

ARCHITECTURE HERITAGE and DESIGN

Carmine Gambardella

XVI INTERNATIONAL FORUM

Le Vie dei
Mercanti



WORLD HERITAGE and KNOWLEDGE

Representation | Restoration | Redesign | Resilience

ARCHITECTURE HERITAGE and DESIGN | 2

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Representation, Restoration, Redesign, Resilience
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**WORLD HERITAGE and KNOWLEDGE
Representation, Restoration, Redesign, Resilience**

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Conference report

300 abstracts and 650 authors from 36 countries:

Albania, Australia, Benin, Belgium, Bosnia and Herzegovina, Brasil, Bulgaria, California, Chile, China, Cipro, Cuba, Egypt, France, Germany, Italy, Japan, Jordan, Kosovo, Malta, Massachusetts, Michigan, Montserrat, New Jersey, New York, New Zealand, Poland, Portugal, Russia, Slovakia, Spain, Switzerland, Texas, Tunisia, Turkey, United Kingdom.

160 papers published after double blind review by the International Scientific Committee

Preface

In the present era, technologies are becoming increasingly important in helping and supporting man in research, knowledge and production activities, almost as if they were smart prostheses. With the theme of the XVI Forum "World Heritage and Knowledge", I propose to the International Scientific Community to debate and establish a comparison of knowledge carriers to communicate methodologies of good practices adopted and experiences in the use in the protection, conservation and safeguarding of cultural heritage and landscape as well as in the design of the "new," that, adopting in the building processes and building construction Innovative Building Modelling, can realise a non-contemporaneity of what has the same date (Giulio Carlo Argan) respectful of the values of the pre-existing, legitimate because it participated ex ante and monitored becoming all its ethical, aesthetic and performance connotations.

With the Internet of things, for example, sensors that are used to produce data autonomously that widen the processes of knowledge on all levels, from the territory with its infrastructures, to the environment, to the artefacts entering into the body itself of their physicality, or, in the case of the new, building the project as a prediction throughout physical consistency.

Nevertheless, the use of new technologies allows for economies of scale, both temporal and economical, not only for the surveying and representation of the built and the territory in the analysis phase but above all for the management of the resulting data that makes the design activity of the restoration of the historical heritage and landscape or of the newly constructed in a single process no longer divided into steps but also unitary in concrete constructions and the realisation of the works, in the intermediate checks, in the testing, in the monitoring and in the programmed maintenance.

In conclusion, it is indispensable for the scientific community to highlight how technologies, without a responsible attitude that commit man's choices and knowledge in dealing with and planning appropriate responses to the issues and needs of the collective, can create a deception that unfortunately materialises with the subtle persuasion of uncontrolled astonishment that overwhelms the imagination.

Carmine Gambardella

President and Founder of the Forum



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XVI INTERNATIONAL FORUM

WORLD HERITAGE and KNOWLEDGE

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Conversions and Resilient Materials

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Abstract (ID 20)

Nowadays, several different forms of resilience draw our attention but, among all the inflated meanings of this term, we are definitely attracted by the one concerning the ability the material has to regenerate to a new life (in a different present) when it is widely used both in “sophisticated” technologies and also in “simple” methodologies to support man in his research, knowledge and production in a world still to be planned, far from the logic of reinforced concrete.

Today the anthropic world of “buildings” must be reconsidered in terms of redesign, systemic editing, methods and results of the performance while creating (even in the case of new artifacts).

The current environmental emergencies force us to adopt the principle of “Circular Economy” also in Architecture. It had never been considered as a complete cycle: at the time of its birth (project), its life (realisation and durability), its death (deconstruction and reuse). Dry stone architectures and other parallel techniques allow easy interventions with the purposes of “build on what has been built”, “redesign”, and “recycling”. These actions constitute different resilient urban settings, able to reborn, to defend themselves and to activate again before adversities (earthquakes, natural disasters and anthropic emergencies).

Keywords: Technology, Resilience, Conversion, Reuse.

*“Resilience, the capacity to lead to a continued existence
by incorporating change”*

(Berkes, Colding, Folke, 2003 [1], p.393)

1. At the Beginning

The term ‘resilience’ comes from metallurgy: it represents the property of metal to resist the forces applied to it, in metallurgic technology.

For a metal, resilience is the opposite of fragility.

The same goes for psychology: a resilient person is opposed to an easily vulnerable one, which «lives: The NIGHT of ego» (Mormese, C. 2004). Etymologically, “resilience” comes from Latin “*resalio*”, iterative of “*salio*”. Some propose a suggestive connection between the original meaning of “*resalio*”, implying the gesture of going back on an upturned ship capsized by the force of the sea, and its current use in the psychological field: both terms indicate the will to carry on without giving up while facing adversities, ‘beyond’ the night.

