TRENDS IN SCIENCE CENTRES AND MUSEUMS

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Changing world

- Museums and science centres all over the world are rethinking their reason to exist. The institutions of the 21st century will be different from those of the 20th century, who were different from those of the 19th century.

- The world is changing at a fast pace. Globalisation and digitalisation are two elements creating a widespread awareness of our world – the entire planet - that previous generations rarely possessed.

Changing role

Museums and science centres have a new social relevance. They are seen as agents of change, as platforms for life-long learning and as places to integrate previously underserved groups into mainstream society.

The modern museum or science centre functions together with its community in producing crowd-sourced contents, being relevant and strengthening the sense of belonging.

Old Museum Definition

ICOM definition (1974-2007)

A **museum** is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment.

ICOM MUSEUM DEFINITION 2022

A museum is a not-for-profit, permanent institution in the service of society that researches, collects, conserves, interprets and exhibits tangible and intangible heritage. Open to the public, accessible and inclusive, museums foster diversity and sustainability. They operate and communicate ethically, professionally and with the participation of communities, offering varied experiences for education, enjoyment, reflection and knowledge sharing.

Museum Trends 2012-2022

SUMMARY OF AAM TRENDSWATCH TRENDS 2012-2022

Museums/audience	Behaviour	Social change	Financing	Technology
crowdsourcing	**mobile experience**	shifts in education	**threats for nonprofits**	**augmented reality**
multisensory experience	creative aging	microcredentials	microfunding	**3D printing**
big data	disconnect from digital	urban renaissance	**crowdfunding**	internet of things
open culture	privacy	social entrepreneurship	**trends in philanthropy**	robots
personalization	**ethical awareness**	**sharing economy**	blockchains	wearable technology
representation/identity	slow movement	**risk landscape**	**financial sustainability**	more than human
agile design	me/we/here/there	**labour 3.0**	**investment values**	**artificial intelligence**
scenarios	happiness	**migration/refugees**	**right-sizing**	digital solutions
digital strategies & leadership	empathy	criminal reform		
empowering elders	fake news	decolonization		
	building self-care	housing insecurity		
	pandemic survival	equity recruitment		
	21st century skills	vulnerable groups		
	mental health	**resilience & response**		

Interactivity as a brand

Interactive exhibits are typical of science centres. In the best case, they are open-ended scientific experiments, in the worst, trivial push-button exercises. In a serious experiment, the visitor will learn from nature itself.

Science centre visits are typically social events, as > 90 % of visitors come in groups. Thus, social interaction adds to the learning experience.

An open experiment in an exhibition has its limitations. Therefore, even if interactivity is a central characteristic of a science centre, it cannot be the only approach.

A broad selection of methods

Science centres and museums use a multitude of communication means:

interactive and/or narrative exhibitions, workshops and laboratory experiments, demonstrations and science shows, maker spaces and tinkering studios, internet and social media, drama pedagogy, inspirers/explainers/guides, historical objects, planetarium, cinema, videos, computer programs, games and gaming, escape rooms, printed matter, books, events, theme days, expert lectures, public debates, meetings with researchers, outreach.

Deficit vs Engagement Concepts

Deficit Model	**Engagement Model**
Public understanding of science	Science engagement
Science literacy	Life-long learning
Science education	Science capital
Curatorial content	Cocreation

Science Capital

Science capital itself is a measure of your engagement or relationship with science, how much you value it and whether you feel it is ‘for you’ and connected to your life. It highlights the significance of **what you know** about science, **how you think** about it, **what** (science related activities) **you do** and **who you know** in shaping attitudes and feelings about STEM.

Science Centre Definition

Science centers or **science centres** are **science** museums that emphasize a hands-on approach, featuring interactive exhibits that encourage visitors to experiment and explore.

(www.definitions.net)

This may today be seen by many science centres as too limited?

21st Century Science Centre Definition?

Science centres are science museums engaging people with science, strengthening their science capital, providing life-long learning opportunities and inviting them to contribute content.

