

## CAN TEMPORARY ARCHITECTURE IMPROVE OUTDOOR CONDITIONS IN RESIDENTIAL DISTRICTS?

Timothy Daniel Brownlee<sup>1\*</sup>, Ernesto Cesario<sup>1</sup>, Federica Ottone<sup>1</sup>, and Simone Pirro<sup>1</sup>

1: Group/Department of First, Second, Third and Fourth Authors  
School of Architecture and Design  
University of Camerino

Viale della Rimembranza, 63100 Ascoli Piceno, Italy

e-mail: { timothy.brownlee, ernesto.cesario, mariafederica.ottone, simone.pirro }@unicam.it,

web: <http://d7.unicam.it/sad/>

**Keywords:** Temporary, Outdoor, Urban quality, Sustainability, UTCI,

**Abstract** *The life quality and the livability level of a city are strictly related to how public urban spaces are used and maintained, and to the type and number of outdoor activities. The absence of recreational and optional activities may create poor outdoor conditions: many public spaces are currently used in ineffective ways, often in uncomfortable and unsafe conditions. Seasonal and weather conditions are also a potential limit to the use of spaces between buildings.*

*The paper stems from several investigations that demonstrate how the request for urban quality is a pressing need of residential areas inhabitants, and how collective outdoor spaces have great unexplored potentiality.*

*With sustainable models, capable of adapting to outdoor climate conditions, this research will try to respond to the request of a livable outdoors, in order to introduce effective programming in comfortable conditions, and give back strength and identity to neighborhoods. Through the analysis of several case studies, classified on the basis of their use and through recurring features and keywords, the project aims at identifying a transferable model based on sustainable and multipurpose structural units for temporary outdoor architectures. These elements will be the base to introduce urban “acupuncture intervention” as a support for the growing need for recreational and cultural activities, in order to provide a tool capable of improving the urban outdoor conditions.*

*The background purpose is to come to a conscious use of the city’s potentialities with the aim of improving the citizen’s modus vivendi.*

## 1. INTRODUCTION

Schaik L.V. and Watson F. [1] suggest how some stable architecture made of bricks and stones, make us think of the old and dusty furniture that our grandparents had in their homes, especially when compared with the young and dynamic pop-up and temporary pavilions, which instead seem better suited to the contemporary spirit.

The ephemeral appears attractive, shining and visionary also because it is right next to the dynamic and shimmering world of our dreams, even the most consumerist ones. But can temporary architecture have a more intense and long lasting value than how it is currently considered? Could it have a key role in collective spaces planning, especially during the social transformation in this economical crisis?

If collective outdoor spaces can be considered as a connective tissue between citizens, literature is pointing out how the cohesive character of these spaces can be threatened by the failure of a development based only on the market rules. In *Urban Catalyst* [1], the authors suggest how social exclusion seems closer everyday as the contemporary community appears divided and no longer able to benefit from sharing urban spaces.

Among the most evident contemporary phenomena of city centers, we observe a fast changing of the commercial modes, a mutation of consumer behaviors and of economic dynamics. In particular there is a decrease number of stable structural openings: for example in the city of Rome, for every three openings there are four activities that are closing [3], especially in food services, in trade and entertainment sectors. But, as the number of traditional stable activities decreases and some Italian Business Federations are alarmed [4], the amount of new temporary and pop-up activities is significantly rising [5].

The structural support of our historical cities, that layering of the massive elements that has arrived to our days, was only the steady support of an urban dynamism made of various and convertible temporary elements. Nevertheless, “In urban planning and design there has been little analysis (...); temporariness and impermanence are rarely viewed as key components of growth and regeneration [6]”.

The history of temporary buildings is a fertile field, intimately connected to human development and to the history of architecture. Evolution is characterized by a succession of different living typologies, many of which have temporary features. The meanings of the Latin word “habitare” (to live, to dwell and to remain) gives the idea that living is normally associated with something that will last a longtime. The Vitruvian “*De Architectura*” explains how architecture should be based on the famous Vitruvian triad: *firmitas*, *utilitas* and *venustas*: the concept of *firmitas*, or solidity, is clearly related to a permanent construction. But looking back towards the history of architecture what appears clear is that almost every building ever built ends up being temporary, more or less ephemeral on the basis of what type of material and technology has been used, or on the basis of climate, social and political conditions.

