Concluding Remarks

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It is a mistake to read history of architecture as a history of stylistic movements. History of architecture is better read as a history of construction technology, as a history of how peoples could do things. The evolution of the simple stone arch, for example, is not a history of patterns, semi-circular as against pointed; it is actually a story of how stone could be extracted from the ground, of what tools were available to shape it, and especially of how the arch could be built economically (often meaning "without formwork"), to achieve a durable stability. The evolution of the forms of masonry domes similarly tells a story of how they could be built with least effort. Brunelleschi won his commission to build the dome of Santa Maria del Fiore not on the basis of enlightened stylistic proposals, but simply because he knew how to build the dome – and the form was part of that technology. Therefore, the history of architecture is, at least in part, a history of technology; it follows that architectural heritage is therefore also "technological" heritage, and, in this sense, "industrial" heritage.

And yet, when heritage authorities select monuments for "preservation", as part of the culture of a society, this selection is often solely based on stylistic and historical grounds, rather than on technological, constructional or material criteria. It is in reaction to this limited view of "preservable" heritage, that the discipline of "industrial heritage" or "industrial archaeology" has become so topical in recent years. It is also as a result of what can best be defined as "academic neglect", that the discipline has thrived mostly as a result of the passion of a few "amateur" individuals.

This conference, a first in Malta, is testimony to the growing awareness that it is necessary to widen old definitions of which "remains of history" should be preserved for generations to come. The Farsons Foundation is to be congratulated for taking a leading role in this regard.

The conventional definition of "industrial heritage", for example by English Heritage, and in the 2003 Nizhny Tagil Charter for Industrial Heritage (TICCIH, 2003), focuses primarily on a specific time period, beginning with the Industrial Revolution, say mid-18th century, to the present day (or, according to some more limited definitions, to the First World War). It is generally taken to encompass the physical remains of what is considered to be the golden age of industrialisation, including machines and buildings associated with railway systems (stations, engines, railway tracks), with early road transport (diesel engines, tunnels, bridges), and with

water transport (steamships, canals, harbours, lighthouses); with the production and distribution of potable water, and disposal and treatment of sewage, (galleries, pumps, reservoirs); with the generation and distribution of energy (power stations, turbines); with production, or factories, (quarries and other mineral extraction works, kilns, glassworks, pottery works, steel mills, breweries); with industrialized agriculture, (threshers, tractors, sheds and silos).

Nevertheless, a number of authors have pointed out that industrial heritage actually exists in all phases of human development, and not only in the 19th and 20th centuries. Michael Falser, in his Industrial Heritage Analysis, prepared for the UNESCO World Heritage Centre (Falser, 2001), argues that "the new discipline of industrial archaeology celebrates the artefacts of the workplace, that have as much meaning in any history, as the religious and domestic artefacts and architecture to which more attention has been paid throughout the years. Our industrial heritage", he continues, "includes not only the mill and the factory, but the social and the engineering triumphs spawned by new techniques, from the Neolithic flint mines to the Roman aqueducts, company towns, canals, railways, bridges and other forms of transportation and power engineering".

In a recent book, "History of the World in 100 Objects", Neil MacGregor (2010) uses objects, taken from the collections of the British Museum, and ranging from Neolithic chopping tools to Korean ceramic roofing tiles, from a medieval Astrolabe to a 19th century chronometer, from a Japanese bronze mirror to a contemporary solar-powered lamp and charger, to tell the story of the world; these are the objects that "speak of societies and of complex processes". In other words, this is the history of the world seen through the history of technology, a history of how peoples made objects, how they used tools to help them with their activities, how they used the sources of energy available.

