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FIFTEEN YEARS OF TALK: Newspaper discourses on Ireland's 'interactive' science museum

Marguerite Barry

Introduction

Plans for a world-class interactive science museum in Ireland have been in circulation for many years in response to a perceived crisis in public engagement with science and poor levels of achievement and take up in science education (see Government of Ireland Task Force, 2001). Indeed calls for a general national science museum to house Ireland's history of scientific development and artefacts go back even further (see Clarke, 1973). However, during the 1980s a number of science interest groups formed which aimed to develop an 'interactive' science museum in Ireland, following the success of similar science museums internationally. The idea gained momentum in the 1990s, and by 2003 formal government support was secured.¹ In 2006, an agreement was reached on a site near Heuston Station in Dublin and plans were formally devised to open the museum in 2011.² However, to date no further development has taken place.

The future of the interactive science museum is uncertain due to the change in the public funding climate and particularly in the circumstances of one of the main sponsors (AIB bank). While the project plans remain on ice, this article examines public discourse around the interactive science museum plans. It presents an analysis of fifteen years of newspaper coverage of the interactive science museum plans between 1995 and 2009, focusing specifically on the concept of interactivity. It explores what the term 'interactive' in an interactive science museum means, what role interactivity plays in communication, and how it relates to the purported educational or pedagogical benefits of such a museum. It also examines the voices, or 'discourse communities', involved in discussions or promotion of the museum idea, focusing on differences, if any, in their representation of the museum and specifically of interactivity. The analysis also explores how the representation of interactivity can present insights into the strategies and intentions operating within these discourse communities.

As a location of display and exhibition of which communication is (at the very least) a part, the science museum has a distinct character in its use of media and, in particular, the relatively smooth adoption of digital communication technologies.

¹ See Department of Enterprise press statement 'Exploration Station a "voyage of discovery" for children and young adults – Harney', available at <http://www.djei.ie/press/2003/181203.htm>. (Accessed 15 June 2011.)

² See Digital Hub company information 'Exploration Station: Ireland's national centre for science and discovery', available at http://www.thedigitalhub.com/enterprise_research/company_directory.php?action=view&client_id=39. (Accessed 9 June 2011.)

These technologies offer opportunities for the public to communicate in different ways with museum content as well as enhancing public access generally, and give valuable information to the institutions on visitor activities. Indeed, in museum studies, the once contentious question of whether a museum can be regarded as a medium is now considered a valuable if overdue addition to the methods available in researching all the activities taking place within the museum context (Silverstone 1994; Macdonald, 2006; Witcomb, 2006; Henning, 2006). Although generally neglected as a research context from a media and communications perspective, the findings presented in this article also support the argument for considering museums as media.

Public discourses around the interactive science museum are not just talk. They attach recognition of interactivity to a specific communication context (the museum) but are also useful in identifying the discourse communities behind particular representations. According to Swales (1990), discourse communities are defined by their 'common goals, participatory mechanisms, information exchanges, community specific genres, a highly specialized terminology and a high general level of expertise' (1990: 29). Of particular interest to this study is what Bizzell (1992: 224) calls the 'the value contradictions that arise when discourse communities overlap'. By identifying and examining the discourse communities operating behind and within the texts, this study explores the strategic interests in play, whether from a political or commercial outlook or from a particular theoretical perspective; it also explores whether groups mix discursive themes for specific communicative purposes.

The article begins with a brief overview of interactivity in media and communications and in connection with interactive science museums. It then presents a synopsis of the larger study on which the discourse analysis is based, followed by the analysis itself, concluding with a discussion of the findings.

'Interactive' Media, Communications and Museums

Interactivity has been described as a distinct characteristic of new media (see Jensen, 1998, McQuail 2000, Bassett 2009). But it has also been described as a 'myth' (Manovich, 2001), carrying a 'cluster of associated meanings' (Lister, 2003: 19) and is problematic and 'notoriously' difficult to define (Jensen, 2005). However, its meaning matters because interactivity is considered to have value in terms of its impact on communication 'effectiveness' and information retention (see Heeter, 1989; Koolstra and Bos, 2009).

