

THE WORLD EXHIBITIONS AND THE DISPLAY OF SCIENCE, TECHNOLOGY AND CULTURE: MOVING BOUNDARIES

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The realisation of the 4th International Conference of the European Society for the History of Science, which took place in the city of Barcelona between 18th and 20th November 2010, created the opportunity to bethink again about world exhibitions and to present and debate several points of view. The resulting works are now published expressing in a clear way the diverse approaches that are possible to relate to world exhibitions¹.

The 4th ICESHS Conference theme – *The Circulation of Science and Technology* – is directly linked to some of the more relevant issues about world exhibitions. From the moment the first World Exhibition was held in London,

1 The published literature is demonstrative of the variety of approaches to the study of the World Exhibitions. See, for example: CARPENTER, Kenneth (1972) "European Industrial Exhibitions Before 1851 and their Publications", *Technology and Culture*, v. 13, n° 3, 465-486; ORY, Pascal (1982) *Les Expositions universelles de Paris*, Paris, Ramsay; GREENHALGH, Paul (1988) *Ephemeral Vistas. The Expositions Universelles, Great Exhibitions and World's Fairs, 1851-1939*. Manchester, Manchester University Press; AIMONE, Linda; OLMO, Carlo (1990) *Le esposizioni universali 1851-1900: il progresso in scena*, Torino, Allemandi.; SCHROEDER-GUDEHUS, Brigitte ; RASMUSSEN, Anne (1992) *Les Fastes du Progrès. Le guide des Expositions universelles 1852-1992*, Paris, Ed. Flammarion; BRAIN, Robert (1993) *Going to the Fair. Readings in the Culture of the Nineteenth-Century Exhibitions*, Cambridge, Wipple Museum of the History of Science; RYDELL, Robert W. et GWINN, Nancy E. (1994) *Fair Representations. World's Fairs and the Modern World*, Amsterdam, VU University Press; MOURÃO, José Augusto; MATOS, Ana M, Cardoso de; GUEDES, Maria Estela (ed.) (1999) *O Mundo Ibero-Americano nas Grandes Exposições*, Lisboa, Vega; HOFFENBERG, Peter H. (2001) *An empire on display: English, Indian and Australian exhibitions from the Crystal Palace to the Great War*, Berkeley, University of California Press; MATOS, Ana Cardoso de; GOUZEVITCH, Irina; LOURENÇO, Marta C. (ed.) (2010) *Expositions universelles, musées techniques et société industrielle / World Exhibitions, Technical Museums and Industrial Society*, Lisboa, Ed. Colibri; DEMEULENAERE-DOUYÈRE Christiane (dir.) (2010) *Exotiques expositions. Les expositions universelles et les cultures extra-européennes, France, 1855-1937*, Paris, Somogy/ Archives nationales; CARRÉ, Anne-Laure; CORCY, Marie-Sophie; DEMEULENAERE-DOUYÈRE, Christiane, PÉREZ, Liliane (dir.) (2012) *Les expositions universelles à Paris au XIXe siècle. Techniques. Publics. Patrimoines*, Paris, CNRS-Éditions.

in 1851, these events have served as “windows” to scientific, technological and industrial progress, allowing the circulation and the disclosure of this change, either directly to visitors or through media publications worldwide.

Under the realisation of these world events, which attracted many travellers, exhibitions enabled the parallel organisation of international conferences and congresses of professionals both in science and in industry, engineering and architecture. These gatherings functioned as places for complementary information speeding the circulation of new inventions and technical solutions, and magnifying knowledge that otherwise would only be obtained by the systematic reading of specialised publications.

Peaceful confrontation among the several participant countries² had become the first events that favoured “mass culture”³. The different countries participating could publicise their own agricultural and industrial development⁴, and they became part of a European economy that up to then only France and Great Britain dominated⁵. This point of view is analysed in Konstantinos Chatzis and Georgia Mavrogonatou’s paper entitled *Greece at the Paris Universal Exhibition in 1878*. According to these authors, by participating in the world exhibition in the second half of the nineteenth century, Greece aimed to achieve two essential objectives: “On the one hand, it was to become acquainted with the technological “weapons” it needed for the desired, by the Greek elites at least, westernisation of the country. On the other, it wanted to be compared with, and to inform the industrialised countries about the progress the young state had accomplished since its founda-

2 MATTELART, Armand (1994) *L'invention de la communication*, Paris, La Découverte.

3 LAFUENTE, Antonio; SARAIVA, Tiago (1998) “Ciência, Técnica e Cultura de Massas”. In: MOURÃO; MATOS; GUEDES (ed.) (1998), 31-38.