## **2. METHOD**

This paper will focus on several topics that, through significant case studies, show us how outdoor spaces can directly influence the lives of inhabitants, activating social opportunities, integration mechanisms, and growth opportunities. As a determining factor in the quality of the outdoor spaces, the outdoor comfort topic will be analyzed too. What emerges clearly from this study is that:

1\_Urban spaces can be used in effective ways, improving the life quality of inhabitants, through new functions and re-locating the “space between buildings” at the center of the community;

2\_The opportunity to use this potential in urban planning is still widely unexplored, as is the attempt to improve the features of collective spaces, expressing them as hybrid and variable places, or as flexible containers for multiple activities;

3\_Through the use of new temporary (or removable) and sustainable architectures it might be possible to overstep natural meteorological and seasonal limits and extend the period of use of outdoor public spaces.

4\_Temporary architecture has always been a very fertile field, but very few are the examples that put together temporariness and sustainability in order to create comfortable outdoor conditions;

## **3. WHY SHOULD WE FOCUS ON OUTDOOR PUBLIC SPACES?**

The outdoor public space is one of the most important fields on which social relations are established. This is why the quality of these settings and the way these spaces are used, are the units of measuring and evaluating the vitality level of a city. As city users, we might have the passive role that consumers have, or we could have the active role of city participants. In both cases we share spaces in which we have free access and in which we might have more or less chances to interact with other city users. The quality of these spaces can influence not only the quality of human interaction but also the possibility of feeling as a part of something bigger than us.

“...Loose spaces give cities life and vitality. In loose spaces people relax, observe, buy or sell, protest, mourn and celebrate. Loose spaces allow for the chance encounter, the spontaneous event, the enjoyment of diversity and the discovery of the unexpected. [7]”.

## **4. SOCIAL OPPORTUNITY**

In *Life between Buildings* [8], Jan Gehl affirms forcefully how the topic should be considered as a crucial point when discussing the whole city-system quality, precisely because citizens' well being depends on this. A conscious planning can transform an urban void -an outdoor place subject to atmospherical agents- into a welcoming site, capable of accommodating numerous recreational and relaxing activities (playing, eating, sitting, talking, etc..), improving the quality of social relationships. Uncomfortable areas and non-welcoming ones, as well as unsafe places, will be exclusively used for primary activities (going to work, waiting for the bus, etc..). The public space that accommodates a great number and kinds of

outdoor activities (primary and recreational) is the one that can ensure a lively outdoor, with a distinguished livability level capable of conditioning positively the quality of life of its inhabitants.

But the chance to use the outdoors effectively is directly affected by the quality of the project and by the attention to details. When the designer intentions don't perfectly match the real everyday needs, as a result, there could be a conflict between user experiences and what the design has produced. The incapability of taking advantage of the potentialities of a given site directly effects the possibility of using this space properly. In order to design public spaces, architects must understand clearly what the community requirements are. The role that architects have is even more crucial when it has to do with the interest of the society and the quality of urban outdoor environment rather than their role in private commissions. Some cases studies have worked very well, in the attempt to encourage the use of outdoor spaces inserting temporary containers for various programming.

The cultural vocation [9], of a city could be expressed in new ways of using the urban scenario: this feature is much more present inside the connective urban fabric, than it is inside the shopping center fabric. The opportunity to use this potentiality in urban planning is still widely unexplored, as is the attempt to improve the features of collective spaces, expressing them as hybrid and variable places, or as flexible containers for multiple activities, also trying to overstep natural meteorological and seasonal limits.

Starting from Madrid's Eco-boulevard, the topic of the multifunctional sustainable temporary container is increasingly more current, yet it's still not finding a real correspondence in new urban planning strategies

#### 4.1. Sean Godsell's MPavilion



Figures 1-2. 2014 MPavilion, photo credit Earl Carter, courtesy of Sean Godsell Architects.

Sean Godsell's Pavilion, designed in 2014 for the M-Pavilion Melbourne Festival, was a multifunctional container, a cultural hub and a meeting point. The citizens could live the Queen Victoria Gardens in a completely new way, thanks to the programming that the pavilion introduced. In this case study the border between indoors and outdoors was blurred,

and the adaptable architectural envelope permitted a continuity with the gardens, allowing an original way to live the outdoors.

Compared to the London Serpentine Gallery Pavilions, the ones that are used in the Australian annual Festival are finally “sustainable-oriented” structures. Sean Godsell’s one was capable of adapting its shape to the weather condition, in order to guarantee, thanks to technological devices, a high level of comfort for those who were inside.

Drawing inspiration from the Australian backcountry barns and hay sheds, and in particular from their metal sheets and verandas, Godsell brought back elements from the country architecture transforming them into environmental control technology elements.