Although a contested concept, theories on interactivity tend to define it as either (a) a characteristic of the medium, (b) dependent on the context in which messages are exchanged, (c) 'a perception in users' minds' or a combination of all three (see Kiousis, 2002; Reinhard, 2011). Understanding interactivity and the role it plays in communication is relevant to all who contribute to both its design and use and therefore agreement on its meaning is useful if not essential to successful interactive communications.

The 'interactive' exhibit in a museum or gallery gets its name from its function – it is considered interactive, therefore it is described as 'an interactive'. But the label also describes the entire institution, the 'interactive science museum' – an increasingly familiar feature of cities worldwide (see Gregory and Miller, 2000). Interactive science museums emerged during a particular period of huge 'intellectual, financial and technical investment' in science presentation internationally since the 1980s,

driven by a perceived crisis in public knowledge of science (see Barry, 1998). Indeed interactivity is not just a central feature of science museum design but a 'prerequisite', and can be traced back to the 19th century origins of science museums (see Hughes, 2001).

Ideological tropes associated with interactivity such as 'empowerment' and 'participation' are utilised in science museums to bridge the perceived gulf between science and society (Barry, 1998). Indeed interactivity in museums is deliberately associated with ideas of 'choice' and 'democracy' as though these are natural partners for the concept (McDonald, 2002). The use of digital technologies for display and communication has repositioned museums within the digital space, to the extent that they have even been mooted as potential drivers of the 'information society' (Keene, 1999).

Constructivist and 'discovery' learning theories are heavily influential over science museum and exhibition design, where interactivity is used to help visitors 'experience' science personally (see Macdonald and Silverstone, 1990, Barry, 1998, Hughes, 2001). Rhetoric around 'exploring' science, 'discovery' techniques and 'hands on' learning, frequently associated with science museums, shows how such pedagogic theories inform interactive exhibit design in terms of the goals and strategies in communication. Constructivist theories have been criticised, however, for not always being appropriate or effective, and for possibly even leading to cognitive overload (see Kirschner, Sweller and Clark, 2006). There is also some evidence that this design approach in interactive science museums confuses entertainment with education and can lead visitors to satisfying yet false conclusions (Barry, 1998). Therefore, rather than viewing the 'interactive' as an exhibition object, it should be considered instead as a 'mode of display' or an aesthetic design tool for museums (see Witcomb, 2003; Henning, 2007). The 'fetish' of interactivity in science museums may even be part of a branding exercise in the increasingly homogenised science museum experience internationally (see Hughes, 2001).

The strategies and procedures of interactive communication are only beginning to be understood in the context of museums, in the changing nature of their communicative features and purposes and their similarities and differences with other communications. By analysing public discourses on the interactive science museum, this article explores how conflicting representations can reveal strategies operating behind the discourse, and also highlights the value of the museum as a context for exploring communication concepts like interactivity in general.

Quantitative and Qualitative Approach

The analysis presented here is based on results from a larger study of how 'interactivity' featured generally in newspaper coverage over fifteen years from 1995 to 2009.³ The study was designed in two parts – a content and discourse analysis. A detailed quantitative content analysis examined a random stratified constructed sample of c.900 articles representing one third of the total population of articles referring to interactivity over the period. This revealed a wide variety of topics,

³ The study focused on coverage from the *Irish Times*, which was the only newspaper to reliably and consistently provide archive material for research across the entire timeframe. The data was retrieved from the LexisNexis database and each article cited (detailed here in footnotes) is available to download from there.

contexts of communication, and representations of interactivity which then provided the basis for a qualitative discourse analysis of the 'themes' of interactivity that emerged. The results relevant to the discussion on the interactive science museum are presented as follows:

Content Analysis

Museums were frequently found under a number of variables in the content analysis, for example emerging among the top ten topics associated with interactivity (see Table 1). This result was greater than anticipated and reflects the sizeable number of opinion columns, features and informal reviews of museums/exhibits in Ireland and abroad as well as ongoing coverage of the planned science museum.