4 AUERBACH, Jeffrey A (1999) *The Great Exhibition of 1851. A Nation on Display*, New Haven and London, Yale University Press; AHLSTRÖM, Göran (1996a) *Technological Development and Industrial Exhibitions 1850-1914. Sweden In An International Perspective*, Lund, Lunds University Press/Chartwell-Bratt Ltd; DELLA COLETTA, Cristina (2006) *World's fairs Italian style: the great exhibitions in Turin and their narratives, 1860-1915*, Toronto (Ont.), University of Toronto Press.

5 BENNETT, Tony (1988) “The Exhibitionary Complex”, *New Formations*, n° 4, 73-102; AHLSTRÖM, Göran (1996b) *On the diffusion of Technology. The Role of International Exhibitions in the 19th Century* Paper presented at the ICOHTEC 23. Symposium, Budapest, 7-11 August, 1996, MATOS, Ana Cardoso de (1999) “As Exposições Universais: espaços de divulgação dos progressos da Ciência, da Técnica e da Indústria e a sua influência na opinião pública portuguesa”. In: MOURÃO; MATOS; GUEDES (ed.), 91-107; MATOS, Ana Cardoso de (2004) “World Exhibitions of the second half of the 19th century: a means of updating engineering and highlighting its importance”, *Quaderns de Història de L'Enginyeria*, v. VI, 225-235.

tion, and to convince them, but also to convince itself, of the “Europeanness” of the Greek Kingdom. These aspects are exemplified by the study of Greek participation in the Paris exhibition of 1878.

In order to exhibit the several products sent to these events new buildings had to be constructed. A series of world exhibition structures were raised, which were either temporary⁶ or permanent and had great impact on the cities where they were built⁷. Moreover, they constituted an important space for evaluating engineering and industrial aesthetics associated with glass and iron structures. New materials and constructive techniques, like pre-fabrication of standard elements, as well as economic and construction flexibility made these exhibitions an overall vehicle of new constructive techniques. Indeed, throughout the years the construction of the several pavilions of the different countries, served to exhibit their architectural character, while favouring, at the same time, an eclectic style⁸. The Greek participation in the exhibition of 1878 led to the construction by two French architects of a pavilion named “Pericles House”.

In continuation of the work initiated by Maria Helena Souto⁹, Paulo Simões Rodrigues, in his paper *The Science of Architecture. Representations of Portuguese national architecture in the 19th-century World Exhibitions: archetypes, models and images*, analyses the several Portuguese pavilions presented at world exhibitions, relating them to the idea of a Portuguese architecture with specific characteristics. In many of these pavilions was made the option of creating an “historicist” scenography that could better reveal the *essence*

6 CANOGAR, Daniel (1992) *Ciudades Efímeras. Exposiciones Universales. Espectáculo y Tecnología*, Madrid, Imaginario Julio Ollero Editor.

7 The architecture of the exhibition is studied in works such as STAMPER, John W. (1989) “The Galerie des Machines of 1889. Paris World’s Fair”, *Technology and Culture*. 30, 330-353 ; SOUTO, Maria Helena (2011) *Portugal nas Exposições universais, 1851-1900*, Lisboa, Ed. Colibri; WESEMAEL, Pieter Van (2001) *Architecture of Instruction and Delight. A socio-historical analysis of World Exhibitions as a didactic phenomenon (1798-1851-1970)*, Rotterdam, Oto Publishers; AGEORGES, Sylvain (2006) *Sur les traces des expositions universelles. Paris, 1855-1937: à la recherche des pavillons et des monuments*, Paris, Parigramme ; MATHIEU, Caroline (2007) *Les Expositions universelles à Paris: architectures réelles ou utopiques*, Paris-Milan, Musée d’Orsay-5 Continents; CHALET-BAILHACHE, Isabelle (dir.) (2008) *Paris et ses expositions universelles: architectures, 1855-1937*, Paris, Éditions du Patrimoine.

8 WALTON, Ann T. (1986) *The Swedish and Finnish pavilions in the Exposition Universal in Paris 1900*, Minneapolis, Minn., Univ. of Minnesota, Diss,

9 SOUTO, Maria Helena; MARTINS, João Paulo (2000) “Pavilhões Portugueses nas Exposições Universais do Século XIX”. In: *Arte Efêmera em Portugal*, Lisboa, Fundação Calouste Gulbenkian, 352-379.

of national architecture as easily archetypical images, like the paradigmatic example of *Mosteiro dos Jerónimos*, in Lisbon - its south façade was replicated at the Paris world exhibition in 1878.

The world exhibitions of the 19th century have defined themselves not only by their dimension but also by the belief in progress and in the spirit of peaceful competition at an international level. Technical and scientific knowledge became globally accessible in the pavilions and in the temporary cities built for these events. The objects exhibit culture and technology and represented both the economic and political power of each participant country.

