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CONTINUING PROFESSIONAL DEVELOPMENT: EVOLUTION, COMPLEXITY AND VARIETY OF SCIENCE COMMUNICATION TRAINING NEEDS

Developing narrative exhibitions and science centres. Training needs of exhibition designers

Peter Higgins

Abstract

In respect of the different modes of science communication including journalism, radio, online, I would propose that the process of making exhibitions and centres dedicated to science & technology is one of the hardest creative typologies. It also provides a very different type of engagement to other modes, in that it works in real time and space with real tangible objects and responsive media. The power of the real is also extended through the direct and collective involvement of people, providing a refreshing antidote to the potential alienating nature of social media and the ever-growing obsession with the virtual. In this paper I will discuss the skills required by a designer in order to solve the challenges contained within the client brief (the project document provided by the client), and therefore the skills a proper exhibition designer training programme should deliver.

Keywords

Informal learning; Professionalism, professional development and training in science communication; Science centres and museums

Preamble — the context of process

In respect of the different modes of science communication including journalism, radio, online, I consider the process of making exhibitions and centres dedicated to science & technology one of the hardest creative endeavours. It also provides a very different type of engagement to other modes, in that it works in real time and space with real tangible objects and responsive media. The power of the real is also extended through the direct and collective involvement of people, providing a refreshing antidote to the potential alienating nature of social media and the ever-growing obsession with the virtual.

This fascinating challenge lies with the creative design team who have to take the design brief (the project document provided by the client) and transform/mediate it into an imagined spatial world and a time based experience. In true scientific parlance this can be a quantum leap. The process is further complicated as, unlike other real time experiential events such as theatre or film, our visitor may not view or experience the precise order or sequence that is intended. It is as if we are asking our visitor to read a book after tearing out some of the pages. The participant may

generate their own bespoke sequence or even be subjected to the flickering gaze where certain elements of the experience are omitted or selected in a random way.

In the following pages I will discuss the skills required by a designer in order to solve the challenges contained within the client brief, and therefore the skills a proper exhibition designer training programme should deliver.

In support of the development of such a programme, we have created a *Venn diagram* (Figure 1) which describes the relationship between the physical architecture of space, the narrative story to be told and the appropriate communication media to help describe the narrative within the parameters of the given space. A complete enclosing circle may capture all of these elements in the context of 'destination' which reflects on the profile of the visitor and has a big impact on the design methodology. I will use this diagram in order the address the central theme of this paper.

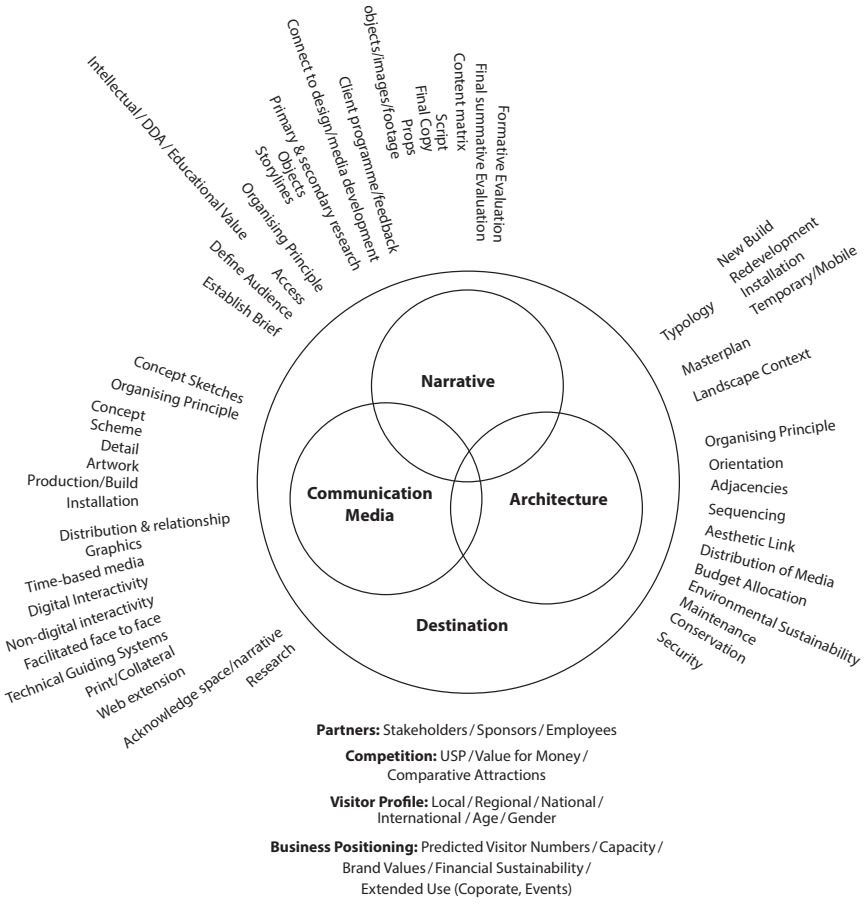

Figure 1. Venn diagram of the exhibition development process (Land Design Studio Ltd, London).