Table 1: Topics in order of frequency

<i>Topic</i>	<i>(%)</i>
ICT Industry	14
Media Production	11
Media Content	10
Arts/Culture/Entertainment	9
Media Delivery	6
<i>Museums</i>	5
Education/Training	5
ICTs and Society	5
Internet use/access	4
Private sector Business (non IT/Media)	4
Academics/Research, Human interest, Other (specified), Public policy (inc. Information Society*)	each 3
Tourism, Science, Sport, Domestic politics, Architecture/Construction/Development	each 2
Health, International relations	each 1
Legal issues, Public service, safety	each <1

This is important as it indicates that museums in general are closely associated with media and communications via interactivity, even though they do not have the formal review status of other media such as games, film and so on. It also supports the argument proposed by Silverstone (1994) that museums should be regarded as media, and raises questions as to why they are not part of the formal media canon for review.

The 'venue' variable concerns the context of communication and gives detail on *where* interactivity happens. The findings show that almost half are public venues, which include exhibition spaces and museums (as shown in Table 2), a significant margin over private, hybrid or other venues.

Table 2: Public and private venues of interactivity

<i>Venue – Public/Private</i>	<i>Frequency</i>
Public space (Work, Education, Exhibition space, Public Other)	48%
Hybrid (Online)	24%
Private space (Home, Console/Player, Private Other)	21%
Other/Undefined	7%

This is important as most research into interactivity focuses on private communication contexts and interactive design is itself heavily informed by Human Computer Interaction (HCI) theory, which generally assumes a private single user and interface configuration. These findings suggest that interactive communications may take place more often in public and that the museum venue may be neglected as a context for communication research.

In terms of what media or technology is involved in the interactive reference (if any), the third most frequent configuration found is 'Exhibit' at 10% (as shown in Table 3), which covers a variety of physical configurations from touchscreens to objects. This finding follows the consistent association of museums with interactivity throughout the sample.

Table 3: Configuration of interactive reference

<i>Configuration</i>	<i>Frequency</i>
www	17%
TV	14%
Exhibit	10%
Title (of company, course, conference etc.)	8%
Face to face – non mediated	7%
E-learning application, Generic unspecific description – e.g. services, products etc.	each 5%
CD/DVD, Theatre/performance, Building/Space	each 4%
Map/guide application, Software – desktop, Other Configuration	each 3%
Touchscreen/kiosk/whiteboard, Game – console, platform, Internet application	each 2%
VR/Sensor/Haptic device, Advertisement	each 1%
Online only game, Other networked application	each <1%
Phone application, Fictional/futuristic, 'Multimedia'	each <0.5%

Finally, the quantitative analysis identified a number of different themes in the representation of interactivity in the coverage. The *pedagogical* theme was among the most frequent and is found where interactivity is associated with teaching and learning and thought to impact positively on outcomes. The 'interactive science

museum' is one thread among a number found to be highly representative of the *pedagogical* theme of interactivity. However, as the discourse analysis shows, this theme overlaps with the *commercial, empowering, aesthetic, ludological, information society* and other thematic representations of interactivity, indicating that multiple meanings of interactivity circulate together in public discourses.

