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**Science and Art:  
Ongoing Changes in the Process of Globalization**

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**Science and Art:  
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**Abstract**

As is well known, art and science represent two ways of presenting the history of the world, not two subjects in contrast with each other. Art, or in other words, cultural and landscape heritage, rightly considering the environment, is linked to the history of man. It is therefore evident that the various artistic expressions and generational movements with their respective social events and problems through time, are linked to each other temporally. It is also true that with the passing of time there is consequent irreversible damage to our heritage, which is what the World Wide Fund for Nature highlights in declaring: "Nature does not support the human footprint". In the processes directed at the possible reacquisition of compatibilities to protect nature, life conditions and historical-artistic heritage, the paper reports on an emblematic case study involving research into the protection and valorization of the "system: artifact of historical-artistic interest - conservation environment - biota". Investigations focused in particular on the problem of atmospheric pollution and degradation of monuments and historical-artistic environments. This represents, significantly and pragmatically, a meeting point between historical-conservative aspects concerning the protection of some prestigious artifacts and their consequent valorization (i.e. economic benefits not only for the said artifacts and territory, but benefits also in terms of human safeguard).

**Keywords:** Art, Environment, Heritage, Pollution, Science

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## Introduction

Over the centuries, art and science have developed in an apparently independent manner, using diverse approaches to deal with their selective experience of the world, to pursue objectives, and to interpret achieved results. Far from seeming to be at opposite poles, they should be seen as complementing each other. The meaning of "art and science", or more precisely "*art is science*", can be found in a reciprocal need of the one for the other and vice versa, from a human, as well as cultural viewpoint. On one hand, art is creativity and inspiration. It is expressed in the numerous ways and means that are used to produce the works of art that surround us, evoking a multitude of sensations and emotions in observers; on the other, science aims to further human knowledge through analytical research and is based on facts and evidence. Although they may be seen as two extreme opposites and two completely different ways of reading reality, they are in fact closely linked to each other.

Two versatile geniuses from the past illustrate this point. Leonardo da Vinci, a great Italian artist, underlined that, "*Wisdom comes from experience ... and experience never fails, only our judgments do.*" Galileo Galilei, an extraordinary Italian physicist, pointed out "*The Universe is written in a mathematical language, where the characters are triangles, circles and other geometrical figures without which, it is impossible to understand things*". Taking into consideration these two statements, the two worlds of art and science are two ways of narrating the history of the world; art is technology and technology can become art.

A similar view, but nearer to our times, is expressed by the American sociologist, Daniel Bell, when he states:

*Technology, like art, is a soaring exercise of the human imagination. Art is the aesthetic ordering of experience to express meanings in symbolic terms, and the reordering of nature - the qualities of space and time - in new perceptual and material form. Art is an end in itself; its values are intrinsic. Technology is the instrumental ordering of human experience within a logic of efficient means, and the direction of nature to use its powers for material gain. But art and technology are not separate realms walled off from each other. Art employs techne, but for its own ends. Techne, too, is a form of art that bridges culture and social structure, and in the process reshapes both (1980: 20).*

As Bell says, the values of art are intrinsic, and its value viewed from a holistic point of view is undoubtedly connected to different areas covering the historical-humanistic (cultural, historical, artistic, aesthetic), the philological-philosophical-social (symbolic, spiritual, social), the technical-economic-managerial (technical, economic, financial, mercantile, marketable), and the legal-identity (identity, authenticity, internationalization, interdisciplinarity).

## **Art: Past and Future**

Art and science have always interacted through the centuries – from the use of rudimentary forms of art, such as signs (e.g. rock art, etc.), to basic forms of architectural design to create living spaces and material objects for human needs (e.g. basic household items, clothes, etc.) (Lobodanov 2015). From early times, the various forms of artistic expression and generational waves have followed one upon the other up to the present day. Human interaction with the surrounding environment has naturally been part of human life. It is evident that our cultural and environmental heritage represents the history of our world and that a great deal still has to be learnt from it. It is therefore essential to examine and study all historical and historical-technical evidence of artifacts from different scientific perspectives in order to tackle problems of heritage protection and valorization, thus preserving it for the future.