Architecture of space

As inspiration, any prospective exhibition designer is able to sample the craft in their own time and own way. Science centres and museums are ubiquitous and I would expect the designer to bring a good personal working knowledge of different typologies, philosophies and pedagogies in both historic and contemporary contexts.

An exhibition designer may be working within a modest gallery space or be responding to a much larger masterplan, which is in the hands of an architect.

When working with an architect on a new build museum, the exhibition designer's contribution at the starting point provides input on the conceptual masterplan generally making the structure fit for purpose. The ideal integrated solution requires the designer to disseminate the curators/scientist's brief into certain functions and space layouts, adjacencies, movement sequences and visitor dwell times. Consideration must also be given to operational/functional planning, back of house, café, shop, and technical considerations; design for disability, power and data distribution also the impact of the input of both structural and mechanical engineers. It may be even at this early stage that we have to consider how conceptual planning and media treatment may have an impact on the funding, business and marketing strategies. Clearly responsibilities are extensive and onerous.

The more familiar need to transform a modest gallery space still carries many of the above activities but at a smaller scale and possibly without the need to collaborate with an architect. In addition to the prime planning activities described above we may consider a more detailed secondary phase for the exhibition designer that will usually start by anticipating the emotional need states of the visitor and embrace the design tools that are available to enhance their experience. This will involve studies in quality of volumetric space, aesthetic look and feel, narrative sequence, visual axes, and the control and use of both natural and artificial light, and acoustic control. Also the spatial dynamics of collective versus individual engagement have to be considered in terms of planning for the needs of individuals versus large groups.

As a general rule, the narrative may drive one of two fundamental conceptual diagrams — a linear episodic layout or a more informal free flow system. For instance a socio-historical theme may suit a deterministic historic time line which pre determines a sequential plan, whilst a series of scientific phenomena or principles may not have a meaningful hierarchy and encourage a free flow layout and a randomly assembled narrative. For me it is the latter that can generate the least satisfactory visitor experience as so many science centres are treated like open industrial spaces with installations, inspired by San Francisco's Exploratorium, scattered across a soulless space.

In any situation it is the designers' task to provide a compelling organising principle and spatial arrangement that will engage surprise and inspire their visitors.

Narrative development

We have to consider as a starting point that there is usually a core team of directors, scientists, curators, interpreters, educationalists, possible financial stakeholders who have a really in depth and sometimes dangerously esoteric, solipsistic and over complicated understanding of their subject fields yet still exhibition designer has the desire to create a coherent and powerful visitor experience.

In an ideal scenario, the exhibition designers role at the early stages is to interrogate, reduce or maybe extend the primary information contained within the

client content brief, i.e. the document where topics and stories and collections (if existing) are listed for the professionals to organize into a narrative. It may be in some cases that they are even able to collaborate with the client team in an iterative way to help articulate the brief from the beginning. The advantage of promoting this integrated process is that the designer may be able to apply a holistic overview rather than a step-by-step approach to narrative, architecture and communication media. It is possible to anticipate design concepts in parallel with writing a brief.

It is not necessary for the designer to have first hand skills in the art of storytelling, it's actually about imagining space and communication media in response to the brief. Ideas presented by the curator may just not be achievable through budget, space or available technology. The designer's skill is to have a knowledge of design tools to refine and make the brief more achievable.

Nevertheless, if the exhibition developer also works closely with curators and professional content developers, it is recommended s/he knows principles and techniques of storytelling.

It is often the case that the curator/author of a project will overload the density of information, objects, media to the detriment of the quality of the visitor experience. It may be that the early intervention of the designer can demonstrate through preliminary spatial layouts and dwell time calculations that this is the case. Additionally it is possible to assess the potential diversity and intelligent appropriation of communication media at the earliest possible stage. I have for some time suggested that accelerated designer involvement can help transform a prosaic brief into 'a script' familiar to film, TV, theatre, which begins to describe emotional states of the visitor along with descriptive treatments of environments, diverse media installations and the notion of a controlled narrative journey.

