and *fire* the four Nature's elements, according to the ancient Greece philosophers thought, Empedocle.
7. Paolella A. *Climate change, adaptation, construction*, here.
L’ACQUA E LA COstruzione MEDITERRanea: COme COstruire UN FuTURo PuRO E Leggero

Dare avvio a questa rivista mediante i temi specifici della terra e poi dell’acqua significa attualizzare le riflessioni filosofiche della cultura mediterranea e interpretarle secondo un approccio che, quindici anni dopo l’inizio del nuovo millennio, sembra il più idoneo da adottare sia come principio intellettuale sia come azione di sviluppo. Stiamo parlando del nuovo pensiero – cosiddetto debole – su cui già negli anni ottanta il filosofo italiano Gianni Vattimo, così come altri noti studiosi, fondavano la propria teoria.

Appare dunque lecito accostarsi a anche alle attività costruttive mediante un approccio debole, che, in quanto tale, non si basi su sensazioni, dinamiche e azioni forti e invadenti nei confronti degli attori di un bene costruito, ma che sottolinei piuttosto l’esigenza di “... un avvertire soltanto, una specie di coscienza accessoria”, una potenzialità ad ascoltare e introdurre le debolezze, le emozioni minori; e qui concordiamo con Dal Lago quando sostiene che “... l’uso della forza turbina l’ordine umano, la sua natura”. Sarà conveniente dunque che ci si avvicini al luogo di progetto con animo sensibile e attento a scrutare il contesto, rilevando anche le più minute specificità del luogo, osservando e ascoltandone cioè il natura e le piccole biodiversità. Sarà opportuno dimenticare di essere potenti, ma invece intaccare “… la forza dell’unità” e così infine “… saper riconvertire in natura gli elementi artificiali, se ci concesso di sopravvivere in un mondo che non sia del tutto disumanizzato”.

Alla luce di tali premesse, vedremo come il tema del Focus del presente numero, cioè l’acqua, rappresenti il mediatore tra le opere di trasformazione dell’uomo sul territorio e le caratteristiche, gli elementi, le qualità dell’acqua in cui si agisce. Infatti, come la fontana di Vancluze ispirò il Petrarca per i suoi versi ‘chiare fresche et dolci acque’, così noi sappiamo che la presenza dell’acqua contribuisce a plasmare il paesaggio e la natura stessa e infine orienta e ispira l’uomo, suggerendogli le trasformazioni più appropriate al vivere in armonia col luogo stesso.

Nell’area mediterranea in particolare l’acqua che “… fa del bene a tutti senza contendere … e risiede nel luogo che ogni uomo disdegna”, contribuisce in larga misura alla configurazione del territorio, in quanto fonte di salute e purezza dei paesaggi, ma anche nelle città come nei piccoli centri. Ed ancora l’acqua, agente di vita e di benessere, è una risorsa essenziale così per gli ecosistemi come per i profili a-biotici.

Secondo il pensiero debole, dunque, un buon impiego dell’acqua nelle costruzioni sostenibili del Mediterraneo deve essere volto alla salvaguardia della purezza, al rispetto delle fragilità dei paesaggi acuatici, nonché alla conservazione e al risparmio, laddove piuttosto assistiamo all’aggressione del territorio con mastodontiche opere di regimentazione idrica.

La questione dell’acqua come mediatore tra costruzione e natura può tuttavia essere interpretata secondo diverse chiavi di lettura, da parte di varie competenze – ingegneria idraulica, geotecnica, geologia, architettura, design, rappresentazione, urbanistica, geografia… -, soprattutto in rapporto con la funzione che l’acqua stessa svolge nel contesto del paesaggio costruito, cioè quale risorsa-base per la scelta della località in cui stabilire un insediamento umano; ad esempio rispetto a zone umide, ai fiumi, ai laghi, al mare, quale elemento indispensabile per la costruzione dell’habitat, è come il caso di mulini, condotte forzate, sistemi di regimentazione; come fattore di rischio nelle costruzioni a scala territoriale, in quanto fonte di salubrità e purezza dei paesaggi, ma anche nelle città come nei piccoli centri. Ed ancora l’acqua, agente di vita e di benessere, è una risorsa essenziale così per gli ecosistemi come per i profili a-biotici.

