## Communication in the context of science museums

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**Abstract.** Highlighting the ever more important role of communication to enhance citizen engagement, this letter emphases the importance of implementing specific initiatives for the small and often hidden museums.

Key words: cultural heritage, science museums, communication, social media, citizen engagement

Science museums represent an invaluable and often hidden cultural heritage. If we exclude the large museums, which are already part of the cultural and tourist circuits, there is a considerable quantity of collections, often located in spaces owned by public universities. One of the factors making it difficult to identify these collections, which are true historical and cultural heritages, is the total or partial lack of classification of the objects they contain. Objects, equipment, iconographic material, documentary material, reports and letters, mostly collected thanks to the passion of scholars, who lived in times when the term dematerialisation had not yet been coined, are a precious testimony to the paths that the various scientific disciplines have taken throughout history. They are a valuable record of how the different scientific areas have progressed through history.

The cataloguing of artefacts, whatever they may be, is the first step towards becoming a collection with historical and cultural value. Unfortunately, this operation requires the use of specialists and implies costs that not all "museum" organisations are able to bear, thus condemning themselves to a visibility for experts. If the necessary resources are found to catalogue the exhibits, this opens up the possibility of making the history, artefacts, equipment and original texts that have contributed to the development of the various scientific disciplines known to a wider public than the restricted circle of researchers and scientists.

There are relatively few museums capable of attracting large numbers of visitors, with a high concentration of artefacts, and with running costs that generally exceed the income from admission fees. They are also the ones that have the least need of effective communication: the fame of the Uffizi Gallery in Florence, the Egyptian Museum in Turin or the Pinacoteca di Brera in Milan (to limit ourselves to Italy) is a fact and communication can be effective just to announce the opening of thematic pavilions or temporary exhibitions.

But the smaller realities need communication initiatives capable of attracting the public: initiatives that have to carefully identify the target population and propose the preserved materials in an appealing way. From a metaphorical point of view, and in terms of tourism, we can liken large museums to cities of art, where many monumental works are concentrated, and museum collections scattered throughout the territory to the small artistic and cultural pearls that characterise a large part of Italy (but a similar argument, albeit with fewer concentrations, can be extended to many European countries with an interesting historical past).

The exhibits, the documentation and the topics dealt with by science museums need a specific communication: their understanding by a non-scientific public is not easy and is essential for the achievement of the main goal, the dissemination of knowledge, often of niche nature, to as wide an audience as possible.

In order to achieve these objectives, it is necessary to use the most modern tools of communication: social media and virtual environments.

The use of social media is widespread and no longer restricted to the younger population: born as communication tools for adolescents, characterised by a synthetic (not to say syncopated), very fast communication and with its own grammar, social media are now used across the board by the different age groups of the population, perhaps with the sole exception of the elderly in the older age groups. Although based on sophisticated algorithms, social networks are based on the old technique of word of mouth in which each member of the chain acts as an amplifier of the signal (the information) and encourages its dissemination through the network of his/her contacts. The creation and continuous updating of individual museum pages on popular social networks, such as Facebook©, Instagram© and others, makes it possible to make the existence of collections of scientific interest known to millions of users. The way in which the material is presented must be communicatively effective, capable of attracting the attention of a varied public with different sensibilities and cultural backgrounds. This is no small challenge: on the one hand attracting people with low to medium cultural skills and the possibility of raising them, and on the other hand not losing the more sophisticated audience of scholars who are looking for more in-depth information that goes beyond aesthetic information and the satisfaction of curiosity. It is therefore necessary to think of two levels of communication: a more popular one, capable of spreading knowledge of the cultural heritage preserved in niche scientific museums to a large number of people, and a more technical one, for experts, for those who can use the collections to deepen their knowledge and produce valuable scientific work.

One of the main obstacles that small museums face is the difficulty of making their collections available to the public. The problem is related to the lack of adequate facilities to accommodate a sufficient number of paying visitors to bear the costs (staff, safety regulations, cleaning, temporary exhibitions, etc.) that such activities entail. Modern technologies offer possible solutions that, against initial start-up costs, guarantee the dissemination of knowledge of the finds preserved in the different collections. We refer to the creation of dedicated sites offering virtual tours of the museum and scientific catalogues with three-dimensional representations. The former allows the visitor to visit the museum spaces by simulating an itinerary within the structure: a captivating way to get to know the contents of the collections with rigorous explanations in a popular language within the reach of visitors who are not particularly cultured. The second represents the scientific documentation of the cultural heritage preserved in the various museums: an inventory of what exists that can satisfy the most refined palates of scholars in the sector, interested in a thorough knowledge of the materials.

The adoption of both of these technologically advanced solutions, obviously with the possibility of using them in multilingual mode to attract an international public, represents a valid alternative to traditional museology: perhaps the only sustainable one for niche realities such as university science museums called to use communication in the best possible way.

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