In fact, it can be shown that, contrary to commonly-held perceptions, the Industrial Revolution did not herald the beginning of machines and technology, as much as the beginning of a period of civilization where energy (the source was coal), could be harnessed and controlled, switched on and off, as it were, without depending on the vagaries of wind and water, or of beasts and slaves. It was not even the beginning of mass production. The surviving evidence is perhaps limited; for example, limited to the surviving texts of Hero of Alexandria, *Mechanica*, *Pneumatica*, *Automata*, or of Vitruvius, *De Architettura*, and Pliny, *Naturalis Historiae*, or closer to our time, Georgius Agricola, *De Re Metallica*. And these texts offer us tantalizing possibilities: did the Alexandrians really have sliding doors which could be opened and closed automatically, using steam power? Did they really have slot

machines? And did the Sassanids really have electrical batteries? Probably not. But the Antikythera device does seem to be a 2,000-year-old mechanical computer capable of predicting the positions of the sun and the moon, and a number of planets, and of predicting eclipses. Our own Megalithic Temples have not yet fully yielded their secrets, not as far as concerns how they were built and the "advanced" engineering of their structures, nor as far as concerns the relationships with celestial bodies – but they certainly point to a much more technologically-friendly civilization than is commonly perceived. Closer to our time, but still preceding the Industrial Revolution, the Bouchon and later the Jacquard methods of using perforated cards to "programme" different weaving patterns, in the beginning of the 18th century, are considered to have deeply influenced Charles Babbage. Are these not part of an "industrial heritage"?

Once the understanding that past civilizations had this level of technology, and of industry, sinks in, should it not change our perception of the past completely? These ancient texts are doubly interesting – first of all, they showcase the technology of engraving and printing that allowed the creation of the books. Secondly, they also document the fact that the societies within which they were produced, considered these machines and technologies sufficiently remarkable to put them on record. This is mirrored by the use of the latest technology in the 19th century, that of silver plate photography, to document the beginning of civil engineering, such as, in Malta, the dramatic engineering transformation of the Grand Harbour.

So, what is "industrial heritage"? Perhaps the most generic definition one can find is that "industrial heritage" is "all about identity". It "encompasses machines, and the buildings in which they were housed, as well as the fabric of a changing society" (ERIH, n.d.). It includes "practices handed down from the past by tradition". It is "that which a past generation has preserved and handed to the present and which a significant group of the population wishes to hand to the future" (Hewison, 1989, p. 16). This is indeed a very wide definition – it could be "anything you want" as Lord Charteris put it (Quoted in Hewison, 1989, p. 15).

The latter part of the definition highlights the fact that the identification of "industrial heritage" inevitably involves a degree of cultural choice, a process by society, or a group within that society, by which judgement is passed on what is to be classified as heritage, and which is to be preserved for the following generations. It is a process of value judgement. This is a very important process, and, paraphrasing, perhaps too important to be left solely to the historians and the experts.

The building that this conference is being held in is an example. Many people would agree that the building is a handsome one. On the basis of these looks, it

has been scheduled by MEPA as a Grade 2 building. Even as the participants came in, many admired the Art Deco influences, but ignored the impressive reinforced concrete beams, and, more importantly, the vision of the makers, back in 1945, of industry as a glorious and honourable activity – in contrast to much "utilitarian" thinking on industry and industrial estates today. The Directors of Simonds Farsons Cisk plc have understood that this is more than a handsome building. It is a testament to a vision of a captain of industry, who was clearly fascinated by technology, in this case, the technology of brewing, as a marvellous process in itself, and but which also deserved to be housed in an appropriately marvellous enclosure - built with the latest technologies available at the time.

The Old Brewery was designed and built between the latter half of 1946, and 1950, that is, soon after the devastation of the Second World War. The Company still has a collection of the original drawings, a magnificent heritage in themselves, which carry the names of the Architects, Lewis V Farrugia, O.B.E., B.E.& A. Architect & Civil Engineer, and the Scottish architect William B Binnie, F.R.I.B.A., as well as of the Civil Engineering Contractors, J.L.Kier & Co. Ltd.. William B Binnie was at that time, a well-established architect, with about 36 years of experience, including the design of an extension to the London Temperance Hospital now part of University College Hospital, the East and West stands of Highbury Stadium and the Hotel Phoenicia in Floriana. J.L.Kier & Co. Ltd. was originally set up in 1928, by two Danish engineers, who like a number at the time, emigrated to Great Britain, and pioneered reinforced concrete design and construction. By the end of the Second World War, it had become a major civil engineering contractor in Great Britain as well as all over the world, renowned for some superbly detailed reinforced concrete buildings.