### *A Brief Look at Italian Legislation*

Indeed, these aspects are referred to in Article 9 of the "fundamental principles" stated at the beginning of the Italian Constitution (1947) which declares "The Republic promotes the development of culture and of scientific and technical research. It safeguards the natural landscape and the historical and artistic heritage of the Nation". In addition, in 2004<sup>1</sup> a more specific Legislative Decree, issued by the Ministry of Heritage and Culture, established the Code of the Cultural Heritage and Landscape to make further provision for the protection and valorization of cultural and environmental heritage, defined as "all buildings and areas expressing historical, cultural, natural, morphological and aesthetic values of the territory". The following articles further illustrate the particular attention given to these sectors.

**Art. 3** Protection of cultural heritage: "Protection consists in the exercise of the functions and in the regulation of the activities, aimed at identifying on the basis of adequate investigative procedures the properties constituting the cultural heritage and at ensuring the protection and conservation of the aforesaid heritage for purposes of public enjoyment";

**Art. 6** Valorization of cultural heritage: "Enhancement consists in the exercise of the functions and in the regulation of the activities aimed at promoting knowledge of the cultural heritage and at ensuring the best conditions for the utilization and public enjoyment of the same heritage. Enhancement also includes the promotion and the support of conservation work on the cultural heritage" (Code of the Cultural Heritage and Landscape 2004).

On 31 March 2016, an updated version of the Code was issued introducing new innovative provisions to enhance the protection and promotion of Italian

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<sup>1</sup> Legislative Decree No. 42 of January 22, 2004, Code of Cultural Heritage and Landscape, as Mandated by Article 10 of Law No. 137 of July 6, 2002 (L.D. No. 42), Gazzetta Ufficiale No. 45 (Feb. 24, 2004), NORMATTIVA (available in Italian).

heritage. The most significant relate to the revised definition of cultural property, international standards and cooperation, improvement of government supervision, etc. (Figueroa 2016).

The above-mentioned elements evidently reflect the great interest in this area, and the weight given to the meaning and value of cultural and environmental heritage by governmental bodies. There is, therefore, awareness of the scientific aspects involved and the different approaches needed to support study and research in this sector.

### *Ecosustainability and Ethics in the Heritage Sector*

This naturally includes the study of the system artifact-environment-biota, which is always carried out in line with ethics, based on the respect of nature and human welfare. To carry out this study, it is necessary to organize and manage the operational steps involved. They can be divided as follows: historical anamnesis; diagnosis; restoration; maintenance; conservation; prevention; monitoring; management; promotion; and public enjoyment. Observance of ethical standards is applied throughout the duration of these important steps.

In today's globalized world, eco-sustainability plays an integral role in the protection and valorization of our cultural and environmental heritage from both an economic and social perspective. The World Wide Fund, in fact, highlights that nature cannot continue to support the rhythm with which the Earth is advancing, and so "*is working to reduce humanity's ecological footprint – the amount of land and natural resources needed to supply our food, water, fibre and timber, and to absorb our CO<sub>2</sub> emissions,*" where "The Ecological Footprint" is a monitor of human demand on ecosystems. This measure shows that humanity is already using nearly 50% more natural resources than the Earth can replenish (WWF 2016)<sup>2</sup>.

Historically, and from a more individual perspective, people have always aspired to an ideal world, nurturing aspirations and dreams, synonymous with a world where there is justice, love, happiness, and beauty. In the course of their lives, they strive to achieve these goals.

There are, however, those who are swayed by epistemological and moral nihilism; they lack values, a sense of purpose and duty. Human beings are a part of nature, seen as scientific objects, but, at the same time, they are not a part of nature, since they have consciences.