Discourse Analysis

Fifteen articles in the sample make reference to plans for an interactive science museum in Ireland, varying in style and content between news updates, policy announcements, press releases, stories on development projects and general opinion pieces on the value of science museums in society. This analysis examines a selection from the thread, beginning with an article linking the idea of a science museum to the value of science in society. The author, a professor of biochemistry and weekly columnist on science issues in the *Irish Times*, stresses the importance of scientific literacy and how it might be achieved:

In Ireland, two basic initiatives that spring to mind are the establishment of a strong primary school science curriculum and the foundation of a large general science museum with good interactive exhibits.⁴

Interactivity is presented as a characteristic of the medium (the exhibit). The exhibits are interactive, but no further explanation is given of what they are or how or why they might improve scientific literacy. The suggestion is that the interactive exhibits usually found in science museums are inherently associated with learning and the acquisition of knowledge. In isolation, the article gives the impression that this view was generally accepted throughout the science community. But the next article presents a dissenting view, in a lighthearted paean to Dublin's then only existing formal science exhibition space, the Natural History Museum. The article author, a freelance science writer, describes why Steven Jay Gould, the author of a recently published book devoting a chapter to the museum (see Gould, 1995), was so taken with it:

The triumph, for Gould, is a faithful restoration to the original, to the 'Victorian cabinet museum'. For, despite his reputation as a science populariser, he has little time for the hi tech interactive computerised scientific exhibits so popular elsewhere today.⁵

Like the first article, this again invokes interactivity as an adjective describing communication technology, indicating the kind of exhibits available in science museums but without any detail. An intertextual analysis of Gould's chapter on the Natural History Museum in Dublin, titled 'Cabinet Museums: Alive, Alive O!', confirms that he is indeed highly sceptical about their value, referring to the exhibition design as follows:

⁴ 'Scientific knowledge essential for society', by Dr William Reville, *Irish Times*, 14 August 1995.

⁵ 'An Irishman's Diary' by Mary Mulvihill, *Irish Times*, 17 June 1996.

... the curators of Dublin have stood against most modern trends in museums of science – where fewer specimens, more emphasis on overt pedagogy, and increasing focus on ‘interactive’ display (meaning good and thoughtful rapport of visitor and object when done well, and glitzy, noisy pushbutton-activated nonsense when done poorly) have become the norm. (Gould, 1995: 244)

Gould sees interactivity as a trend in display rather than a tool for pedagogical effect, suggesting it occurs in the space between visitor and object, an aspect of interpretation as much as communication. An ‘aesthetic’ theme is thus introduced, as the success of interactivity depends on design ‘done well’ or ‘done poorly’. The mark of success is ‘rapport’, again implying a relationship between visitor and object, but with no detail as to how and when this is achieved or measured. His sceptical view is emphasised further by his use of scare quotes around the term ‘interactive’ which has the effect of raising questions about its meaning.⁶

The Natural History Museum in Dublin is typical of the Victorian science museum style, which sought to educate in a highly instructionist way. Such museums were considered the repositories of fact and knowledge and visitors as vessels to be filled (see Witcomb, 2006). Many such museums were originally private collections and only opened to the general public (and not just ‘learned men’), because access was thought to bestow advantages in terms of education (see Abt, 2006). So rather than standing against modern trends in display, the ‘curators of Dublin’ were simply adhering to the exhibition design style of its origins. Indeed, they were also restricted both physically and financially from fundamentally changing the original communication style of exhibits (see Monaghan, 2007). The late 20th century interactive science museum movement, on the other hand, sought to move away from this paternalistic style towards a more competitive visitor business (Barry, 1998), involving a kind of ‘glitz’ for which Gould has little time.

Gould asserts that pedagogy in modern science museums is in fact more ‘overt’ than in the Victorian cabinet museums, which were really ‘microcosms for national goals of territorial expansion and faith in progress fueled by increasing knowledge’ (1995: 243). The Victorians saw expansionist and imperial benefits to the acquisition of knowledge, while modern science museum enthusiasts extol the personal and societal profits of science literacy. But both eras are at one on their concern with progress, represented by the former in the content of exhibits and by the latter more in the manner of their display.