There is then the whole process of brewing, which informs the cross-section of the building, with the raw materials taken to the top of the building, and then coming down, by gravity, through the various stages of making beer - a whole "machine" for making beer.

As can be seen, the "industrial heritage", in this case, is not just the façade of the building, but the whole, including the construction process and the materials it was built with, the drawings specifying how it was to be constructed, as well the brewing processes contained within it. This is what, correctly, Farsons have identified as worthy of preserving and explaining (because without explanation, many of the relevant details would remain hidden), and what they wish to hand over to the future. There are many ways they could do it. They have chosen to make it part of their on-going industrial operation, because they clearly wish to continue brewing beer. That they have made this choice themselves is even more valuable than if such

choice were made by "experts". The success of the whole process of protection of our "industrial heritage" requires enlightened patronage.

In Malta, there are a number of examples of buildings "encompassing machines" which tell the story of our changing society – foremost amongst these, one finds the structures and processes involved in producing energy (eg. The Marsa Power Station and the whole industrial complex around it); structures involved in producing and storing water (19th century reservoirs, underground galleries), processes associated with food production and storage, and with telephony or telecommunications, or the structures supporting the operations in the Harbour, to mention a few. "Building Technology" is itself one of the sub-categories of industrial heritage, and, in this sense, the use of particular technologies in construction may not only merit preservation, but especially awareness: for example, cast- and wrought-iron in the 19th century Market in Valletta, mass concrete in Fort Tigne' or Fort Cambridge, the 20th century reinforced concrete water tower in the Civil Abattoir; perhaps even the first examples of post-tensioned concrete?

However, the protection of this industrial heritage will not be successful if it limits itself to simply "scheduling", or preserving in aspic. That is the legalistic solution, which is not good enough. The protection of these buildings and structures should not preclude modern interventions. The preservation of heritage needs to facilitate the telling of a story, so that the whole point of preservation is widely understood, and contemporary technologies may be needed to tell this story. Most of these sites lie within, or side-by-side with, on-going industrial activities, which need to continue to function. Functional requirements on the whole of the sites are often very demanding, and resources normally limited. Freezing the picture is often not an option. For the whole exercise not to be counter-productive, acts of preservation should not be the mere imposition of a schedule, or a list, by an external agency, as informed by "experts". It should be a much more meaningful operation, involving an open-minded interaction with various actors, but particularly the owners or operators of the facilities, so that all can participate in the choice of what is to be termed as "heritage", and in the decision of how it is to be preserved. The people who are associated with these sites are often very passionate about where they have worked. What experts should do is to respectfully assist them on the way.

One other point is the issue of museums and visitor centres. Surely, the solution of transforming these sites into museums is not good enough, nor is it viable in the long term. One other way is to draw people in, to live and work, side by side with the "heritage", as people in Mdina and Valletta lived and played on the fortifications around their cities. At University, we have initiated student projects which look at

large-scale industrial sites like Marsa, to consider how the main features can be preserved, whilst completely changing the use - what about a University inside the old Power Station, or an Opera House using some of the gigantic steel structures? There is much more work to be done to explore how these issues could be handled.

A final point is to look at the quality of contemporary industrial/technological design. Compare contemporary industrial buildings with those of the past; contemporary public technological furniture with that of the past, the lamp posts, telephone booths, the roof paraphernalia. This is not a bout of nostalgia, but a fear that perhaps the "passion" of "making" has been lost; this is the passion that this establishment really celebrates. Perhaps what one needs to create is a centre where the importance of doing things with a passion is fostered.

At this stage, The Farsons Foundation should be congratulated for the commendable way they are addressing the issue. This conference is part of the process they wish to engage in, in order to find the best way by which they can transmit the heritage they have inherited to future generations.

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