

What do Museums Communicate? Embedding Participation as an Integral Component of Science Center and Museum Narratives

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Abstract

Science Centers and Museums are indeed becoming communication hubs for many research areas, including, of course, Earth and Environmental Sciences. Over the last decades numerous new channels have opened for two-way communication and museums have embraced them enthusiastically, promoting dialogue and participation. The incorporation of citizen science, for example, into exhibitions and programming is one of the most recent trends in this direction. Often the question arises, however, of what such activities have to do with the objects and exhibits in the museum, and this perceived disconnect is used as an objection against such activities, which end up being considered as simple contingent add-ons that could just as well be done elsewhere, instead of necessary elements of museum communication. I will present a vision of museum communication that integrates such activities as part of its narrative, as long as they are incorporated using the unique and specific power of the language of exhibitions, a.k.a. the museographic language. To do so I ask the question: what is the museographic language good at communicating? In other words – what do museums communicate? If we center the answer around the concept of “phenomena” or “processes” we will be able to see how museum objects as well as interactive exhibits and a whole range of participatory activities can be successfully combined into a unique mode of communication through exhibitions that complements other channels in the ecosystem of science communication. While there are many scientific disciplines that can be communicated well using primarily collections of objects, other research areas, like Earth and Environmental Sciences need to extend their communication in Science Centers and Museums to include phenomena or processes (as well as objects) in order to actively engage audiences and harness their participation to shape the future of research and of science in society. I will share practical examples and recommendations for these disciplines.

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Fact 1: Tangibility is a fundamental asset of museums
Objects (artifacts) are one of various elements available to exhibition designers from the toolbox of the museographic language.
Other resources from that toolbox are:
- Digital
- Open

Fact 2: Science Communication aims to transform people and society
Over the last decades, science communication has evolved through various phases:
- Deficit Model approaches: science literacy, public understanding of science.
- Two-way communication approaches: public engagement with science, science-society dialogue
- Involvement approaches: Public Participation in Science, Co-creation
- Emergent approaches: innovation/humanity, institutionalized
- Open

Answer: museums communicate phenomena through tangible experiences
Beyond considering museums as collections of objects, science communication as an exercise of knowledge transfer, and engagement as numbers of visitors, we see exhibition floors as:
spaces to build transformative narratives based on experienced phenomena
Visitors creating their own landscapes with and Augmented Reality Sandbox at the Science Center in Africa, NY. Open for the others.
- Open

Fact 3: Engagement comes mainly through emotions and storytelling
One of the best ways to package emotions is as stories. Stories are part and parcel of human nature (see, e.g. Gershoff, 2003) and are communicated in myriad ways, such as:
- Novels
- Films
- Dance
- Open

Example: seeking synergies. Instead of reinventing the wheel
Citizen Science (and Citizen Humanities) has involved members of the public in research for several decades now (Richard, Pienaar and Esborg, 2020). What began mostly as crowdsourcing initiatives to harness the public's data collection potential has demonstrated a huge capacity to foster public participation in science beyond pure data collection. Citizen scientists have the power to make projects happen and often even to shape them and influence research agendas.
- Open

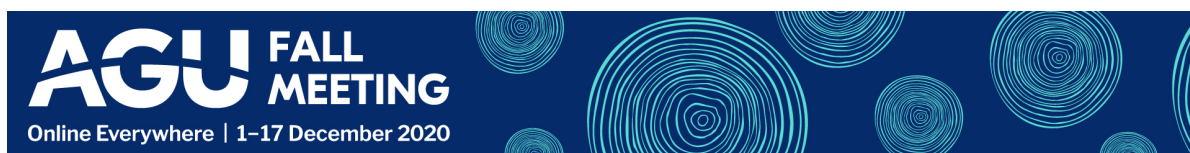
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ABSTRACT

Science Centers and Museums are indeed becoming communication hubs for many research areas, including, of course, Earth and Environmental Sciences. Over the last decades numerous new channels have opened for two-way communication and museums have embraced them enthusiastically, promoting dialogue and participation. The incorporation of citizen science, for example, into exhibitions and programming is one of the most recent trends in this direction. Often the question arises, however, of what such activities have to do with the objects and exhibits in the museum, and this perceived disconnect is used as an objection against such activities, which end up being considered as simple contingent add-ons that could just as well be done elsewhere, instead of necessary elements of museum communication.