1.2 On the definition of Pietro Trabucchi

Psychological resilience is the ability to persist while achieving challenging goals, effectively coping with difficulties and other negative events that will be on our path. The verb “to persist” indicates the idea of a solid, unwavering motivation.

In fact, the resilient individual has a series of unmistakable psychological characteristics: he/she is optimistic and tends to ‘see’ negative events as temporary and limited; he/she believes having a wide degree of control on his/her life as well as on the surrounding environment; he/she is strongly driven to

achieve pre-established goals; he/she views change as a challenge, an opportunity, and not as a threat; when faced with defeat and frustrations he/she doesn't lose hope.



Fig. 1: Bebe Vio - The Strength to Get a New Lease on Life, Feeling Alive After Experiencing the Worst.

2. Current use

'Resilience' is the ability to positively cope with traumatic events, successfully reorganise one's life while experiencing difficulties. It is the ability to regain one's life by remaining sensitive to the positive opportunities that life offers, without losing humanity.

Resilient **people**, surrounded by adverse circumstances, despite all the obstacles and sometimes against all odds, manage to effectively face setbacks, to give new impetus to their lives and even to reach important goals. It doesn't mean to be strong, but flexible, therefore manage to sensibly bend to events, and react accordingly (The road of resilient - American Psychological Association (APA) – official site).

Resilient **territories**, exist in a concrete geographical dimension, fragmented into many pieces by wars, conflicts, catastrophes and cataclysms.

In these places, despite open wounds, there is an innate 'resilience' of recreation, an amazing ability to find in itself the means for a new phase of growth, affirmation, self-determination for regeneration. The strong presence of natural elements, allows a high resilience: the trees resist, their roots' net contains avalanches and drought, the plants regenerate, the animals repopulate the area. Life recovers even after a strong stress, traumatic or disastrous events. Everything regenerates.

For us, these subjects represent important experimentation and research fields, on which we should focus to understand the actions that are set in motion, both spontaneously and through the effect of sensible human choices. Consequently, codify the events to draw pilot actions and activate new research areas.



Fig. 2: Goqui Island (China), Has Been Claimed By Nature In The Most Stunning Way

Resilient *cities*, generally are artificial places, completely built, mostly man-made, and have a 'low' ability to resist the environmental shocks (heat waves, floods, extreme weather events, earthquakes) and to recover from damages.

After a hurricane or a fire, the artificial places are damaged beyond the possibility of recovery.

This means, they have a low, insufficient or even null resilience. In these conditions, there is very little to do and it is possible to rely on specific energies (especially economic and forecasting types): forward projections that anticipate deteriorations and events.

3. What about Architecture?

In accordance with the above-mentioned considerations, it might seem that Architecture is 'passive'. Technically, it is the less resilient setting, less susceptible to autonomous rebirth. That is why, we need to ask ourselves how we might consider it particularly resilient, and what actions we should implement to make it resilient and understand how to connect natural and artificial factors, carefully looking for the priority of one or the other.

On the one hand, the constituent materials of architecture can contribute (they can certainly resist more in 'endurance' and 'durability'). On the other hand, the project (ab-origine, from its creation) with resistance properties of its construction systems and its acclaimed static benefits. Furthermore, rethinking architecture as built by modules, so that it does not go into pieces since it was originally built with pieces.

It is a clear reference to the well-known dry stone construction systems (to be assembled) - definitely much more solid and resilient of others - that by being built with modules can be easily, quickly and effectively be replaced when necessary. Such systems, appear to be much more elastic and flexible when an earthquake occurs or in case of hydro geological instability. Therefore, they are more resilient than ordinary construction systems (reinforced concrete and similar).

Of course, the subject is much more complex than that, and we should, first of all, consider it as a historic-cultural matter. The Architecture has always been imagined as 'long-lasting matter', presumptuously capable of challenging time with its mass and its size (ancient Greek or Roman heritage). However, current history has shown otherwise.

Throughout the evolution of buildings, man has always laid the foundations for substantial achievements, aiming to persist and presumptuously remain unharmed in time. This feeling increased with the creation of reinforced concrete (E. Mendelson's Einsteinturm Tower, 1917) considered the perfect means for human creativity and capable of embrace all his wills.

Architecture has indelibly affected the territory (instead of consuming it) and its transformations have never gone unnoticed, even after decades. Wastes of disused buildings float in the confused nebulae of our suburbs and man does not know how to contain the potential economic bleeding if he wanted to recover, dismantle or demolish them: bottomless processes that will never find a solution (Detroit – USA) [2].



Fig.3: Detroit (USA), “Motor City” Ford Headquarters Where More than Three Million “T” Models Were Produced

Bad building (Bottone, P. 2015), together with territory and construction site misgovernment, have already shown signs of dismantling for decades and its results are before everyone's eyes.

