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SUSTAINABLE ARCHITECTURE FOR THE EARTH

Focus:
People Planet Profits
at UAEmodern



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Hamonic+Masson and Associés,
Guillaume Ramillien Architecture,
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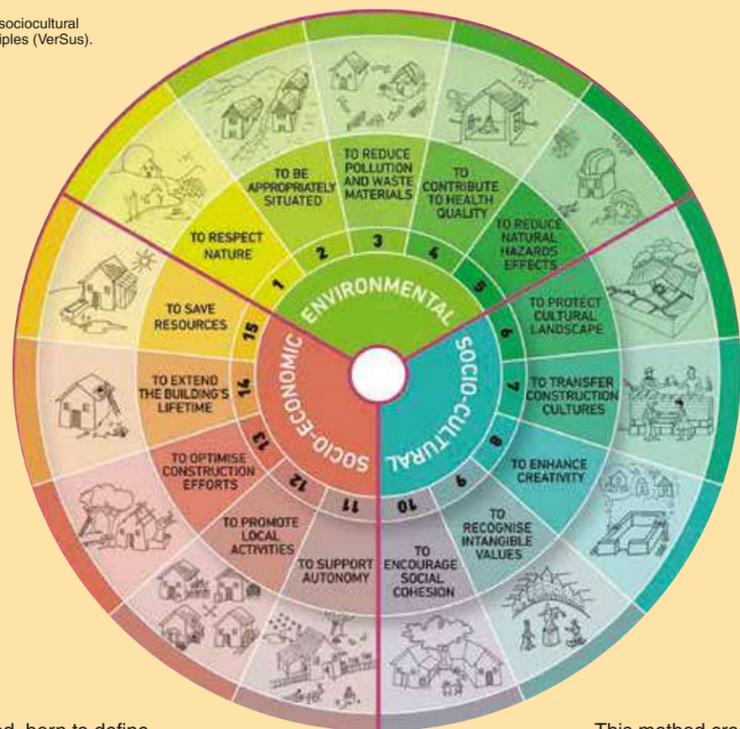
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Wheel of environmental, socio-cultural and socioeconomic principles (VerSus).



The VerSus method, born to define, assess and measure the sustainability of an architectural project and created by the European Union program called *VerSus. Vernacular Heritage for Sustainable Architecture*, was developed by several European universities, i.e. the CRAterre-École Nationale Supérieure d'Architecture de Grenoble (France), the Dipartimento di Architettura of the Università degli Studi di Firenze (Italy), the Dipartimento di Ingegneria civile, Ambientale e Architettura of the Università degli Studi di Cagliari

The VerSus method

(Italy), the Universitat Politècnica de València (Spain) and the Escola Superior Gallaecia (Portugal), under the leadership of the latter. The philosophy of the project consisted in studying the lessons on sustainability that vernacular architecture offers us, with its optimal solutions derived from centuries of trial and error, in order to apply them to the design of a more sustainable contemporary architecture.

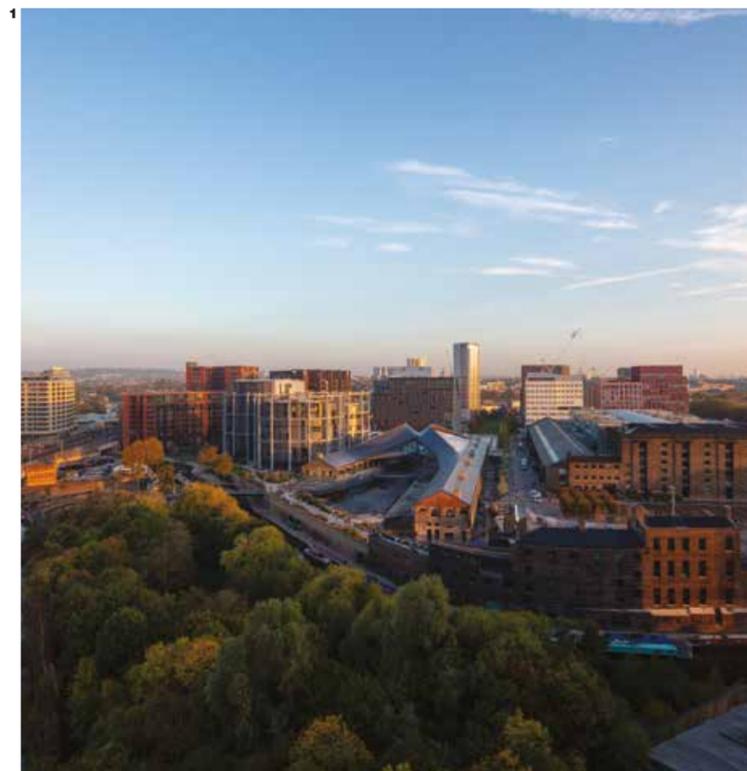
This method created a wheel with 15 parameters divided in the three basic pillars of sustainability, that is to say, environmental sustainability, socioeconomic sustainability and sociocultural sustainability. This wheel allows, easily and quickly, to check the degree of sustainability reached by a project, an ongoing construction site or an existing building, as well as to suggest corrections to improve the performance in this field. To know more about the project and freely download the publications online, see: www.esg.pt/versus.