I will present a vision of museum communication that integrates such activities as part of its narrative, as long as they are incorporated using the unique and specific power of the language of exhibitions, a.k.a. the museographic language. To do so I ask the question: what is the museographic language good at communicating? In other words – what do museums communicate? If we center the answer around the concept of “phenomena” or “processes” we will be able to see how museum objects as well as interactive exhibits and a whole range of participatory activities can be successfully combined into a unique mode of communication through exhibitions that complements other channels in the ecosystem of science communication.

While there are many scientific disciplines that can be communicated well using primarily collections of objects, other research areas, like Earth and Environmental Sciences need to extend their communication in Science Centers and Museums to include phenomena or processes (as well as objects) in order to actively engage audiences and harness their participation to shape the future of research and of science in society. I will share practical examples and recommendations for these disciplines.

FACT 1: TANGIBILITY IS A FUNDAMENTAL ASSET OF MUSEUMS

Objects (artifacts) are one of various elements available to exhibition designers from the toolbox of the museographic language.

Other resources from that toolbox are:

- representations (replicas, dioramas, ...)
- experiences (interactive exhibits, demonstrations, ...)
- metaphors (models, digital simulations, ...)

All of them have in common that they are tangible. Tangibility is one feature of the museographic language:

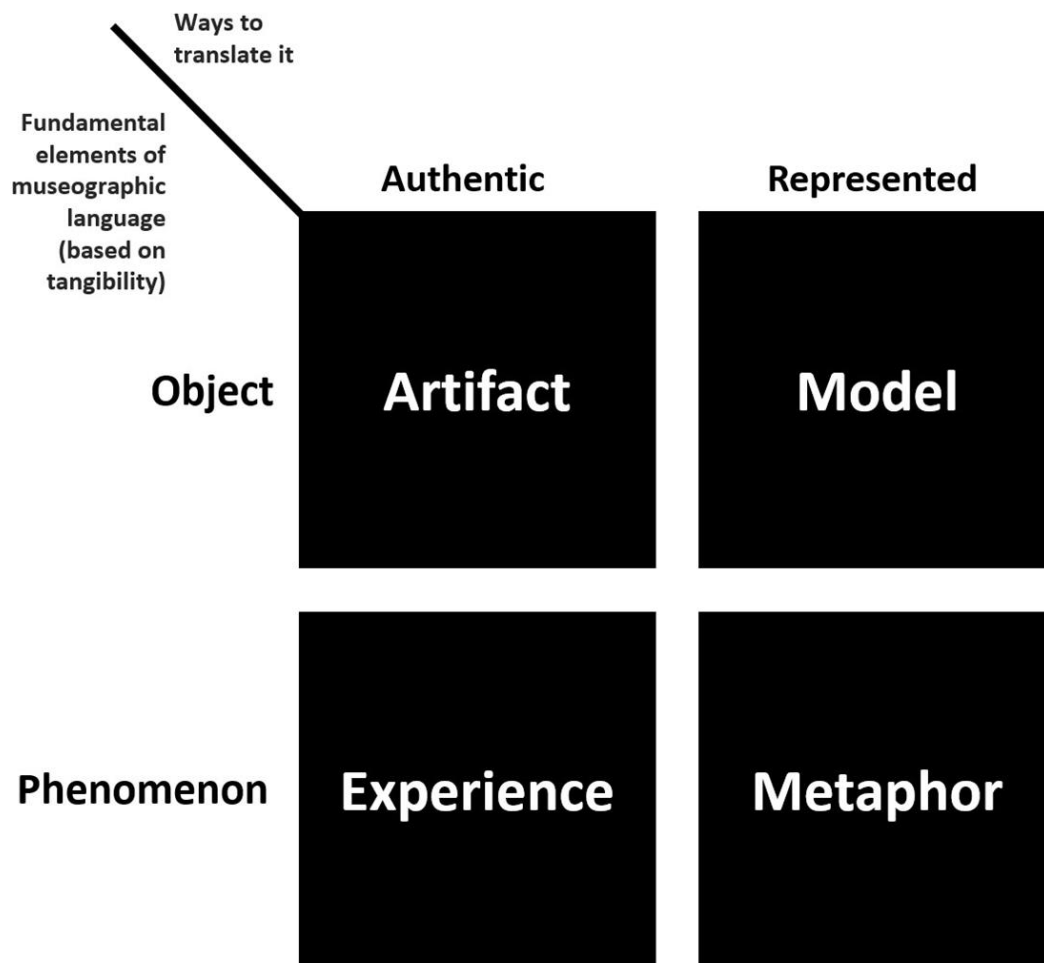


Figure from *The Transformative Museum* (2020)

Another is that the recipient of the message is physically *inside* the exhibition. (This is why museums will not remain digital after COVID-19, see Stengler et al. 2020 (<https://blogs.uwe.ac.uk/science->

communication/museums-will-open-their-doors-again-after-the-covid-19-crisis-heres-why/))