We need to drastically abandon planning interventions if competence, actions designed for the context and evaluation of side effects are lacking. Therefore, stop designing on a big scale and creating a timely design, and, never again, consider a building as a ‘sacrifice’ for knowledge or creativity (whose results are often nefarious and irrecoverable).

Sadly, we have too long been used to consider the ‘error variable’ as regular requirements of projects and buildings. We easily accept the ‘error variable’ as standard action; errors in the design, determination of quantities, prices, necessities, needs, supply, logistics; errors in the installation of materials, times and deliveries; errors considered in the call for tenders under the heading, “risk of error”; and even the errors arising from economic assessments throughout the life cycle of the building (Argiolas, C., Quaquero, E., Prenza, R., 2015).

Therefore, we have accepted the error as part of the making process and, its complete incapability of being ‘resilient’. Without thinking about the consequences of such errors that affect not only the life of the building, but also its scope, management and comfort.

Today, stand against this logic is a true necessity, a duty, a goal for the future. Think about these subjects fits the logic of “misjudge/correct”. Technological development leads us to eliminate the superfluous, lighten, eliminate matter and, instead, add thought, intelligence, “suitable” creativity; know and avoid the mistakes that others have made before us while trying to keep up with times, to which we must necessarily adapt (Zennaro, P., 2000). Materials, techniques, knowledge, lifestyles, climate and general innovation undergo continuous mutations and it will be difficult to find a coherent solution for different problems: however, the effort must be made!

To build means: lift up by the union of conveniently placed parts.

We believe the most coherent property is established by environmental sustainability, reuse, ‘recycling’ and the circular economies originating from the «do/misjudge and correct» process, to reintroduce the efforts made in new circular processes (feedback) that can consume only what they produce.

Therefore an Architecture produced by mechanics rather than masons; an Architecture capable of reconvertng with little effort, precisely because created ab-origin with interchangeable modules.



Fig.4: Casa Sabugo, Gijón, Spain (2016), Arch. Tagarro; Arch. De Miguel: Single-family Homes Restoration



4. What Conclusions

As a Phoenix, mythological animal, symbol of natural and evolutionary cycles of 'death and rebirth' - reason for the evolution, life and 'resilience' of men and nature - Architecture is to be considered able to respond to this process, capable of reconvert at any time into 'something else', as a different already foreseen reality (Carta, M. 2014). We are certain that only an Architecture in pieces and made by modules can truly and positively fulfil this new need.

As it happens in nature (see Mimosas or Bamboo) [3] the elements regenerate and autonomously strive to take back their space. We saw that even a healthy man is capable of regaining his life through positive attitudes of rebirth. Architecture must have the same ability of resilience, to restart and re-establish its building processes.

We have to take note that every building (added) on territory must only 'occupy' the territory it stands

on without 'consuming' it. Therefore the new buildings must be designed keeping in mind three key moments:

- *birth* (creativity, harmony, research, experience, context, technology, forecasting, solutions);
- *life* (maintenance, social and environmental conditions, transformation, conversion, adjustment, immediate reinvention, adaptation, global or partial redevelopment, resilience to events, expansion/reduction of space);
- *death* (partial or total deconstruction; conversion and reconversion, partition, reuse, recycling, reintroduce pieces into cycles, readaptation of parts, regeneration of waste).

This will set a new way of thinking about the buildings, where error can become a research tool, having the ability to self-correct in every moment.



Fig.5: Wikkellhouse (2017), Developed by the Dutch Company Fiction Factory, Is Made Out of Cardboard, Modular and Highly Customisable, Built to Last Between 50 and 100 Years.



Notes

[1] The use of ecosystem resilience together with the development of territorial systems has officially entered International and European Union policies since 2002, when Carl Folke, Steve Carpenter, Thomas Elmqvist et al., presented Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformations, and today has a central role in community policies (EAC, 2002).

[2] Detroit: «What do I have to do to be saved?» The huge writing on the building next to Michigan Central Station well expresses the sense of dismay and resignation of Detroit's soul. Fifty years ago: the District's black community exploded with rage, the city burned, the US military brought order, and the gap with white people became a deep wound. 1970s and 1980s: the city emptied (only a quarter of the 2 million citizens of the 50s) and it became a «Ghost Town», one of the most violent in the United States. 1990s: globalisation damaged the foundations of Detroit Motor City. 2000s: the car industry went out of business because of Asian competition. In July 2013, the town council, burdened by a debt of 18 billion dollars, declared bankruptcy (from Il Sole 24 Ore on-line);

[3] In 1946 the U.D.I (Unione Donne Italiane) chose the Mimosa as perfect flower to represent women's day. In fact, it is a flower that grows spontaneously in many parts of Italy. Only a sprig of Mimosa was spared by the fire of a textile factory where dozens of women died, so it was chosen to honour their memory (resilient);

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