Notes

- This text was formerly published with some variations under the name F. Vegas, C. Mileto, G. Guimarães, V. Navalón, *Defining sustainable architecture*, in M. Correia, L. Dipasquale, S. Mecca, *VerSus. Heritage for Tomorrow. Vernacular Knowledge for Sustainable Architecture*, Firenze University Press, Firenze 2014, pp. 34-39.
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Reuse, optimize, share: three paradigms for a sustainable future in buildings design. The London King's Cross experience



consumption required for the production processes. In many cases, this mask is real, and covers up the ecological deficiencies by resorting to supposedly efficient technologies or formal evocation of the vernacular tradition. *The sustainability of recycling* Recycling seems to have become a byword for efficiency, a sacred term for any contemporary architecture that wishes to aspire to sustainability, whether sincerely or merely following the trends of the time and the most popular labels in the construction market. However, recycling is not always the panacea of sustainability. Furthermore, the concept of recycling

would be the last option from a group of variants implying greater sustainability such as repair, restoration, rehabilitation, recuperation, reuse, etc.¹³. This is the case of aluminium, among other materials, for its production cost is so high that it would require dozens of recycling periods to make it worthwhile. Other popular materials in the recycling sphere, like used tyres, either as they are or converted into EPDM rubber (Ethylene Propylene Diene Monomer rubber), are used with freedom and ease of mind because they are recycled, but the fact that it does not allow steam transpiration often makes it incompatible with the rest of the materials in the

sustainable building, sometimes creating potentially pathological constructive aberrations. Finally, experience shows us that resorting frequently to demolition materials from old buildings generates a market that causes more demolitions in the historic city centre, as occurred in the early 20th century in the United States with neo-colonial architecture and the fashion of creating period rooms in museums and stately homes. *Partial sustainability* The concept of sustainability in contemporary architecture is often confused or deliberately mixed up with other hackneyed notions that we defined briefly at the beginning of the

text, although they are not the exact equivalent and the adjective used has nothing to do with what is actually built. Besides, especially in the realm of schools of architecture and the most widespread journals, sustainability in architecture is often seen as a purely environmental factor, mainly related to the production of construction materials or to the energy cost of maintaining a building, unmindful of social, cultural and economic implications, which have to do with other factors such as durability, tradition, cultural scene, immaterial values and human relations.

The shift from a linear make-use-dispose perspective to the closure of the loops marks an up-to-date approach to sustainability in building design. Value preservation and resource optimization are the poles of a process aimed at a smart development rebound, through game-changing strategies. Prosperity and resilience are the horizons for a circular economy transition into action, reversing settlements' cycles with the support of new business models for a sustainable urban future. Issues related to the environmental crisis, societal expectations, economic challenges are the drivers of a new commitment to replace the concept of end of life, with

life cycle lengthening¹. The Ellen MacArthur Foundation approach to growth² has been contributing to this transition, suggesting that the ever-growing economic profitable development can happen without an ever-growing pressure on the environment. Based on a system thinking, aware of relations between economic, human, natural and cultural dimensions, sustainability invests in maximizing values. Reshaping resources through symbiosis turns into a possible solution for past performance realignment or for the provision of new services. The transition to a circular economy

requires not only to redefine solutions but mainly to rethink processes³. The emergence of innovative business models leads to collaborative design dynamics across entrepreneurship, administrators, educators and communities that reveal new fields of value creation. Step by step architectural designers, planners, contractors, administrators are currently leaving the linear economy behind, so to safeguard the future by creating services instead of products, recovering resources from waste, sharing assets and producing green supplies⁴. In this framework, three design paradigms emerge for buildings'