This may be an opportune moment to consider how the central function of 'real time' exhibitions is to inspire and open the door of enquiry. The nature of this form of communication does carry limitations that may be addressed through complementary communication activity such as books, on line activity, which can be used to extend and provide more in depth study post visit.

Appropriate use of media

In my opinion an understanding and the application of communication media is the least defined field of study in the training of an exhibition designer. It actually crosses the line of many established courses that focus on each of the tools that are at our disposal. For example the list may include; graphic design, time based media (film/video), animation, analog mechanical interactivity, digital interactivity, object display, lighting, sound, face-to-face communication (explainers/storytellers), and many hybrids that evolve through innovation and experiment. It is almost impossible to embrace all of these disciplines in any depth but the objective in a training programme is to have sufficient working knowledge in order to exploit the most appropriate form of media to suit the learning outcomes and objectives embedded within the project brief. In reality a designer will gradually build up a working knowledge of communication media and at the same time a database of practitioners who are able to deliver each of these discrete skills.

It is now common for young practitioners working in many academic fields to have an instinctive understanding of emerging media. Though this field of exhibition design may be more specific, encouraging some additional in depth research through conferences, trade shows and inevitable on line activity. For example at this moment augmented reality, Oculus Rift and innovative applications of social media are 'hot topics' .

Some of these communication opportunities have originated in the museum/science centre domain and deserve extra discussion even though it may add further complexity to any exhibition design training programme. Our exploration of possibilities is always driven by defining needs and only happens through collaborations with technology partners and extensive R&D workshops followed by evaluation. We encourage systematic evaluation in respect of the intuitive use of interfaces and the robustness of manufacture. Typically we set up media lab facilities where we can provide public evaluation and demonstrations for the client.

The growth of interactivity in the museum domain has the central objective to engage the visitor through 'discovery learning', which is most successful when we can encourage an emotional link with information delivery. With an understanding of input/output and the feedback loop it is possible to promote cognitive exploration where initiative and experiment are rewarded. The early days of mindless button pushing or handle turning are long gone.

An important feature of the digital domain is the opportunity to build and capitalize on data management systems that provide storage and access supporting visitor profiles and the growing need for self-selected and bespoke visits. There are presently investigations studying how object displays could be identified and interpreted in response to the semantic user profile delivering the appropriate levels of information. This may involve preliminary profiling and tagging of the visitor in order to generate smart responses.

Within museums the fascinating emerging technologies can challenge the growth and popularity of the entertainment marketplace by exploiting distinctive features such as tangible objects previously described as the 'power of the real'. Through experimentation we have developed a fascinating hybrid where a digital tablet can be used as an augmentation device to unlock interpretive material linked to the object simply by using activating markers in proximity to the object.

In simple terms the tablet is held in front of the object and it comes to life.

We describe this mechanism as 'unlocking the glass case'.

It is also important for designers to track the development of media in other entertainment fields. For example there has been a steady increase in the use of big scenic digital media in stage production for the theatre. These large scale virtual/immersive worlds transfer easily into museum/scientific narrative exhibitions as they can provide extremely powerful immersive environments that provide emotional stimulus for visitors as part of their narrative journeys.

Understanding the visitor

For an exhibition designer it is imperative that they understand visitor socio-demographics that are often included in briefing documents prepared by established museums/science bodies. It provides empirical data that usually underpins the imperative that the visitor experience is for everybody: families, adult experts, cultural tourists, young children, etc. The inevitable reaction is to design for a median intellectual level of a twelve years old visitor. As described above this may well change if we can introduce semantic profiling of our visitors.

In any case an understanding of the visitor profile may have an impact on the tone of voice of the narrative and the look and feel of the aesthetic treatment of the architecture and graphic information. When working in Japan we used a local Japanese graphic designer rather than a highly experienced London based agency, which had much more appeal for a local audience.

When designing 'Manchester Science' for the Museum of Science & Industry in Manchester our task was to present the work of four famous scientists (older men mostly with beards) and ultimately to encourage younger visitors to contemplate a career in science & technology. Already a counter intuitive starting point for what was to be an inspirational gallery for younger visitors!

A long gallery with an entrance and exit at one end encouraged us to create a 'reverse timeline' with world science history of the last 200years on one side and Manchester science history on the other side. This mechanism delivered the visitor back to the present time as they passed along this 'reverse timeline'. Major Manchester events penetrated the wall and conveniently became part of the world display.