It is consequently important to overcome the "dichotomy between the economic and the socio-cultural sphere" through ethics by respecting others and the environment in its entirety. This is what eco-sustainability entails. Ethics and aesthetics go hand in hand, they form a relationship where conduct (morality) is very often governed by what is seen as being aesthetically pleasing to the eye (aesthetic values). This is of import to the area of cultural and environmental heritage, in that aesthetics influences moral behavior and

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<sup>2</sup> World Wide Fund for Nature, WWF Global, Reducing Humanity's Impact. Retrieved from [http://wwf.panda.org/what\\_we\\_do/footprint/](http://wwf.panda.org/what_we_do/footprint/). [Accessed: 04 December 2016]

vice versa. The present-day situation however, reflects many of these aspects in the cultural decline that is affecting society globally (Lorusso et al. 2016).

More specifically, viewed as cultural heritage, it is evident that all forms of art have some kind of value, therefore art has a price – "the price is what is paid and the value is what is obtained". There is however a sense of uncertainty in the art market as regards quotes for art works, whether they are ancient, modern or contemporary (Lorusso et al. 2010). Art has become part of the global economy. Features important in art are the intensity, insight and vision, which cannot be attributed to a method and cannot be repeated by others, but are the product of the individual artist. William Blake vividly sums up the meaning and greatness of art when he says, "*If the parts of perception were cleansed, everything would appear as it is, infinite*", and it is the artist who puts us in touch with this process of perception.

In contrast to this perception of art is the scientific approach used by experts when evaluating a work of art to determine its conservation state and/or authenticity. This is a subjective evaluation that comes from a comprehensive knowledge of history, style, iconography, aesthetics and a participatory, emotional understanding emanating from the work; it must however, necessarily be accompanied by an objective evaluation based on the use of diagnostic and analytical equipment that supports or confutes the former evaluation. It is this aspect that gives a real dimension of "cultural education and personal ethics". From this derive two interconnected aspects: first, the need to complete and integrate different skills, or "protection of cultural heritage," and second, setting limits for technical intervention in compliance with a higher instance, as in the "ethics of conservation and restoration".

### **Interdisciplinarity in the Sector of Cultural Heritage**

In the past, competences were compartmentalized, with little interaction between the various experts. In the heritage sector, the relationship between knowledge of cultural artifacts and scientific disciplines was never fully developed; today it is necessary to strengthen the bond. Since the objective and subjective evaluation involve the contribution of experts from different backgrounds, possessing different skills, it naturally follows that interdisciplinarity in cultural and environmental heritage is an essential element. This highlights how important the professional figure is. This is someone who, possessing a historical-humanistic background, is able to complement their educational career with technical-experimental input, in addition to legal, managerial, and other aspects.

In fact, study and research in the areas of cultural and environmental heritage covers the following interdisciplinary themes: appropriate methodologies and analytical techniques for the characterization of cultural heritage, micro and macroclimatic monitoring in confined spaces, such as museums, libraries, and archives; art diagnostics and verification of authenticity; evaluation of the suitability of products used for restoration,

conservation, and maintenance of cultural heritage; measuring air pollution and deterioration of monuments in their historical and artistic urban settings with the aim of protecting and preserving; consequent benefits; and economic evaluations of cultural heritage to draw value from the territory.

### **Internationalization in Culture and Research**

In addition to the need for interdisciplinarity in the heritage sector, it is necessary for the different players to dialogue with each other not only at a local level, but also at a global level for a variety of reasons.

Firstly, the demand for professional figures with specific expertise in the heritage sector is growing. This is evident from the increasing interest in the different kinds of heritage found throughout the world. For example, China is investing a great deal in culture to attract tourism to contribute to its economic growth, and thus has many projects underway (Valori 2013). The same is true for several African and Indian regions, as well as South American cities. Technology transfer between nations also has an important role in this field, since it can help facilitate economic growth in the above-mentioned countries. In this context, only a well-prepared figure, such as the conservation scientist or art-historian, working together with other professionals, can resolve issues.

Secondly, the cultural object embodying the holistic value possesses its own significance, its meaning going beyond local and national confines by assuming and requiring involvement and participation in its role of acculturation, joy, contemplation, enjoyment, sadness, pathos and enthusiasm.

The European Union (EU) also takes this issue into consideration, providing guidelines to aid future "territorial cohesion" by jointly managing the cultural and environmental assets and values of the different member states. The following two points (37 and 38), extracted from the "Territorial Agenda of the European Union 2020"<sup>3</sup>, illustrate the importance the EU places on valorizing and looking after the treasures Europe possesses and at the same time drawing benefits for its communities.