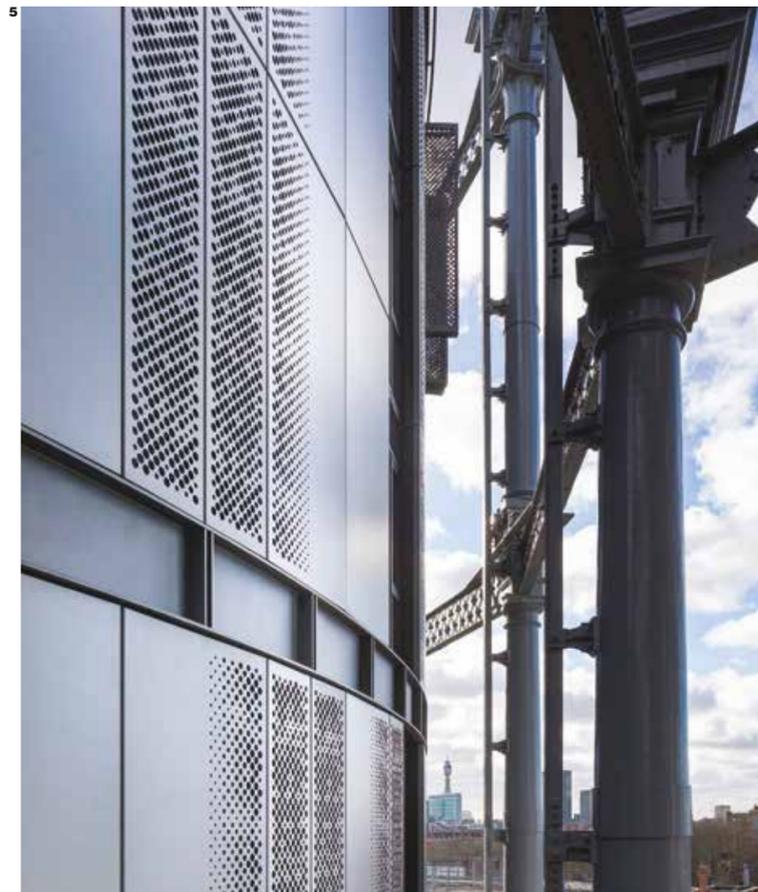
sustainable future: reuse, optimize, share. Framed within the sustainability visions, the concept of reuse extends its boundaries implying two different actions. The first refers to the built environment conservation and to urban sprawl reduction through the search of new compatible uses for existing settlements. Repurposing buildings, retaining their historic features, reusing them are all ways to protect memories and to save the planet; engaging citizens in the sustainability perspective helps reinforcing local culture and supporting community's sense of identity. The second meaning takes into



3 Stanton Williams Architects, New University of the Arts London Campus for Central Saint Martins at King's Cross, internal view (photo: Hufton+Crow).
4 WilkinsonEyre with Jonathan Tuckey Design, Kings' Cross Gasholders, external view (photo: Peter Landers).



5 WilkinsonEyre with Jonathan Tuckey Design, Kings' Cross Gasholders, detail of the façade (photo: Peter Landers).
6 Heatherwick Studio, Coal Drops Yard, side view with Gasholders in the background (photo: Luke Hayes, courtesy of Heatherwick Studio).
7 Heatherwick Studio, Coal Drops Yard, view of the roof (photo: Luke Hayes, courtesy of Heatherwick Studio).



account used components, developing innovation and practical solutions from input materials and final elements. This involves remanufacturing, refurbishing and repairing components. Online marketplaces and databases link buyers to used components from demolition sites and promote the creation of new jobs in cataloguing the final elements. Keeping buildings and technological devices at their highest value as long as possible while strengthening their performances and efficiency is the aim of the second paradigm: optimize. Sustainability holds the promise of reconciling economic development while preserving resources, increasing built system performances and prolonging component life. Repair and maintenance are the answers to the current

sustainability issues, with a limited, efficient and lessened use of primary resources, combined with improved waste collection. Optimizing resource yields means fostering built environment effectiveness. The commitment to handle trade-offs between users' needs and growth limits contributes to the redefinition of a shared design approach, aimed at rebalancing the pressures due to the increasing age of the built, fighting climate change, satisfying new market expectations. An active social and cultural involvement is a necessary condition for successful strategies based on awareness and cooperation among key actors (businesses, consumers, NGOs and governments), drivers of sustainability through the systematic distribution,