Manchester science — a case study

On the Manchester side of the timeline the historic moment dedicated to each scientist was identified and branched off into a dedicated capsule that described their life and times and major contributions to the scientific world. A portal to their life was created and as an introduction we made four pepper's ghost installations using live actors displayed as holographic style animated vignettes, which were particularly fascinating for younger visitors. In true science fiction terminology the capsules were described as 'holodecks' where we described each scientist using object rich displays and graphics, hands on interactivity describing some of their seminal discoveries with the back wall projecting video animation in support of the interactive devices and the key narrative of their scientific work.

Each of these *holodecks* was highly immersive and self-contained providing a very focused and distinctive story of each of these Manchester heroes.

The exit installation was dedicated to the work of contemporary local scientists who described their work through video interviews augmented with support from a dynamic conveyor system carrying specific objects related to their research. These objects passed behind screens that transformed them into devices interpreting the object as an X-ray or complimentary animations bringing their stories to life.

Referring back to the *Venn diagram* starting point, for this project the architectural layout responded to a flow and return movement system incorporating four immersive spaces and a modernist exit sequence. The narrative of the four

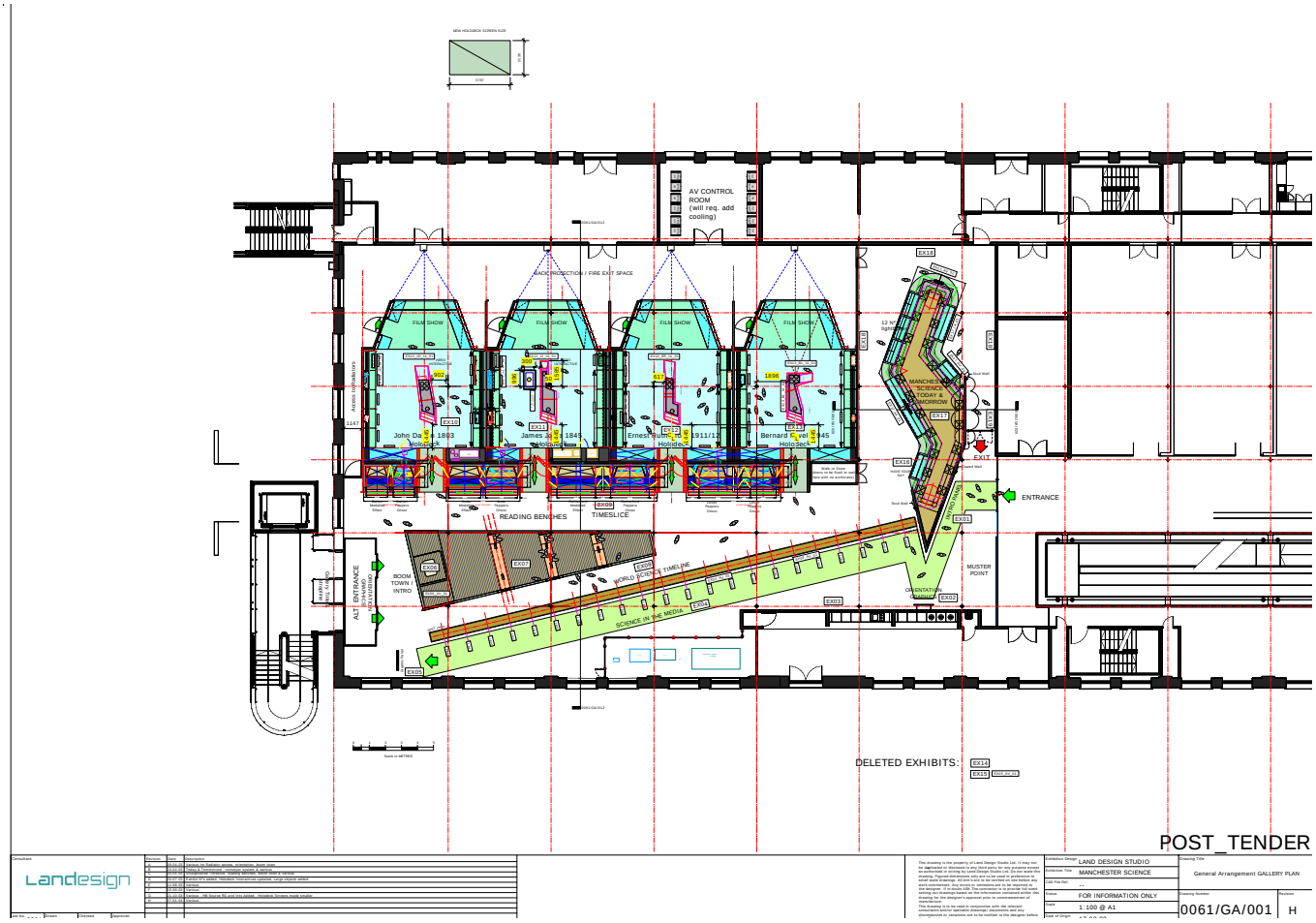

Figure 2. Manchester Science Gallery plan (Land Design Studio Ltd, London).