## 5. INTEGRATION MECHANISM

Case studies demonstrate how small temporary elements can critically contribute to the transformation of urban areas, creating new social relations and enhancing the living conditions of the inhabitants, sometimes encouraging an increase of a civic sense or of a community affinity. It is particularly evident how, in those areas affected by poverty and crime, or in areas with humanitarian crisis, a social urbanism carried out through small actions of acupuncture architecture, can make the difference. In some cases, these structures can turn into a source of identity, making people proud of the place they live in.

### 5.1. Forest of Hope

As Giancarlo Mazzanti says during his interviews, Architecture should have a social inclusion role in order to improve life-style factors and competitiveness in deteriorated environments, and promote a social well being. With his architecture in Bogotá, Mazzanti is not only interested in changing the life style of the inhabitants but also their way of thinking, inducing actions, encouraging people to behave and generating new relationships.



Figures 3-4. Forest of Hope, photo credit Jorge Gamboa, courtesy of El Equipo de Mazzanti.

Forest of hope is a covering and a sport center in a very depressed area in the outskirts of Bogotá. The modular structure evokes the trunk and the foliage of trees as a symbol of nature, union and hope. Just like a real forest, the forest of hope could increase and expand itself in an attempt to secure even the adjacent outdoor spaces.



The functional role of the covering is to protect and shade a public area used for sport activities and as a multifunctional support for the community. But the emotional role of the architecture emerged clearly after it had been built: community sport clubs were born and people started to use the architecture as a meeting point and as a distinctive sign of the center.

## **6. OUTDOOR COMFORT INCREASER**

In order to increase the use of outdoor spaces effectively, temporary architecture can be very useful improving the outdoor comfort level. The parameters that can actually help controlling the outdoor conditions and the physics variables can be managed through the UTCI (Universal Thermal Climate Index - <http://www.utci.org>), announced in 2011 by the International Society of Biometeorology (<http://www.biometeorology.org>). The index was developed under ISB Commission 6 by COST (European Cooperation in Science and Technology) Action 730 under the umbrella of the WMO Commission on Climatology (Jendritzky, de Dear, & Havenith, 2012); the index can be called a state-of-the-art work in human thermal sensation and comfort studies (Bröde et al., 2012) 7. UTCI considers all four variables necessary for outdoor comfort evaluation: air temperature, humidity, wind speed and radiation (or mean radiant temperature). UTCI uses these variables in a human energy balance model to give a temperature value that is indicative of the heat stress or cold stress felt by a human body in the outdoors [10].

### **6.1. Inclusive spaces, Municipality of Beit Ummar**

The UTCI is used in this case study in order to analyze and understand the difference between before and after the intervention. It's an outdoor project carried on by ARCò on the Municipality of Beit Ummar in the West Bank. The environmental simulations are made using the Rhinoceros 3d parametric interface Grasshopper software, a modeller linked to Energy-plus through Honeybee and Ladybug plug-ins; the plug-ins use the .EPW files to extract the weather data information.



Figure 6-7: Inclusive spaces in Beit Ummar, before and after the intervention, courtesy of ARCò.

As we can see, during the worst weather case scenario, the hottest week, the temporary structure makes a 3°C difference, reducing the temperature from 30,48 °C outside to 27,10°C thanks to the shading device; for the other two cases studied we have the same temperature optimization: it is clear that for outdoor life during the winter it's necessary to support temporary structures with active devices.

1\_Extreme hot week: the study of this period goes from the 8<sup>th</sup> to the 15<sup>th</sup> of August for the eight hottest hours of the day