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In particolare le declinazioni del fattore acqua all’interno della costruzione dell’Habitat umano sono numerose e variegate, determinando tale elemento anche la scelta di ingegneria strutturale, geotecnica, geologica, architettonica, design, rappresentazione, urbanistica, geografia… ed oggi più concretamente come fattore di rischio nelle costruzioni a scala regionale, in quanto fonte di salute e purezza dei paesaggi, ma anche nelle città come nei piccoli centri. Ed ancora l’acqua, agente di vita e di benessere, è una risorsa essenziale così per gli ecosistemi come per i profili a-biotici.

Nei processi di costruzione si giunge a un equilibrio tra le caratteristiche del luogo e le dimensioni della pressione antropica in relazione alla disponibilità di acqua, alle condizioni di vulnerabilità del patrimonio storico in zone esposte a rischio idrico (Liguria, Napoli), oppure in presenza di umidità nelle strutture portanti o di chiusura degli ediifici (Napoli). Ulteriore rischio alla scala urbana si corregge quando si presentano situazioni di difficile allontanamento delle acque meteoriche, specialmente quelle a carattere temporalese oppure indotte dai cambiamenti climatici; queste infatti richiedono pratiche di gestione a basso impatto ambientale, volte anche a impedire l’inquinamento delle acque superficiali e sotterranee, come ad esempio quando “… l’urbanizzazione crea impatti sulla qualità dell’acqua almeno in due modi: prima di tutto molti nuovi materiali e componenti impiegati per lo sviluppo territoriale contribuiscono al carico inquinante e al conseguente crollo, e in secondo luogo, l’azione di filtro del suolo vegetale risulta ridotta dalla presenza di cemento, asfalto e tetti.”

In questo numero della rivista viene ancora descritto il rischio idrico alla scala territoriale, in particolare in relazione ai suoi effetti sui centri abitati (Sicilia) e infine il rischio di esaurimento delle scorte di acqua pura per uso domestico, che può essere scongiurato solamente mediante nuove tipologie di analisi e di progetto, per la scala di insediamento residenziale (Napoli), anche adottando attente metodologie di valutazione degli impatti sul ciclo dell’acqua dei diversi materiali e delle diverse tecnologie impiegate.
In conclusione lo spirito della rivista, già espresso mediante la volontà di orientare alla sostenibilità ogni azione costruttiva, viene sottolineato dagli articoli qui presentati, poiché il fil rouge di tutte queste ricerche, che affrontano in tema dell’acqua, risiede proprio nella scelta di considerare il processo dinamico della risorsa idrica quale punto di partenza per riportare ai cicli naturali anche le attività trasformative della civiltà del nuovo millennio.

NOTE
1. Che insieme all’aria e al fuoco rappresentano i quattro elementi della natura secondo il pensiero del filosofo dell’antica Grecia, Empedocle.
8. Paolella A. *Climate change, adaptation, construction*, qui.
Talking about sustainability for a technologist is a daily task, for no transformation and education activities can avoid taking into account a growing society's need of change, as well as the environmental context's safeguard. The modification process will then enter into symbiosis with the site, without altering the available resources' balance. In order to activate empathy between man/designer and nature, a number of procedures for knowing and testing should be applied, which will respect urban places, landscape and territory.

Knowledge, history and materiality are the needed ingredients for starting these processes, through the assessment systems for the sustainable issues within the projects at both urban and land scale.