Some trends in our world

1. A diminished trust in science and technology, creating the post-factual society

2. Several wicked problems where typically science and technology provide only partial solutions

3. Changing behaviour, morals and ethics due to technological advancements

4. A sharpened polarisation both within and across countries

5. Rich but fragmented and partially unreliable information flow

Providing context

The fragmented information flow needs “fixers”. We have probably never in history had access to the wealth of information that we have today. However, as it arrives in bits and fragments, it is very difficult to understand the context. We need institutions outside the formal education sector that can provide contextualisation. As media traditionally are commercial players, museums and science centres have a role to play here.

The social role

Traditionally, science museums and centres have considered themselves honest brokers of information. Facing today's challenges, many centres are questioning whether they should assume an activist role, propagating changes in people's behaviour. This is particularly true for museums dealing with climate change issues.

A high degree of trust

- 77.7 % of the American population have a high degree of trust in science centres and museums and consider the information they provide reliable.

- Most museums follow the honest broker philosophy. A change towards activism may influence credibility ratings.

- Brokers influence world affairs by selecting the topics.

Unique possibilities

- The high degree of trust gives science centres and museums possibilities that other institutions lack. These centres are forums where different opinions can meet. They are safe places for difficult conversations. They can easily address controversies.
- Science centres are open learning environments, based on empirical evidence. This fosters curiosity, creativity and critical thinking, all important elements of scientific literacy and 21st century thinking skills.

Influence on attitudes

The most important outcome of a visit to a science centre or science museum may very well be a long-term positive effect on attitudes towards science, research and technology.

This is a major outcome.

Knowledge, engagement, context

Complex issues rarely have simple clear-cut solutions. Instead, engagement, thinking processes, inspiration, reflection, insight become key words.

Complex subjects lead to narrative exhibition approaches. Providing context becomes important: how are problems connected, what is important, what is trivial. Understanding history explains the current situation and future options.

Science centres and museums are particularly well suited to provide contextualisation of complex challenges.

Museums provide context, meaning, wisdom.

Real and virtual

Most science centres provide their auxiliary services (marketing, ticketing, school materials) on the web. The challenge that has not yet been solved is the relation between contents on the web and contents in the physical exhibition. Ars Electronica in Linz has experimented with accessing real-world exhibitions virtually for two decades, but elsewhere intellectually satisfying solutions are largely yet to be found.

Building or local network

Reaching out to underserved communities may require outreach solutions. In the future science centres and museums may act more like a local network, where the museum displays contents in its building and provides content in various forms to be presented in different places throughout the community.

Current challenges

All science centres/museums currently address the following challenges:

1. How to strengthen their capacity

2. How to extend their reach

3. How to be relevant to their communities.

Strengthening capacity

The biggest science centre/museum organisations number about 2000 people. They are small organisations.

Capacity building happens through partnerships with the scientific community, private corporations and third-sector organisations.

Some centres base their entire contents production on input from outside experts.

Extending reach

Last 25 years the field has discussed how to reach out to non-visitors and underserved population groups.

The solutions demand co-operation/cocreation of content with these groups and often moving programs to areas easily accessible for these groups.

Example: Creative Explorations Project at International Centre for Life, Newcastle-upon-Tyne.

Relevance

You cannot be relevant to all people at the same time.

You are relevant to selected groups through cooperation with these groups.

A broad-based museum will serve several audience groups, although offerings may vary in time and space.

Impact of science centres

"The collective evidence strongly indicates that science centres

- strengthen science learning
- enhance interest in science
- strengthen motivation to learn science
- affect attitudes towards science and technology positively
- increase confidence in science
- influence career choices by young people.

Science centre visits may result in long-lasting memories, indicating a strong personal impact on visitors."