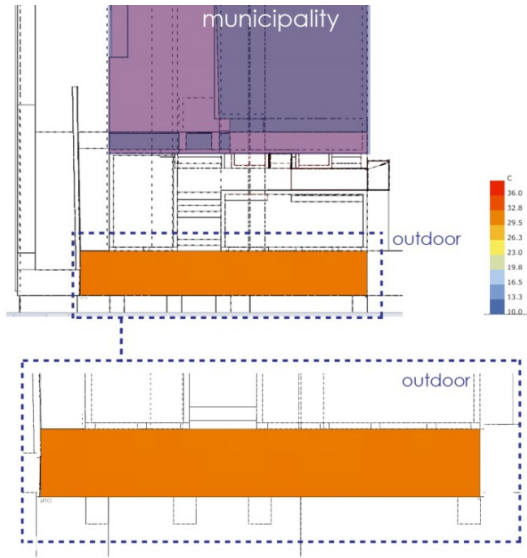


Figure 8: Average UTCI value without shading device = 30.48°C

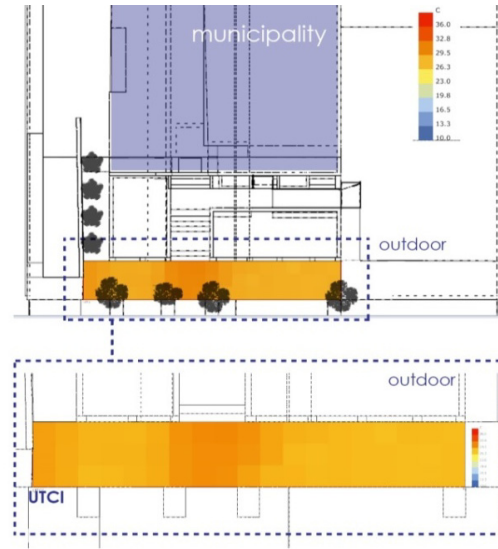


Figure 9: Average UTCI value with shading device = 27.10°C

2\_ Typical week: the period goes from the 23<sup>rd</sup> of December to the 3<sup>rd</sup> of January

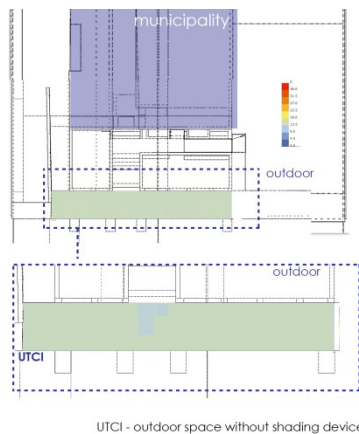


Figure 10: Average UTCI value without shading device = 30.48°C

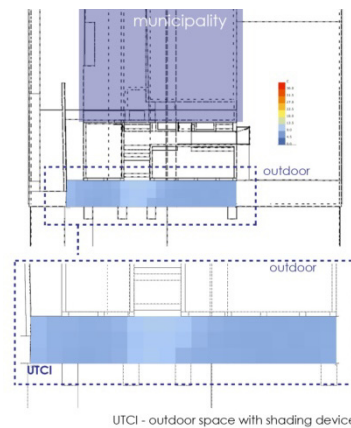


Figure 11: Average UTCI value with shading device = 27.10°C

### 3\_ Extreme cold week: the period goes from the 1<sup>st</sup> to the 7<sup>th</sup> of March

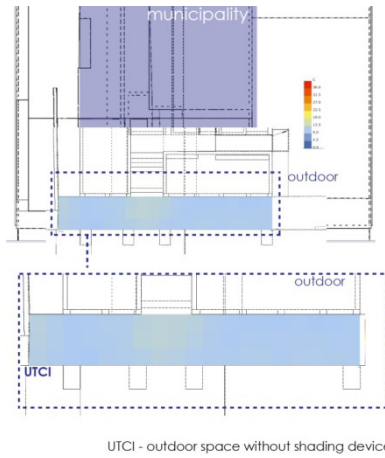


Figure 12: Average UTCI value without shading device = 10.36°C

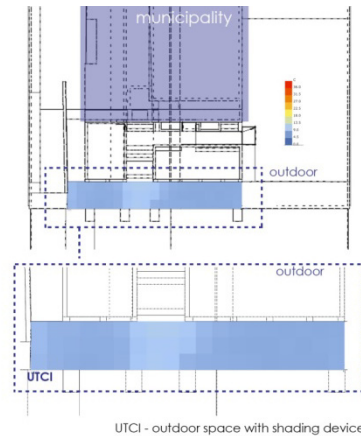


Figure 13: Average UTCI value with shading device = 6.33°C

## 7. GROWTH OPPORTUNITY

“A sustainable approach can not exclude strategies implemented in order to foster social relationships and economical development of those activities connected to the site and more generally to the city [11]”.

Temporary pop-up architectures foster marketing strategies and market surveys in those populated urban areas and with low cost investments. This phenomenon is in part connected to the progressive spread of online shops and to the partial loss of consumers that some stable and long-term stores are suffering from. The pop-up store is energetic and guarantees a high level of attention from the consumers also because the online market can't give the kind of sensorial experience that a real structure can give: testing and touching.

“As diverse and manifold as this temporary planning strategy might be, a potential benefit of it surely is that it allows for the testing of new possibilities in construction and spatial experience because of the smaller scale, shorter time frame and freedom to exist on sites inaccessible to permanent architecture [12]”.

In some cases the use of small temporary events as a support to marketing activities can generate unexpected behaviours, like in the following case studies.