Due to a number of reasons, besides the designers' responsibility, the sustainable actions are still a few: “today sustainable development, environment and durable life quality are often discussed. I think that for our generation these have been failed, mainly for practicing designers, which have in their culture, in their hearts, bones and eyes, the ability of respecting territory, past and environment. Employing parameters, quantitative and qualitative values for verifying an intervention’s sustainability is downgrading. The goals are still vague, ambiguous and fleeting, as indexes and vectors of complexity and sustainability are still not very well balanced. Being illusory the idea of processing a frame of rules for constructing and transforming, such a design procedure seems to guarantee, on one hand, a better life quality, while on the other hand it looks as a defeat, which leads inexorably the man towards genetically modified, artificial and virtual realities”

Paolo Portoghesi declares with delusion that today “the architecture seems to have lost [...] its traditional task of tool for control and provision of an healthy environment and instead has gained on field a number of demerits, for the produced environmental faults”.

Knowing the past is necessary for the future, it is the guarantee for living in symbiosis with nature, even if this is against the speed of the evolution and the transformation of our age, and it will sound strange for new millennium computer programmers or architects. The memory needs this knowledge for correctly and harmonically operating, manly by architects conscious of the natural issue within the material culture application.

Adriano the emperor stated, with the words of the writer Marguerite Yourcenar: “building means collaborating with the earth, printing man’s sign on landscape which will remain modified forever”. The Sicily then becomes context and test field in which I take part as both person and scholar in the search of sustainable futures, so as to provide sustainable contributions to transformation and education processes mainly as far as design and technological culture are concerned.

My role within the scientific community as university teacher requires to participate to non-profit associations, such as the Inbar (Bio-Architecture National Institution), which pursue the aforesaid goals.

Then, while describing the potentials of this region, as a traveller or a modern Goethe, we can compare Sicily with the harmonic team of the four elements of the traditional cosmology, earth, air, fire and water, defined during the 4th century BC. (Fig. 1)

In fact, the Sicily, as island, is mainly earth, surrounded, embraced and enriched by the water, and also belongs to fire/light and to air, for the strong wind and its volcanoes. The Inbar provincial section of Trapani, in force since 2012, was born thanks to architect Salvatore Cusumano, its President. The national association has been active in Italy for more than 20 years, and had always played a fundamental role in awareness, information and education of actors operating for healthy inhabiting, land requalification, and ecological re-conversion of the building sector.

Since its birth the Inbar has activated a number of events at county and national scale, aimed at pursuing the association’s mission. The city of Trapani section, conscious of the fact that any place has its peculiarities and its history, had developed education and studies programmes so as to share the culture of bio-architecture, by proposing four workshops and some seminars. The president Cusumano underlines “that the Bio workshops and the Bio-seminars are chances in which thinking is enriched by action, where there are a lot of ideas, an opportunity for facing, sharing abilities and expertise, and, as in an alchemical studio, can contribute to look for searching such solutions which will be more and more sensitive towards the correct use of resources. The Bio-seminars are also living interior experience so as to provide evolution substance to present architects pro-ject, which is meant as a look towards the unknown, leaving away any predetermined sureness and truth. It is as throwing own ideas in a possible fertile field, where any seed can generate new fruits and create relationship nets between subjects who enriched each others’ from the others’ experiences and ideas, in a creative and organic comparison. As in the archery, more you stretch the rope and farther the arrow will go, so in the pro-ject practice, more the roots will sink in the past and greater is the knowledge-expertise, farther it is possible to go”.