(37): We underline that well-functioning ecological systems and the protection and enhancement of cultural and natural heritage are important conditions for long-term sustainable development. We are all responsible for ensuring they are well functioning, protected and enhanced. Joint risk management is particularly important, taking into consideration different geographical specificities. We support the integration of ecological systems and areas protected for their natural values into green infrastructure networks at all levels.

(38): The high value of European urban and rural landscapes should be protected and developed in qualitative terms. Areas rich in natural and cultural landscapes may need special attention in order to make best use of these assets.

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<sup>3</sup> Territorial Agenda of the European Union 2020, *Towards an Inclusive, Smart and Sustainable Europe of Diverse Regions*, Informal Ministerial Meeting of Ministers responsible for Spatial Planning and Territorial Development, 19th May 2011, Gödöllő, Hungary.



Environmentally friendly job creation and strengthened recreational functions can complement conservation. The local, regional and trans-regional management of cultural and natural heritage is of key importance. We support the protection, rehabilitation and utilization of heritage through a place-based approach. Improving regional and local identity by strengthening awareness and responsibility of local and regional communities towards their environments, landscapes, cultures and other unique values is also important.

If the EU is just a small part of the globe, and policies and strategies are developed to promote cultural and environmental heritage, the valorization of heritage at a global level is also feasible.

Thirdly, internationalization in research is also of primary importance. The diffusion of data and knowledge aids in raising awareness of the many problems that have to be resolved in all scientific fields. One such example is the joint project between the Universities of Bologna (Italy) and Zhejiang (China) to set up a Diagnostic Laboratory in the Chinese University; its purpose is to foster collaboration and learning between the two countries regarding a number of Chinese artifacts with problems of restoration.

### **A Case Study**

Having acknowledged the close relationship between "art and science", as well as between "cultural values and scientific research", it is possible to act accordingly to protect and enhance the cultural heritage that has been produced over the centuries. As mentioned earlier, it is a precious legacy, not just the "habitat" and "historical memory" of what humankind has been and how people have learned to interact with available materials. Rather, it also represents a testimony across the centuries to the evolution of the spirit, identity, and culture of a people and is, therefore, a message to be carried into the future.

Most urban areas possess conditions in which the significant deterioration of historical-artistic materials can become established. On the other hand, mitigation work may only be proposed in light of knowing its probable causes and cause-effect relationship which are difficult to define.

Research in different countries has already shown a close relationship not only between pollutants (from industry and transport) and harmful effects on human health, but also between pollutants and similar effects on artifacts of historical, artistic and architectural interest. In particular, artifacts suffer considerably by being exposed to the open air and are affected by the synergistic effects of different factors and mechanisms, such as chemical agents, mechanical actions, temperature variations, etc. (Lorusso et al. 2013).

The following summarizes a case study that is emblematic of a geographically circumscribed research project. It highlights the procedures used to protect living conditions and historical-artistic heritage and, therefore, related to the protection and enhancement of the "system: artifact of historical-artistic interest - conservation environment – biota". It involves the monitoring and measurement of atmospheric pollution and degradation of monuments and

historical-artistic environments over a specified period of time. The case study represents a model that can be applied to any historic city center or urban environment in the world.

Four different sites, referable to four different historical periods, were chosen, two inside Rome city centre (Italy) and two outside Rome in Tivoli (approximately 35 km. from Rome): the Basilica of Santa Maria Maggiore and the Theatre of Marcellus in Rome, and the Cloister of the Villa d'Este and Villa Adriana in Tivoli (Figure 1). The sites all had one feature in common: the constituent material was travertine, a sedimentary rock found locally and widely used in the Lazio region.

Factors that contributed to this choice corresponded not only to the appropriate logistical conditions (e.g. household heating with traditional fuels or natural gas, absent or heavy motor vehicle traffic) and the type of material to be examined (travertine), but also the most appropriate locations where non-destructive investigations could be carried out. Focus was on selecting sites of archaeological interest situated in zones with high-density traffic and consequently high-risk environments. In relation to this, three of the sites, the Basilica of Santa Maria Maggiore, Theatre of Marcellus and Villa d'Este represented varying degrees of traffic flow and different levels of natural gas, while Villa Adriana represented an uncontaminated area, i.e. traffic-free and 100% level of methane distribution.