(Falk & Dierking 2013; Falk et al 2014; Persson 2015)

Pandemic shifted visiting preferences

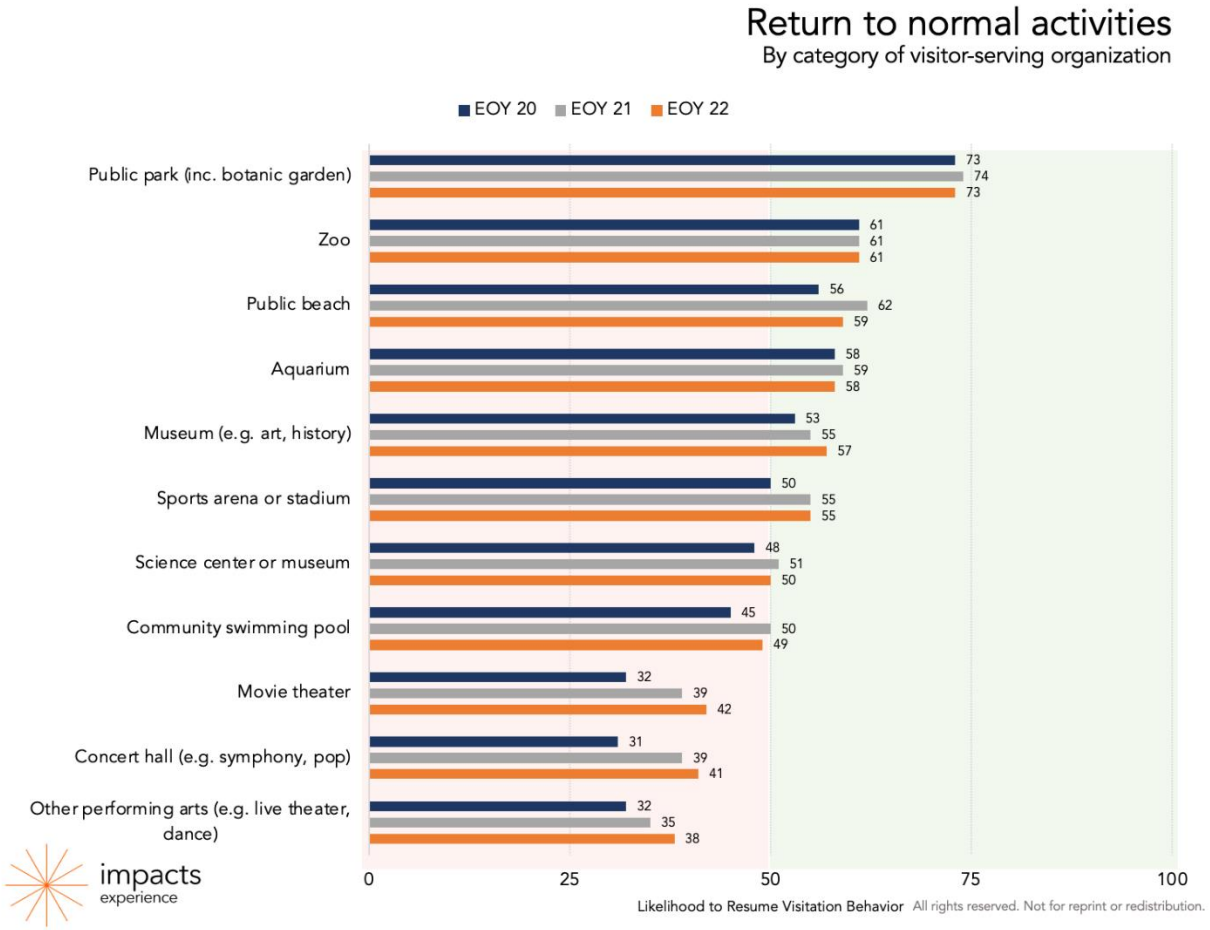
Colleen Dilenschneider/Impacts Experience studies 2020-2022

Basic question:

"On a scale of 1 to 100 where a response of 1 means 'a significant decrease in my likelihood of visiting,' a response of 50 means 'the same' or 'no change in my likelihood of visiting,' and a response of 100 means a 'significant increase in my likelihood of visiting':

How likely are you to visit a(n) [organization type] after the current coronavirus-related restrictions are removed and you are able to resume your normal activities?"