*Visitors at an interactive on Pangea at the Museo of Science and the Cosmos
(<https://www.museosdetenerife.org/mcc-museo-de-la-ciencia-y-el-cosmos/>)
on Tenerife (Spain) Photo by the author.*

FACT 2: SCIENCE COMMUNICATION AIMS TO TRANSFORM PEOPLE AND SOCIETY

Over the last decades, science communication has evolved through various phases

- "Deficit Model" approaches: science literacy, public understanding of science.
- Two-way communication approaches: public engagement with science, science-society dialogue
- Involvement approaches: Public Participation in Science, Co-creation
- Agency approaches: conflict/action, individual, social and social transformation

[adapted from Pedretti & Navas Iannini (2020)]

Each phase added its new approach while maintaining the previous ones, each approach has its space in the current science communication landscape.



In recent years Science Museums have increasingly addressed controversial issues, not without risk of being criticised for it. We The Curious in Bristol was forced to withdraw this exhibit on bovine tuberculosis amidst a campaign against the culling of badgers to stop the spread of the disease, led, among others by Queen guitarist Brian May. Photo from this BBC article (<https://www.bbc.com/news/uk-england-bristol-48116918>) on the incident.

FACT 3: ENGAGEMENT COMES MAINLY THROUGH EMOTIONS AND STORYTELLING

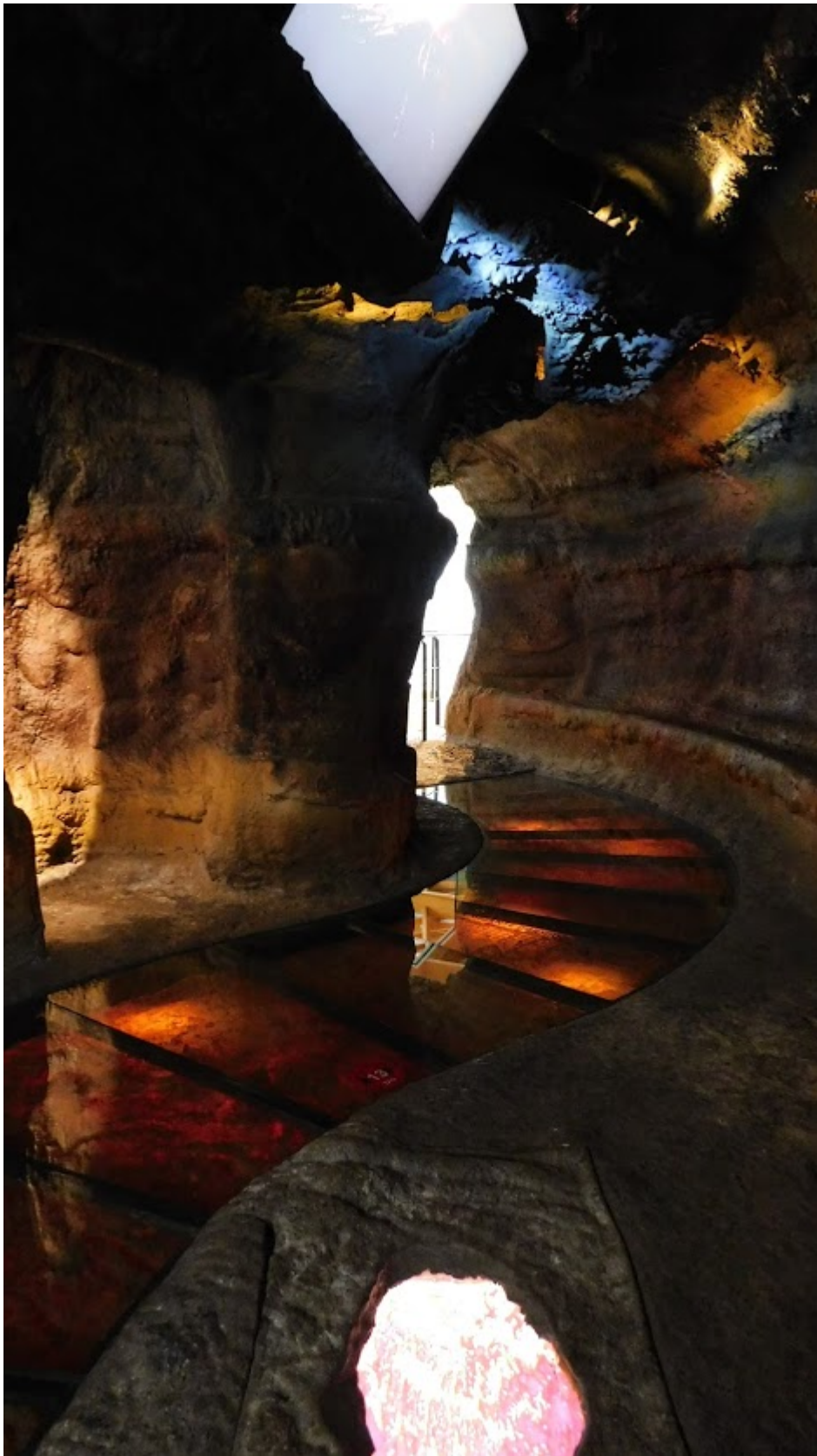
One of the best ways to package emotions is as stories. Stories are part and parcel of human nature (see. e.g. Gottshall, 2013) and are communicated in myriads of ways, such as:

- Novels
- Films
- Dance
- Music

And what is even better than being told a story? Witnessing one. And even better? Being part of one.

If we can come up with ways to get museum visitors to make their own (real) stories, we will achieve the highest level of engagement.

The museographic language is one of very few that unfold in the same space and time as the visitor, who is uniquely positioned as a part of the communicative process, co-creating the message that is being communicated.



Often an immersive experience like this staged walkway through the interior of a volcano goes a long way towards making visitors feel part of the narrative of an exhibition. Exhibit at the visitor center of Spain's National Park of the Teide volcano on the Canary Island of Tenerife; photo by the author.

ANSWER: MUSEUMS COMMUNICATE PHENOMENA THROUGH TANGIBLE EXPERIENCES

Beyond considering museums as collections of objects, science communication as an exercise of knowledge transfer, and engagement as numbers of visitors, we see exhibition floors as:

spaces to build transformative narratives based on experienced phenomena



Visitors creating their own landscapes with and Augmented Reality Sandbox at the Sciencenter (<http://www.sciencenter.org/>) in Ithaca, NY. Photo by the author.

With a focus on phenomena museum communication becomes a language in its own right (the good old museography) with its own resources (objects, interactives, representation) and its own way of telling stories.

It involves *hands-on* engagement, but also *minds-on*, *hearts on* (Wagensberg, 2006) and *talk-on* (The Transformative Museum, 2020).

Interactive exhibits guarantee hands-on engagement; exhibitions with well scripted narratives elicit minds-on engagement; opportunities to participate and feel agency over real-world issues ensure hearts-on engagement.

Together they will achieve transformation at all levels: personal, in the community, in society as a whole. This is the purpose of the modern 21st century museum, the transformative museum.
(<http://thetransformativemuseum.org/>
(<http://thetransformativemuseum.org/>))

EXAMPLE: SEEKING SYNERGIES INSTEAD OF REINVENTING THE WHEEL

Citizen Science (and Citizen Humanities) has involved members of the public in research for several decades now (Hetland, Pierroux and Esborg, 2020). What began mainly as crowdsourcing initiatives to harness the public's data collection potential has demonstrated a huge capacity to foster public participation in science beyond pure data collection. Citizen scientists have the power to make projects happen and often even to shape them and influence research agendas.

To achieve participation, museums do not need to try to emulate other languages. By fully developing the elements of the museographic language museums can create synergies with citizen science projects and become hubs for citizen science to reach a wider audience, train participants in the use of equipment, loan the kits, and make the results available to them as well as the wider public as part of their exhibitions.

From March 2017 to March 2018 as part of the Talking Brains exhibit, the CosmoCaixa acted as a neurosciences laboratory. The BrainLab enabled visitors to participate in a brain monitoring experiment that resembles the setup in a pure research laboratory, while learning how the study of language relates to brain activity.



Photo from the website on the exhibition: https://cosmocaixa.es/es/p/expo-talking-brains_a361865 (https://cosmocaixa.es/es/p/expo-talking-brains_a361865)

The Adler Planetarium in Chicago, IL is pioneering the inclusion of citizen science as part of exhibitions. Read more about their most recent innovations in this field (*click on the pictures*):



EDUCATION, NEWS

U!SCIENTIST AND THE GALAXY ZOO TOUCH TABLE AT ADLER PLANETARIUM

(<https://blog.zooniverse.org/2019/08/14/uscientist-and-the-galaxy-zoo-touch-table-at-adler-planetarium/>)

Mapping Historic Skies with Zooniverse



(<https://www.adlerplanetarium.org/blog/mapping-historic-skies-with-zooniverse/>)

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