**Figure 1.** a) *Basilica of Santa Maria Maggiore*; b) *Theatre of Marcellus*; c) *Cloister of the Villa d'Este*; d) *Villa Adriana*



Source: Author's personal material.

## Methodology

The experiment focused on:

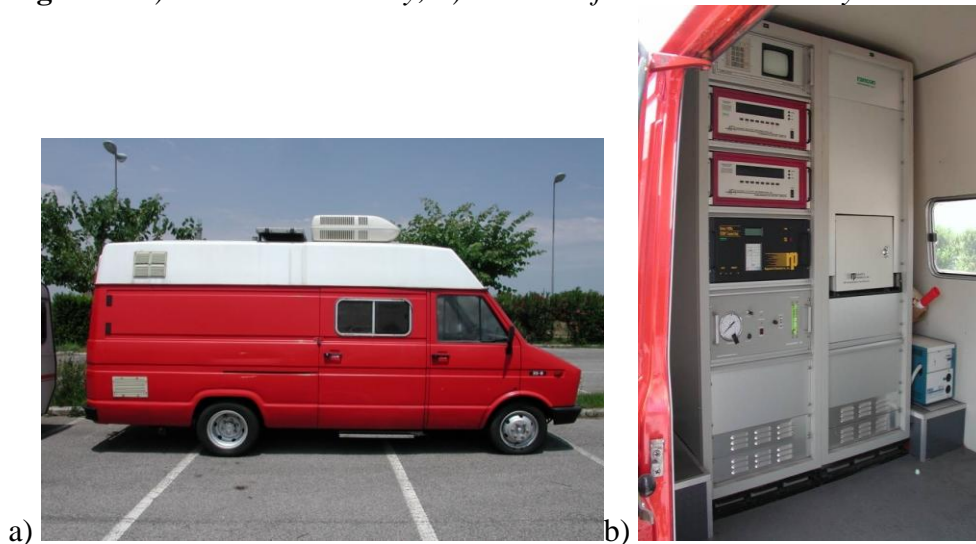
- the determination of airborne pollutants;
- the quali-quantification of alteration-degradation of artifact surfaces using an index of graying-blackening-fouling;
- the characterization of atmospheric aerosol.

For this purpose, the following instruments were used:

- spectrophotometric-colorimeter;
- prototype device (EIS: Electron Industry Support) to automatically measure the level of graying (brightness) on exposed surfaces;
- video microscope for determination of tristimulus color components (R-G-B for red, green, blue) (Lorusso 2002);
- Scanning Electron Microscope for quali-quantification of total suspended particulate.

The first objective was to detect and measure volatile pollutants ( $\text{NO}_x$  - nitrogen oxides,  $\text{SO}_x$  – sulphur oxides, TSP – Total Suspended Particulate) using automatic analyzers classified and approved by the Environmental Protection Agency EPA-USA. The instruments are installed inside a mobile laboratory (Figure 2).

**Figure 2.** a) *Mobile Laboratory*; b) *Interior of Mobile Laboratory*



Source: Author's personal material.

Readings were taken at intervals of 20-30 days during each of the 4 seasons for:

- a) sulfur dioxide (SO<sub>2</sub>); measurements were made with an automatic detector (UV fluorescence);
- b) nitrogen oxide (NO), nitrogen dioxide (NO<sub>2</sub>) with an automatic detector (chemiluminescence);
- c) total suspended particulate matter (TSP) with an automatic detector TEOM for continuous ambient air monitoring/microgravimetry.

The analyzers were programmed to follow the index of degradation for the exposed material over a period of time and indicate the extent of the degradation.

For characterization of the materials constituting the artifacts, sampling was carried out *in situ* using non-destructive, non-invasive and non-manipulative methodologies. Stratigraphic sections were prepared and then observed with a mineralogical microscope.