Redistribution of demand



Explanatory note

As usual, this research does not necessarily mean that people prefer botanic gardens to symphonies.

Instead, this metric intends to measure how likely people are to return to their normal, pre-coronavirus behaviours.

It means that people whose *normal behaviou*r in 2019 was to go to symphonies report being less likely to return to the symphony now.

It means that people whose *normal behaviour* was to go to botanic gardens are even more likely to visit them now than they were before the pandemic.

Operational implications of pandemic

- Exhibit halls, passage
- Cleanliness, hygiene protocols
- Public, access, restrictions
- Ticketing, web
- Digital offerings
- Work force, containment
- Work from home
- School visits, grouping
- Closures, marketing and information
- Closures, economic implications
- Government relations

Strategic implications of pandemic

- Risk landscape: more uncertainty
- Digital offerings and services
- Innovation
- Consumer behaviour
- Leadership and work force
- Economic sustainability

Post-Covid Risk Landscape

Natural disasters

- Pandemic disease
- Wildfire
- Severe storms
- Extreme heat
- Extreme rain
- Sea level rise
- Spread of invasive species

Economic disruptions

- Financial crisis sparked by Covid
- Widening wealth gap

Social disruptions

- Mass migration
- Civil rights protests
- Nationalist violent movements

Political disruptions

- Challenges to democratic processes

- Warfare

Technological crises

- Dramatic rise in cybercrime, ransomware, data theft
- Continued displacement of labour through automation and AI
- Growing digital divide

Strategic perspective: foresight

Using systematic observations of current world to envision possible futures to create a portfolio of actions, deployed as needed.

Foresight is accurate even when imprecise.

Steps:

Scanning

Exploring implications

Creating visions (scenarios)

Making choices

Four scenarios for 2025 museums

Growth:

Back to business as usual

Constraint:

Interdependence

Collapse:

Survival mode

Transformation:

Citizen museology

Risk mapping

Risks and opportunities:

- Effects of the pandemic on the audience
- Effects of the pandemic on the organisational environment
- Growth of responsibility and awareness
- Climate change
- Fluctuations of the financial market
- Digitalisation and tribalism
- Technology
- Globalisation
- Staff

Staff

Risks

Challenges in recruitment of competent staff

Loss of jobs and capabilities

Narrowing of perspective

Decrease in work place wellbeing

Cost increase

Change of client behaviour

Capability deficit

Work overload

Insufficient resources

Opportunities

Increased wellbeing

Less travel – time saving

Innovative ideas

New service concept

Change of client behaviour

Direct interaction

Better accessibility

Easier to get information

Leadership in a New Age

- The CEO should focus on what only he/she can do
- Delegate everything that can be delegated
- Traditionally, leaders are seen as charismatic and bold.
- In the post-pandemic world, we need more humility and resilience.

(McKinsey)

The CEO role

Integrator, orchestrator, connector

- Setting direction
- Aligning the organisation
- Leading through leaders
- Engaging the board
- Connecting with stakeholders
- Managing personal effectiveness

(McKinsey)

The financial model

Diversify:

- As many income streams as possible
- Earned income, several items
- Sponsorship, several donors
- Government: several sources
- Culture donors/supporters

Summary (1)

- Global challenges influence role perception by science centres/museums: honest brokers of information or activists?
- Science centres try to strengthen their capacity, extend their reach and be relevant.
- An important long-term outcome of a science centre/museum is a positive attitude towards science.
- Science centres and museums are highly trusted by the public.
- Even if interactivity is a trademark of science centres they use a wide array of communication tools.

Summary (2)

- A closer integration between virtual and real world phenomena is expected in the next few years.
- In the future, science centres and museums will cocreate contents in local networks serving their entire communities.
- Science centres and museums are well suited for providing context and understanding of complex phenomena. Museums provide wisdom instead of fragmented information.
- Long-term effects of the pandemic continue to influence science centres (digital offerings, customer behaviour, workplace changes, financial fluctuations)

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