Site Specifics

The thread continues with a front page news story from 1997 outlining the plan by a volunteer group to convert an old power station in Dublin bay into a science museum, as part of a large redevelopment plan:

⁶ Scare quotes are said to turn an expression meaning ‘X’ into an expression meaning ‘so-called ‘X’’ (see Haack, 2003). Scare quotes communicate a number of different attitudes to the term within – insecurity over whether the term in quotes is correct or correctly used, scepticism on the part of the writer around the meaning of the term itself, or lack of endorsement by the writer of the use of the term by a third party quoted in the article.

Far from keeping displays under glass, visitors will be encouraged to push buttons, turn cranks and otherwise panhandle [sic] the exhibits ... Many interactive science centres were visited, [according to the project manager] and good ideas have been borrowed. The Pigeon House plan includes similar facilities to Paris' museum of Science and Industry at La Villette with its Cité de Métier (city of jobs) which links exhibits with educational, training and career information.⁷

The pedagogical view of interactivity is represented in the exhibit descriptions but also in the communication effects of linking an interactive museum to 'educational, training and career information', referencing international comparisons. The pedagogical aspect of interactivity works at two levels – locally where visitors interact with exhibits, but also at institutional level where the museum interacts with other agencies.

But despite a stated aim to be open for visitors in 2000, this plan never went further. Instead, less than two months later, the State's largest ever urban renewal scheme in Dublin's docklands was unveiled, which included an interactive science museum as 'anchor' project, as reported in May 1997.⁸ While only making minor reference to an 'interactive science museum', this article hints at a perceived public value in such a concept but also suggests difficulties between the new Dublin Docklands Development Authority and the consultants who produced the report, and the potential for political interference in the project.

Three years pass before the first detailed explanation is given of what an interactive science museum might actually be, in an opinion piece by the recently retired president of Dublin City University, published in the *Education* supplement in 2000:

In a country where almost every boreen seems to have a museum of some kind, it is surely revealing that we have no equivalent for science. But what I have in mind is not a museum in any traditional sense of that term. A science centre, on the model that is now well proven in many places around the world, is a place where one can see science happen – and even more important, experience science by doing it. Interactivity is the key word in successful science centres. A world-class centre of this kind could put science on the map for the Irish public. Done well, a science centre provides a spectacular public attraction. It could be the essential foundation-stone of a national campaign to make science and engineering more attractive as school subjects and as career choices. It could, in a phrase, glamorise science in a way it never has been in Ireland before ... Much of the time, science centres act as a supplement to teaching in schools – providing facilities that no school could ever offer and structured experiences that can be directly tied into the curriculum.⁹

7 'Old Pigeon House power station may be science museum' by Dick Ahlstrom, Science editor, *Irish Times*, 20 March 1997.

8 'Docklands scheme would be largest ever' by Frank McDonald, Environment correspondent, *Irish Times*, 31 May 1997.

9 'How can we attract students to science?', by Danny O'Hare, *Irish Times*, 23 May 2000.

This account renders any further debate around the appropriate pedagogical approach to science in museums superfluous. Again, international practice is provided as sufficient proof of concept for how exhibits within science museums produce positive learning outcomes. The concern is that readers may compare science museums to dusty historical collection and conservation oriented museums rather than the ‘spectacular public attraction’ the writer has ‘in mind’ (asserting some ownership of the idea in the process). Yet the dismissal of historical museum styles of exhibit is remarkably similar to the Victorian outlook on progress which similarly treated the past with ‘condescension’ (see Gould 1995: 241).

Here, interactivity is the ‘key word’ invoked alongside the ‘doing’ of science, reflecting the style of pedagogy that such science centres have come to represent. This model of ‘doing science’ is associated with science museums internationally and can be traced back to the very earliest examples in the nineteenth century (see Gregory and Miller, 2000). However, describing the museum as a ‘spectacular public attraction’ suggests success is measured in visitor numbers and popularity as much as in pedagogical outcomes. Its success in fact will be measured by its influence over choices made by students to study science. This invokes an empowering and potentially commercial aspect of interactivity rather than a purely pedagogical effect.