scientists was a given but the 'reverse timeline' provided a valuable device to locate them in the context of time and world science, and the communication media combined the diversity of object display, smart interactivity, and animated video. The end sequence presented a unique way to relate to real people and the science behind their research. The key objective to attract young children to science through the unlikely history of Manchester scientists was overcome through innovative approaches to media using pepper's ghost (mini holograms), compelling animations, interactivity set within atmospheric 'holodecks, and an end sequence that attracted their interest through topical science research being undertaken by young and approachable scientists.

Summary

It is quite common for the exhibition designer to have been originally trained in interior design or architecture with the narrative development & media communication skills gradually evolving as they are in practice. The ready made skills drawn from such training provides an understanding of the architecture of space and enables the articulation of an initial conceptual design response to a client brief providing preliminary proposals for the quality of volumetric space, the flow and narrative sequences and practical issues of operational and functional planning.

Table 1. Exhibition developer — tasks and competences.

Architecture of Space	**Narrative Development**	**Appropriate Use of Media**
Input support for the conceptual masterplan.	Interrogate primary information contained within brief.	Exploit the most appropriate form of media to suit learning objectives embedded in the brief.
Break brief into functions and space layouts.	Extend or reduce.	Build up a working knowledge of media and emerging technologies.
This includes; aesthetic look, adjacencies, narrative/movement sequences, visitor dwell time.	Encourage involvement in brief writing from beginning.	Evaluate prototypes.
Consider operational planning, back of house, café, retail.	Suggest design tools that make brief more achievable; budget, space, technical possibilities.	Check clarity of input/output mechanisms for interactivity.
Be aware of technical requirements; mechanical, structural, lighting, acoustics.	Consider complementary communication; books, on line activity.	Consider different levels of interpretation using semantic user profiling alongside extensive database.

It may come as a surprise that my passion for this discipline of exhibition design has evolved over 45 years. My original training was as an architect within a very conceptual institution The Architectural Association in London. I quickly moved into film, television (BBC) and theatre design where I was fascinated by the power of the script, the narrative and the need to transform the story into 3D environments. My next stop was an international design consultancy called 'Imagination', where I learnt about commercial imperatives, the importance of the brand and also the need to understand the profile and demography of visitors. Our company Land Design Studio was formed in 1992 and has completed €130m of cultural and commercial exhibitions. Our distinctive approach to design has always focussed on the integration and appropriate use of communication media from which we have built a reputation and won many international awards.

The experiential designer (exhibition designer) puts the visitor at the centre of a promenade that has to acknowledge architectural/spatial conditions, objects (described above) alongside atmospheric light & sound and a fascinating mixture of media, sometimes all mediated by trained explainers. We may borrow a terms from French filmmaking if we say that the task of the exhibition designer is to become the *auteur* of the *mise-en-scene*. If we set this observation alongside the extended learning through my personal journey described above I am beginning to build the framework of what is clearly a complex field of study that has yet to emerge as a sophisticated graduate course within UK universities who are well respected for their design & architecture programmes. So it may be that my very simple outline proposal will remain hypothetical and merely provide a platform for debate and inspiration for some readers to undertake 'the long journey' because it's worth it.

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Peter Higgins is Creative Director at the Land Design Studio in London. He trained at the Architectural Association and has worked as a designer for the BBC and in London's West End Theatre. In 1992 he formed Land Design Studio who have built a reputation in integrating architecture, narrative design and communication media for museums, science centres, visitor attractions and commercial environments. For many years Peter's interest in the crossover of design disciplines has encouraged Land's collaboration with many leading architects and media practitioners such as Ars Electronica. Peter is committed to design education and is visiting professor of interpretation at Central St Martins. In 2009 he was awarded an RDI (Royal Designer for Industry). Land's holistic approach to place making and experiential design is reflected in the range of clients that include; Foreign & Commonwealth Office, Anschutz Entertainment Group, Miraikan Tokyo, National Parks Singapore, V&A, Natural History Museum and The British Museum, where in 2013 they designed Pompeii & Herculaneum. E-mail: peter@landdesignstudio.co.uk.

How to cite

Higgins, P. (2016). 'Developing narrative exhibitions and science centres. Training needs of exhibition designers'. *JCOM* 15 (04), C04.

ISSN 1824 – 2049. Published by SISSA Medialab. http://jcom.sissa.it/.