Analysis of the type of damage caused by the deposition of pollutants was carried out by means of determining the degree of greying (% reflectance).

After cleaning selected portions of the surfaces, reliable functional techniques were used to measure brightness (% reflectance). This was done by means of a colorimeter-spectrophotometer (Minolta), a prototype instrument (EIS), and a videomicroscope with image analysis.

A portable colorimeter-spectrophotometer was used on standardized travertine slabs exposed to pollutants (reference) and on selected parts of the artifact surface. The prototype instrument was used on several samples of standardized travertine (used as reference) and micro-maps of the degraded areas of the reference slabs were determined by videomicroscope with image analysis.

## Findings/Results

From the results obtained over the 4 seasons in the 4 sites in Rome and Tivoli, it was found that for NO<sub>x</sub> and TSP, average recorded values were high in both the Basilica of Santa Maria Maggiore (NO<sub>x</sub>: 122 ppb and TSP: 99 µg/m<sup>3</sup>) and the Theatre of Marcellus (NO<sub>x</sub>: 133 ppb and TSP: 91 µg /m<sup>3</sup>), with peaks almost in the same time bands of early morning (8 - 9am) and late evening (20.30 - 23.00 and until 0.30am). Lower concentrations for NO<sub>x</sub> (between 10-40 ppb) and TSP (between 50 and 110 µg /m<sup>3</sup>) were found in the two sites in Tivoli (Table 1).

**Table 1. The Four Sites**

Characteristics of the chosen research points			
	Site	Traffic	Index of methanisation
1	Basilica of Santa Maria Maggiore	Intense and fast	81%
2	Theatre of Marcellus	Intense and fast	48%
3	Cloister of the Villa d'Este	Intense and stagnant	100%
4	Villa Adriana	Null	100%

Source: Author's personal material.

SO<sub>2</sub> concentrations for all sites were a great deal lower and almost equal to instrumental zero during the night (Gigliani and Natali 2009). Trends in traffic significantly influenced concentrations of O<sub>x</sub> and TSP throughout the day, whereas the limited concentration of sulfur dioxide should be viewed in relation to the lower sulfur content in conventional fuels and the progressive reconversion of heating systems for residential purposes, which has obviously been felt in areas that have adopted methane almost totally and in those that have only partially converted to methane. The hazard level for NO<sub>x</sub> and TSP has been amply confirmed.

## Discussion

The findings provide concrete evidence of the situation concerning the system artifact-environment-biota. Pollution in historic city centers, as illustrated in the above case study, is a major problem affecting the safeguard of human life and activities in urban areas. TSP deposits in cities increase the need for frequent cleaning and restoration of monuments in historic centers. This is due to the effects of suspended particulate matter, which "dirties" and attacks stone materials, such as limestone monuments, exposed to outdoor atmospheric conditions, on a massive scale. Directives have established limit values for human health but not for heritage materials. This means conservation and maintenance costs for heritage artifacts, monuments, and buildings are exorbitant, especially for a country like Italy, which has 51 world heritage sites – more sites than any other on the UNESCO list of protected heritage - and numerous other priceless treasures<sup>4</sup>. The costs mean that much heritage is in danger of deteriorating to such an extent that it is beyond repair. Effective policies are needed to deal with this problem. However, to implement the proper measures a scientific basis must first be defined to measure and evaluate the effects of the pollutants.

Measures have to be taken to eliminate or at least prevent these conditions from worsening and causing further damage. Solutions may include, for example, adopting pedestrian areas in sites with high levels of traffic pollutants (Lorusso and Natali 2015).

To improve this situation and to achieve significant results in this area, it is necessary to involve the territorial forces, i.e. the cultural units (museums, universities, libraries, etc.) and business units (banks, enterprises, etc.). This is a natural follow-up to the protection of cultural and environmental heritage, as their involvement and participation in this sector provides a continuation of the process. They must keep up to date with the latest technologies, laws, research, etc. Such involvement reflects the importance of the cultural and business world in adding value and, at the same time, drawing value from the world of

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<sup>4</sup> See: Unesco.org. Italy: Ministry for Cultural Heritage and Activities, Rome, June 2004. Retrieved from [goo.gl/EztS5e](http://goo.gl/EztS5e). [Accessed: 05 September 2016]

cultural and environmental heritage. It is these units that can help alleviate or resolve the problems many urban areas, as well as the globe, face today.