The next article, some months later, reports that while touring the Shanghai science and technology museum, the Tánaiste Mary Harney announced formal cabinet approval would be sought for a science museum:

It is envisaged that it would be an interactive museum in which children and other visitors could interact with exhibits, and with interchangeable sections which could be exchanged with museums abroad ... Ms Harney said she became enthusiastic about such a project after visiting the science and technology museum in Tel Aviv last year. ‘The reasoning behind such projects is that Ireland has got to stay at the forefront in the area of science and technology’, an official [from the Department of Enterprise Trade and Employment] said. ‘It’s very important that we interest kids in science and to take science in secondary schools.’¹⁰

This is the first comment in the thread from a public representative. It initially represents a pedagogical theme, noting the importance of encouraging interest in science and so on. However, in the first sentence, the words ‘interactive’, ‘interact’, ‘interchangeable’ and ‘exchange’ appear to merge into one another, suggesting that public representatives see the role of an interactive science museum as a selling point for Ireland, a tool for establishing international relationships or a marketplace of exchange. This again suggests a perspective remarkably close to the Victorian outlook, where such museums reflect progress in society. Yet the reference to Ireland being at the ‘forefront’ of science and technology places the political outlook somewhat at odds with the general consensus that science literacy is generally poor in Ireland. The ‘reasoning’ is based on the perception government wishes to create rather than pedagogical goals. The reference to science museum visits forming a regular part of

¹⁰ ‘Harney reveals museum plan’, by Conor O’Clery, Foreign Correspondent, *Irish Times*, 13 September, 2000.

trade missions reinforces a commercial theme operating alongside the pedagogical representation. Meanwhile the museum's other, perhaps more minor role as an attraction for 'children and other visitors', invokes a particularly frequently found association between interactivity and children. This representation makes an assumption that interactivity is attractive for children, with no rationale given as to why. The casual use of the term 'kids' by a government department official suggests that the pedagogical aspect of interactivity is of a low level, nonspecific, instructionist kind.

By 2001, criticism is emerging over the lack of progress on the science museum plan:

For 15 years, the Discovery group has been seeking to persuade the DDDA, its predecessor and several Government departments that the best possible use for Stack A is an engaging and interactive science museum ... The DDDA never saw a science museum as a viable use for Stack A: quite apart from any reservations of principle, the space it has allocated for museum use is too small to accommodate the sort of science museum that would capture the public imagination.¹¹

This article reports that the Stack A building in Dublin's docklands, long mooted as a science museum location, has now been earmarked as a shopping centre, because 'that's what people want, as the DDDA sees it'. Critical of both government and developers for prioritising commercial over educational projects, the newspaper's environment correspondent contrasts the situation with developments in Belfast, where the W5 science museum has just opened. Designed to 'unlock the scientist in everyone', W5 has 'floor after floor of interactive exhibition spaces' and 'is just as engaging as the Cité des Sciences in Paris or the Metropolis science centre in Amsterdam.' The enthusiastic review, again including international comparisons, notes the pedagogical aspect of interactivity, found in 'hands on' and 'engaging' exhibits. Visitors are not just handling but 'playing' with exhibits, reflecting a ludological theme more frequently found in discussions of interactivity in games. An interactive science museum had finally arrived on the island of Ireland but, unlike IKEA, the need for a second one in Dublin remained to be proven.

Two months later, a letter to the editor from the Discovery group (the science museum promoters quoted in the previous article), cites an Irish Government Task Force report which identifies the establishment of a national science centre as an action area.¹² The letter refers to explicit support given by government, and outlines what is required to progress the idea according to Discovery's plan. But the most interesting aspect for this analysis is the most detailed explanation yet of what an interactive science museum is:

¹¹ 'Making the sums stack up' by Frank McDonald, *Irish Times*, May 4, 2002. The DDDA refers to the Dublin Docklands Development Authority

¹² The Report and Recommendations of the Task Force on the Physical Sciences (2001) (whose chairman was Danny O'Hare, author of a number of articles in this thread) makes reference to a science museum/centre under section 5.1: 'National Interactive Science Centre: The Task Force is conscious of the need to promote science in the wider arena, among parents and the general public, as well as among the student body. It welcomes the fillip that the advent of a National Interactive Science Centre would give to increasing the public awareness of science at a time when it seeks to promote science uptake in schools and at third level and encourages Government to take an early positive decision to develop such a National Science Centre.'