### 7.1. Piceno Garden Show

For hundreds of years the Renaissance square of Ascoli Piceno has been characterized by the strong and material shapes of its geometry and during the 2009 promotional flower and trees event, it suddenly changed its aspect and became a sequence of twelve thematic gardens. The square, that over the centuries has hosted many temporary events, finds itself probably for the first time, having to accommodate an event that puts into contrast the rigid material geometry of solid architecture with the soft and shimmering geometry of plants and trees. During an interview, Professor Toraldo di Francia, who directed the project for the School of



Architecture and Design of Ascoli Piceno said that: “...it’s not only the city that expands itself in the countryside, but it’s the country that vigorously comes back into the city...”. In this case study, with a piece of country that is placed in the center of the city, the temporary architecture not only had the effect of being a psychological and biological compensation for the citizens. It was also an “education to nature” instrument: users could actually see and touch a considerable number of tree species through a sequence of thematic gardens, described with explanatory taglines.

It was a surprise to notice how the event attracted numerous people not only to visit the exposition but also using the thematic gardens as a place for urban meeting. This effect was probably generated by the architecture conformation, that was able to accommodate people at a human scale.



Figures 2-3. Piceno Garden Show, photo credit Cristiano Toraldo di Francia.

## 7.2. Greenhouse Melbourne

Between November 2008 and January 2009 the Australian Festival “Greenhouse” filled up an urban void with a temporary restaurant right in the financial district of Melbourne. The idea was to start an activity using a real urban downtown vegetable garden, and making it a part of the façade. In this way everybody could see vegetables growing in an unusual urban context.

A great part of the temporary building was also made of recycled materials. The spaces between inside and outside were a comfortable liveable filter ideal to place tables and resting areas. The green vegetable walls shaded and reduced the temperature peaks and were also a natural showcase of the products used for the menu.

## 8. CONCLUSIONS

This paper demonstrates how small scale architecture interventions can influence the life style of inhabitants, acting as a support to the social relationships or even creating new integration mechanisms. Many of these operations are also characterized by low cost investments or, in some cases, they are financed by the very activity that the architecture introduces. It is

desirable to introduce small scale urban outdoor architecture as an element to use the spaces of our cities in a better way, and if necessary, as an instrument for urban planning. A temporary design mode could introduce new opportunities to architecture and, in particular in urban planning it could allow the use of new tools, capable of understanding and adapting to the ongoing changes, in order to bring flexibility and responsiveness to the variable needs that contemporary citizens have. Urban planning could have the primary role that it once did, finally responding in an efficient way to the demand of a flexible, dynamic and iridescent city.

The study also shows that, with some environmental simulation, outdoor spaces can be lived in better thanks to temporary structures; the perceived outdoor comfort depends on many factors such as habits, activities, clothes and obviously climatic conditions too; the research, that can be improved in the future with other simulations, comparing various sites and weather conditions, wants to underline the importance of temporary devices which can offer a contribute to a much more comfortable outdoor living.

## REFERENCES

- [1] Schaik L.V. and Watson F., “Pavilions, Pop-Ups and parasols, are they platforms for change?”, in *Architectural Design* May/June 2015 pp. 9-15;
- [2] P.Oswalt, K. Overmeyer, P. Misselwitz, Urban Catalyst, “The power of temporary uses”, Dom Publishers, Berlin, 2013;
- [3] Data from Rome’s Chamber of Commerce, years: 2014 and 2015;
- [4] “Il commercio è in ripresa ma i negozi sono sempre meno”, *La Repubblica, Economia e Finanza*, 3 ottobre 2105;
- [5] R. Harbron and S. Alderson, “Britain’s Pop-Up Retail Economy 2015, Blurring the lines between pop-up and traditional retail”, a report by the Centre for Economics and Business Research, London, 2015;
- [6] F. De Girolamo, “Time and regeneration: temporary reuse in lost spaces”, in *Planum, The journal of Urbanism*, N°27, vol.2/2013;
- [7] K. Franck and Stevens Q., “Loose space: possibility and diversity in urban life”, Routledge, London, 2006;
- [8] Gehl J., “Life between buildings, using public spaces”, Island press, 2011;
- [9] L. Ferrucci, “Le potenzialità economiche dei centri storici”, in *Aedon, rivista di arti e diritto online*, n°2, 2015, [www.aedon.mulino.it](http://www.aedon.mulino.it);
- [10] K. Błażejczyk, . Bröde, Y. Epstein, D. Fiala, G.Havenith, G. Jendritzky, B. Kampmann, A. Psikuta, “An introduction to the universal thermal climate index (UTCI), in *Geographia Polonica*, volume 86, Issue1, pp. 5-10;
- [11] A.M. Ippolito, “Spazi urbani aperti. Strumenti e metodi di analisi per la progettazione sostenibile”, Franco Angeli, 2014;
- [12] L. Fiereiss, “A Brief Reflection Temporary Architecture and Temporary Space” in *Platoon* n°2/2015.