In particular, the first workshop, entitled “Light. Let us collect the sun” was held on December the 12th, 2012 at Alcamo (Fig.2), the second, entitled “Earth. Architecture, materials and techniques, from tradition to innovation”, was held on march the 7th, 2014 at Alcamo (Fig.3), the third, named “Water. Bio-architecture and land within the new climatic and energy scenarios”, will be held, still at Alcamo, on December the 18th 2015 (Fig.4). The latter wishes to underline how the water can no longer be considered as an unlimited and renewable resource (everybody knows that fresh water represent only 3% of all the whole terrestrial one), by facing with the participation of illustrious scholars and designers (Fig.5) the subjects of the ancient link between Architecture and Water, mainly for the Mediterranean region (just mentioning the aqueducts, the thermal baths, the Roman tanks or the closed vegetable gardens, the fountains and the hydraulic...
first "Planning the sustainability: Innovative paths for design", held on January the 2013 at Castelammare del Golfo; the second, "Angel’s house. Blow and design", at Akam on February the 22nd, 2013; the third: “Urban regeneration and city, from the building squatting till the eco-sustainable planning”, at Akam on November the 7th, 2014; the fourth, entitled “Centre. From urban quality to life quality” held at Akam on February the 7th, 2015; the fifth bio-meeting, entitled “Harmony. Towards a re-design of city between landscape and economics”, held on May the 18th, 2015 in the Palazzo dei Normanni in Palermo with the coordination of the Sicily Region. The latter wanted to create a confrontation moment with the main Italian policy, economy, culture and planning promoters so as to search concrete answers to citizens’ need of comfort and sustainable development, while not neglecting the beauty and harmony, which are the unique truthful concepts which could still save man from the melancholy of the contexts where he lives.

Giuseppe De Giovanni
Full Professor in “Technology of Architecture”,
University of Palermo – Honorary President of the Scientific Committee INBAR Trapani Section.

NOTES
2. P. Portoghesi, Natura e architettura, Fabri editori, Milano 1993, p. 27.
3. M. Youcenar, Memorie di Adriano, Elmaus, Torino 1988, p. 120-121.

Programma venendo 18 ore 8:30-18:30
8:30 Accostamento partecipanti
9:00 Saluto dalle Autorità e dei Presidenti
Introduzione Arch. Salvatore Guarnaccia - Presidente INBAR siciliano
Arch. Antonio Sabatino - Presidente INBAR
Arch. Anna Casti - Segretario Nazionale INBAR
Prof. Arch. Andrea Salinardi - Direttore del Museo Nazionale Archeologico di Palermo
Arch. Alfonso De Cataldo - Presidente Ordine Architetti di Trapani.
Ing. Fabio Gangopadhyay - Presidente Ordine Ingegneri di Trapani
9:40 Le ragioni dell’aria
Mia Minneci - Filmmaker
9:00 Apertura dei lavori
Prof. Arch. Giuseppe De Giovanni - Professor Università di Palermo - Chairman, Italian Sustainable Architecture Congress - INBAR Trapani.
10:10 Modelli operativi di sussistenza d’aria
Arch. Giuseppe Sasso - Presidente Nazionale INBAR.
10:40 Le acque correnti e - minerali - le basi delle componenti tecniche e degli utili colmamenti per un’architettura sostenibile nei territori - il caso studio del parco nazionale d’Etna - ala
11:00 Sorvegliati climatici ed eventi naturali dopo 5000 anni di Confidenza di Parghelia
Stefano Sperduto - Presidente Green Building Council, Sante Coordinatore P4ER - Fondazione Scientifico Km Zero Cult. e Quantum.
11:30 Quale è l’aria del futuro
Prof. Gennaro Veneri - INET-Università di Palermo.
12:30 Intervevi di apertura, il tema del poster individuale
Prof. Arch. Sami Sarro - Università di Palermo.
13:30 "Europa come..."
Prof. Arch. Natale Fogliani - Università di Palermo.
15:30 Paola Pasini
Laboratorio a regola d’arte
15:00 Accostamento
16:00 Il sistema letti casa elemento imprescindibile
Ghil. Mauru Borga - Orologio maiolicato.
16:00 Acqua - sogno - casa - immagine con la natura
Arch. Raimondo Borga - Torino Tecnocampus.

Fig. 5 - Programme of the 3rd Bio-workshop “Water. Bio-architecture and land within the new climatic and energy scenarios"