Another issue at the forefront in current news themes regards the destruction of important heritage sites. This aspect has always afflicted archaeological sites, artifacts, and monuments throughout the world over the centuries as a result of wars, vandalism, looting, theft, the iconoclastic rage of minority groups, and natural disasters. The most recent cases of deliberately inflicted damage, ranging from willful disrespect and damage or destruction of tourist attractions to accidental physical harm to artifacts, show how fragile the safety of our unique world heritage is, not to speak of the earthquakes that have also caused the loss of priceless heritage treasures.

Regulated and unregulated urbanization have also had detrimental effects on heritage. In past centuries, a number of important historic buildings have been demolished to make way for more modern structures and infrastructures, such as road and railway networks.

## **Conclusions**

In the past, the economy has almost always dealt with culture from the perspective of public support, obviously involving state intervention, an element considered indispensable in averting the decline or even the disappearance of the cultural sector. Funding earmarked for artistic and cultural heritage and activities were given without thinking of the actual possibilities for economic development that culture offered, an extremely shortsighted approach. In recent years however, the general economic crisis together with the progressive reduction of public funds allocated to culture has forced those working in the cultural and environmental heritage sector to rethink their approach to funding.

As a result, innovative fundraising strategies for financing heritage projects have flourished. Many of them have been borrowed directly from fundraising techniques used by non-profit organizations to raise money and awareness of existing social problems. Others have roots in territorial development policies and go hand in hand with public-private partnerships (PPP) launched to make certain territories more competitive. Private investment, sponsorship, patronage and donations are other forms of cultural financing. Thus, new models of public-private management for cultural and environmental heritage have emerged. At one time, these might have seemed inappropriate due to the mistaken belief that profit and culture were unrelated, implying a negation of culture, but as mentioned earlier, today these are driving forces of a nation's economy.

It is, consequently, of primary importance to diffuse and communicate research results and all knowledge to experts, scientists, political representatives and the general public, since it is only in possessing this knowledge that action can be taken. In this, the education system can play a

key role in teaching students, from an early age, about the value of their heritage, so as to grow their awareness and respect.

Implications of the above problems related to the artifact-environment-biota system must be addressed by the appropriate heritage bodies and professionals. In other words, by intervening in the protection, promotion, and valorization of cultural and environmental heritage, the territorial forces can generate value not only for heritage, but also for the territory at large, with potentially beneficial chain effects at a global level.

One final consideration regarding the conceptual term "creativity" and young people comes from the definition given by Henri Poincaré: "*Creativity is putting together existing elements with new connections that are useful*", together with a statement made in the "White Paper on Creativity" (Ministerial Decree 2007, Italian Ministry of Cultural Heritage and Activities and Tourism):

*Creativity and culture are inseparable, a mechanism for success that can place the Nation in a strategic position in the international process of globalization* (Santagata 2009).

Creativity, therefore, provides the basis of a profession in a sector that is undergoing profound change: the protection and management of cultural and environmental heritage.

The cultural and environmental heritage sector is a sector that requires increasingly more specialized multi-faceted figures who are able to design strategies for promoting and preserving art and heritage, in order to operate on diverse media platforms and effectively use necessary languages and potential. Young people must be given more opportunities to enter the employment market to help this sector. They are generally more flexible, willing to move, full of new ideas and, if well prepared as heritage professionals, ready to compete in the international arena. This in turn builds global skills, such as language learning and other cross-cultural competences, adding to their personal growth and experience. Today's digital generation can become the new citizens of a truly more united and more creative global community.

The sector of cultural and environmental heritage is undoubtedly a sector with many resources that have not yet been fully exploited in a positive way. Together, science, art, and history will continue to have an important role in the future of our heritage, but only if we take care of our past. This necessitates adopting and implementing the right policies and strategies at a local level, in order to help communities and nations to develop and grow at an international level.

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