Exhibitions also contributed to the introduction of technology in day-to-day life in urban spaces¹⁰. The transformations that occurred in Paris by the realisation of the world exhibitions of 1878, 1889 and 1900 are noted by Miriam Levin in the paper *Inventing a Modern Paris. The Dynamic Relationship between Expositions, Urban Development and Museums*: "The very process of constructing the fairs helped move the city into the future". In fact the permanent structures in the city spaces where exhibitions took place were a demonstration of the building technologies of the time. This is evident in the construction of the Trocadero Palace in 1878. Exhibitions were also the pretext for city planning and the development of urban transportation such as tramways or metropolitan subways. On the other hand, the realisation of great structures like the Eiffel tower and the construction of buildings like the *Grand Palais* or the *Petit Palais* required the use of new materials, new building techniques and new ways of making business and organising work. These buildings also became associated with new forms of art, like *Art Nouveau*. Miriam Levin's examination of the world exhibitions considers that these events were, together with urban rehabilitation and the museums, "part of a culture they invented to turn Paris, and through it the French nation, into an, powerful society".

The changes in cities due to the world exhibitions astonished visitors and were captured by photographers, whose significant testimony allows today a more clear perception of these events. The paper by Maria Helena Souto and Ana Cardoso de Matos, *The 19th-century World's Exhibitions and their photographic memories. Between historicism, exoticism and innovation in architecture*,

10 BLANCOT, Christiane; LANDAU, Bernard (1994) "La direction des travaux de Paris au XIXe siècle". In: BELHOSTE, Bruno; MASSON, Francine; PICON, Antoine (dir.) *Le Paris des Polytechniciens. Des Ingénieurs dans la ville, 1794-1994*, Paris, Délégation à l'action artistique de la Ville de Paris, 154-173.

emphasises the importance of photography, an important technological innovation used to record several world exhibitions¹¹. Furthermore, photographic techniques allowed the presentation of images from several countries, thus introducing new landscapes, people and artistic culture. Thus, the several temporary pavilions built for these events became immortalised by the photographs of both anonymous and well known photographers, like Aurélio da Paz dos Reis, one of the of photography and cinema pioneers' in Portugal. Published in newspapers or magazines, dealing with architectural themes, these photographs helped to spread architectural techniques and styles. The construction of pavilions from each country that took place at the 1867 Paris exhibition made these events authentic *world museum*. Portugal's pavilions, mostly those which were built at the several Paris exhibitions are analysed by Maria Helena Souto and Ana Cardoso de Matos, who focus their work on the purpose of the buildings' construction and the characteristics that marked them out. These characteristics were mostly associated with evocative images of Portugal's history of discovery.

The role played by several spaces in the exhibitions such as *Parc des Nations* (1867) and *Rue des Nations* (1878) or even *Rue du Caire* (1889) in popularising the architecture of the different countries is also evoked by Christiane Demeulenaere-Douyère in her paper *Les expositions universelles : une passerelle vers les cultures extra-européennes ?* The author discusses the 1867 exhibition, which showcased inter alia a pre-built Moorish kiosk exhibited by Prussia and a reconstitution of roman catacombs. In a time when the taste for Orientalism was common in European society, the "exotic" exhibitions of the Ottoman Empire, Egypt, Tunisia, China, Mexico... could suggest visitors to be transported to far and often exotic horizons, "des horizons lointains et souvent exotiques...", and this played an important part in their success because world exhibitions were also *recreation parks*, mainly after 1867. According to Demeulenaere-Douyère, these countries considered world exhibitions as a diplomatic means to claim their national identity and a certain executive independence from their suzerains, «une occasion diplomatique de revendiquer leur identité nationale et une certaine indépendance de fait par rapport à leur suzerain». She further discusses how colonies participated in world

¹¹ See also about French photographic collections, DEMEULENAERE-DOUYÈRE, Christiane (2009) "Les expositions universelles sous l'objectif. La photographie dans les fonds des expositions aux Archives nationales (Paris)". In: MATOS; GOUZÉVITCH ; LOURENÇO (dir.), 165-178.

exhibitions and the growing importance that this assumed in relation with a considerable colonial push, “une «poussée» coloniale considerable” taking place from 1880, and also the need to promote the colonial ideology among the general public. Not by chance several colonial exhibitions happened in the late years of the nineteenth century.

In a time when anthropology¹² and ethnology were recognized as scientific disciplines, the world exhibitions had a major influence on their popularization. As noted by Christiane Demeulenaere-Douyère, the objects and photographs and even people shown at the world exhibitions greatly publicized these sciences to the many visitors, “offrent aussi aux visiteurs une version grand public de ces sciences”. Finally, she remarks upon the importance that exhibitions had on the Occidental rediscovery of Islamic art and Japanese artistic trends, concluding with a reflection on the real role these events had in globalisation of people’s culture.