communication and promotion of practices. Within this framework, the transition to sustainability cannot be achieved by single actors working in isolation, but it requires the definition of relationships among public and private, authorities and community. Sharing is achieved through participatory planning and stakeholder consultations to decide on design aims and actions. According to these paradigms, sustainability puts in place long-term opportunities for spaces that are becoming out of fashion or out of date, for buildings or components that are reaching the end of their life cycle. Prioritizing policies and actions for conservation and development is the approach adopted in the London King's Cross experience, a showcase

of transitions towards sustainability in a historic urban landscape, where service industries have been replacing industrial factories. The site, which is immediately to the north of St. Pancras International, in the London boroughs of Islington and Camden, is identified, in 2004, as one of the ten inner Opportunity Areas in the London Plan. The redevelopment has begun to move forward since 1996. The commitment to sustainability is favored by a long-term thinking, in turn made possible by special circumstances. An essential aspect is that the main backers are pension funds, taking a long view of investments. A seven-year planning facilitates the achievement of the final result, making the debate animated before the construction could start,

as the high-speed line to the Channel tunnel was being built across the site. In 2006 an outline prepared by Allies and Morrison with Townshend Landscape Architects and Porphyrios Associates is approved. The action plan is based on three axes: reusing abandoned spaces – indoor and outdoor – optimizing the existing potentialities in terms of architectures or devices and creating an active community. The largest regeneration from a single ownership in central London is emblematic from an administrative and procedural point of view: in 2008, the landowners – London & Continental Railways Limited and Excel (now DHL) – form a joint partnership with Argent, selected as the developer partner and asset manager for the project. The

location, the connections, the canal-side setting, the rich and varied heritage, are keys to success, both for the past and present, making this place clean, prosperous, safe and managed, while for so long it has been dirty, rundown, risky and anarchic. Innovative is the fact that most of the streets and squares, off-limits to the public before, are now privately-owned public space – Pops – since the London borough of Camden declines to adopt them. The wild 27-hectares of the forgotten industrial site integrates a vibrant mix of uses, as residences, offices, commerce, education, as well as leisure and culture. The area, leftover from the times of the great railway and industrial revolution, testifies the commitment undertaken for marginal contexts. It is a symbol of

London's engineering past, present creativity and future sustainability (fig.1). Within a robust urban framework, the project shapes the overall sense of place, harnessing the value of heritage, through a network of new streets, squares, parks, canal and railway structures. Reusing, optimizing and sharing are the design approaches adopted to reinvent a future for the site, modifying the ancient granaries, gasholders and storage buildings, in order to satisfy users' requirements, protecting a long history, which spans from before the Victorians through to the club life of the 90's. The paradigm of reuse is applied to find new functions for abandoned architectures. The most impressive case is that of Lewis Cubitt's 1852 building, which has hosted, since September

2011, the University of the Arts (fig.2). The location of the Central St. Martins School is a key choice for the whole regeneration; it acts in order to increase the capacity of providing services and material assets. The reuse designed by Stanton Williams Architects aims to stress the idea of connection implicit in the original project, highlighting the flows of students and material on a par with what happened with wheat (fig.3). The adopted solution is a win-win for both Argent and the academic institution, where the latter gets a handsome new home and the former finds its property animated in its early years, becoming a great attractor for education and job opportunities. A trio of Victorian gasholders, dismantled, repaired and re-erected, are reused as luxury apartments by WilkinsonEyre with >



8 Townshend Landscape Architects, Granary Square (photo: John Strurrock).
 9 Townshend Landscape Architects, Granary square (photo: John Strurrock).
 10 Rana Begum, No.700 Reflectors, outdoor artwork (photo: Anthony Upton/PA Wire).
 11 Rana Begum, No.700 Reflectors, outdoor artwork at night (photo: Anthony Upton/PA Wire).