Since the world exhibitions were regarded as a kind of apprenticeship based on direct observation, most countries supported the idea of sending to them several representative craftsmen from their industrial sectors, so they could learn about technological progress realised in their field of work.

Anna Pellegrino’s paper, *Italian workers and the Universal Exhibitions of the 19th century. Imaginaries and representations of technology and science*, takes this theme based on the reports written by workers during their visits. These reports, unequal in content and form and sometimes difficult to interpret, are a relevant source of study¹³. Weak modernisation in Italy along with competition for technical progress and the introduction of machinery in Italian industry contributed to the reports of workmen, who stated “they felt that the machinery presented itself like something aside”. As Anna Pellegrino explains, this had not much to do with their day-to-day work; rather it was the result of workers being faced by extreme situations, a mixture of fear and awe when viewing the machinery. Fascination extended itself to the new technologies presented. Such was the case with electricity, which was

12 According to Paul Greenhalgh, were the world exhibitions, particularly the exhibitions of Paris, in 1878 and 1889, that allowed the basic foundations of this new discipline. GREENHALGH (1988), 86. About a “popular ethnology”, BLANCHARD, Pascal *et al.* (dir.) (2000, 2011), *Zoos humains et expositions coloniales. 150 ans d’invention de l’Autre*, Paris, La Découverte; BLANCHARD, Pascal; BOËTSCH, Gilles; JACOMIEN SNOEP, Nanette (dir.) (2011) *Exhibitions. L’invention du sauvage*, Paris, musée du quai Branly-Actes Sud.

13 See also PELLEGRINO, Anna (2011) *Macchine come fate. Gli operai italiani alle esposizioni universali (1851-1911)*, Milano, Edizioni Angelo Guerini e Associati.

associated with a happier, safer and more comfortable lifestyle. Thus, as highlighted by the author, the commitment of sending Italian workers to world exhibitions was not simply a task related to apprenticeship, it was also a way of countering their anti-progress ideas.

By favouring the notion that world exhibitions could function as an important vehicle for knowledge and apprenticeship, these events played a major role in the decisions to organise other international exhibitions. This, for instance, was the case in 1876 when the *Council on Education* founded the South Kensington Museum, a permanent collection like that at the *Conservatoire des arts et métiers*, in Paris. This exhibition is the subject of the paper by Vitor Bonifácio and Isabel Malaquias – *Portugal and the 1876 South Kensington Instrument Exhibition* – in which they try to explain how Portuguese scientific instruments sent by the General consul of Portugal to Great Britain were included in the list of British instruments. The discussion refers to the Portuguese participation in Philadelphia’s International Exhibition that very same year in which Portugal presented several scientific instruments.

Like big events whose echoes were heard globally, world exhibitions of the second half of the nineteenth century and the first decades of the twentieth century were visited by thousands – who benefitted from the development of transportation – and converted into sites of pilgrimage¹⁴. Progress made in transcontinental navigation and in the railways, the interest in travel and great engineering works, such as the Suez channel, encouraged mobility and contributed to the growing number of visitors at world exhibitions. Between these visitors was Goan José Gerson da Cunha, the subject of Filipa Lowndes Vicente’s essay *The ‘Thousand and One Nights’ of Paris: an Indian traveller at the 1867 Universal Exhibition*, whose voyages are an example of Indian elite’s mobility to Europe for the purpose of study, work or leisure. In the present case, this was a scientist and historian from Portuguese India, whose fragmentary identity attests to someone “who belonged to various worlds while not fully belonging to any of them”, and came from a colonised region. He had left Goa, the main Asian Portuguese colony, as a young man in order to study medicine in Bombay and then in Edinburgh and London, but still it was with the Goan intelligentsia that he wanted to communicate through his

14 Several trips were organised, such it was the case of the excursions organised in 1851 by Thomas Cook, a businessman, owner of the *Midland Railway*. These excursions included, at an affordable price, the train journey to London and the entry ticket at the Crystal Palace.

personal narrative of his European journey: on the return to India, Gerson da Cunha wrote his travel impressions and published them in a popular Portuguese language Goan newspaper and in his accounts can be found important descriptions of the exhibitions that demonstrate the grandeur of these events.

World exhibitions have always reflected the mood of the times: from belief in technological progress to the sustainable development of globalisation, this is a story about reflection, trade and discovery. From places of privileged information to the complex mechanisms of industrial society, exhibitions were in fact propaganda operations, showcases in which nations built the images they wished to project onto these temporary stages, where public multiplicity was submerged in a universe of representations.