Jonathan Tuckey Design, winners of a competition in 2002 (fig.4). The housing blocks follow the cylindrical form, with different heights to echo the movement of the original gasholders rising up and down. The façades are characterized by perforated grey metal shutters (fig.5). A fourth cylindrical void sits at their intersection forming an open courtyard. The just inaugurated Coal Drops Yard designed by Heatherwick's studio completes the settlement with 9,290 square meters of shops and restaurants along interior and exterior promenades (fig.6). The project takes forward the sustainability vision by converting and extending two Victorian industrial

buildings originally used to store and transfer coal, delivered by rail from northern England. A sinuous roof joins the two warehouses that reach out and touch one another: it is designed to form a focal point for the shopping center, in which people can gather (fig.7). The paradigm of optimization finds in Granary Square its practical demonstration (fig.8). Built where barges once unloaded their goods, the square designed by Townshend Landscape Architects has been completed in 2012 and voted by the public to win the Camden Planning Award for "Best New Public Space" in 2014. At the centre of the square there are four impressive banks

of fountains, with over 1080 individual jets, making it a focal point for visitors and one of the largest water features in Europe. Central to the master plan, Granary Square is the largest public space created at King's Cross Central (fig.9). Its fountains collect waste water from the surrounding buildings and are remote controlled. The paving under each of the four banks has been subtly dished to allow flooding with a film of water in order to create reflective pools. In warm weather children play in the vertical jets that rise from the ground. The location of the water feature reflects the historic canal basin; the alignment and scale of each of the four banks of jets

is a direct response to the façade of the Cubitt Building. The design of the water feature, developed with the Fountain Workshop, is conceived to allow the jets to be programmed individually by visitors through an app. Activated, animated, welcoming public spaces have been recognized as critical to the success of the whole regeneration. Sharing is the paradigm pursued by Argent in every step of the process, from the pre-development consultation stage, to the construction and delivery of the site. According to this vision, public art is adopted as a strategic means of cohesion and inclusion, involving artists across the site as it changes



10



11

and as communities grow and slowly take ownership. Two curators have been selected on a three-years basis, to commission and deliver outdoor and indoor site-specific installations. Since 2016 Tamsin Dillon and Rebecca Heald are in charge of the second three-year program. Their first commission is No.700 Reflectors, an outdoor artwork featured on the 50 meters long Cubitt Wall by the Bangladeshi-British artist, Rana Begum (fig.10). Influenced by minimalism and heritage, the giant project creates a continuous surface of shifting color, which seems to change depending on the hours of the day and the weather (fig.11). Also, in the indoor spaces, art is

a driver for sharing common community values: impressive are the choices made for Tapestry, a 15-storey building. Taking inspiration from the Guaranty building in New York and from a long history that stretches back to Assyria, Egypt, Greece and Rome in using hanging carpets to define space, in the main entrance the artist Tess Jaray has been asked to transform the lobby space by creating a site-specific tapestry, able to dialogue with architecture: Aleppo at King's Cross. With 7.5 million visitors estimated in 2017, King's Cross most significant benefit has been the catalytic impact it had beyond the red line of the regeneration, on its wider area. Despite numerous criticisms

to the £3 bn process, as for the reduction of the quantity of affordable housing realized, compared to the initial plan, the project has the merit of opening to the public an off-limit site, quickly becoming a place where people want to dwell. By mixing the regeneration of old industries and new services, positive effects in terms of sustainability come from the overall design strategy, increasing the reduction of soil loss, the improvement of transport efficiency, the rise of the number and quality of public spaces. Thus, the transition towards new sources of wealth depends not only on the ability of our society to reduce dependence on primary materials and energy, but

mainly to break the paradigms prevailing since the industrial revolution, through symbiosis based on reuse, optimization and sharing. On the threshold of the third millennium, sustainability reinvents not only architectures and public spaces, but it activates a sort of positive contamination between the area of King's Cross and the surrounding district, redefining processes, promoting wise technology and social equity.

Notes

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- 2 *Cities in the Circular Economy. An Initial Exploration*, Ellen MacArthur Foundation, 2017. Available online: www.ellenmacarthurfoundation.org/publications/cities-in-the-circular-economy-an-initial-exploration (accessed on 20 September 2018).
- 3 J. Grin, J. Rotmans, J. Schot, *Transitions to sustainable development. New directions in the study of long term transformative change*, Routledge, New York 2010.
- 4 *Growth within: A circular economy vision for a competitive Europe*, Ellen MacArthur Foundation & McKinsey Center for Business and Environment, 2015. Available online: www.ellenmacarthurfoundation.org/assets/downloads/publications/EllenMacArthurFoundation_Growth-Within_July15.pdf (accessed on 6 December 2018).