Key characteristics of science centres are their space (versus time) frame, social context, three-dimensional, multi-sensory interactive qualities, employing a very large or very small scale, and presenting science both in and out of context. Therefore, curiosity, questioning, learning at a leisurely pace, accelerated learning, playfulness, exploration and avoidance of failure are the qualities that grow from a visit to a science centre. Informal science education uses social interaction and inter-generational learning and invites people to participate on a voluntary basis. This contrasts with formal science, which is taught within a school structure, on a time scale and directed by a teacher. The two are complementary, not mutually exclusive.¹³

This considered appraisal contains references to a variety of pedagogical approaches that interactivity supports. The ‘key’ characteristics outlined use further themes of interactivity in support of pedagogical outcomes. First, the ‘space (versus time) frame’ of science centres suggests a visitor experience where perception of space has a pedagogical effect as much as the procedure of acquiring information over time. This utilises an *aesthetic* theme, in the merging of design and experience and impact on visitors’ senses. It reflects the original vision for the Exploratorium in San Francisco, the model for many modern science centres around the world which attempt to use the ‘power of perception to access the natural world’ (Gregory and Miller 2000: 202).

The aesthetic perspective on interactivity also arises in how the phrase ‘interactive science museum’ describes a building and the space inside as ‘interactive’ as much as the individual exhibits or approaches to pedagogy in the exhibition design itself. Interactivity describes the entire museum as though it is itself a technology of communication – a medium. This echoes Silverstone’s proposition that in their treatment of spaces, times and logic as much as their ability to educate and enlighten, museums have the potential to be analysed themselves as media (Silverstone 1994: 161).

The ‘social context’ described anticipates the research into visitor behaviour at science museums in subsequent years. Visitors to museums tend to approach exhibits in pairs or groups (as much as individuals) and the manner in which groups interact with each other and with strangers as well as with exhibits in the same space relates directly to visitor outcomes (see Reading, 2003; Heath et al, 2005). This alludes to an *empowering* aspect of interactivity; its potential to create community around a common purpose, to change the nature of a communication relationship or expand the possibilities for how the pedagogical effects might work through social collaboration and input.

Lastly, the ‘three dimensional, multi-sensory interactive qualities’ allude to the immersive aspects of interactivity reflecting both *aesthetic* and *ludological* aspects of interactivity. The writer states that the educational approach of museums and schools, while different, ‘are complementary, not mutually exclusive’, thus defusing a point of potential conflict between the constructivist style of interactive science museums and the instructionist approach traditionally used in schools. By using overlapping themes of representation, such zones of conflict can be transcended by allusion to spatial and social as well as pedagogical benefits.

¹³ ‘Case for National Science Centre’, letter from Rosemary Kevany, Director of Discovery group, the *Irish Times*, 5 July 2002.

The Fetish of the Science Museum

Two and a half years later, in January 2005, a brief reference to the museum appears in the commercial property supplement:

The Office of Public Works and Eircom expect to secure at least EUR 60 million for the eight acres opposite Heuston station which has planning permission for a mixed development of offices, apartments, an hotel, shops, restaurants, bars and an interactive children's museum.¹⁴

Initially, the description as a 'children's museum' appears to be a mistake, perhaps a reference to another plan. Whether a description of the author's or from elsewhere, it reiterates how interactivity, as an aspect of museum design, is particularly associated with children. In any case this was indeed the location chosen for an interactive science museum (see further) and the first reference to finance in the thread.

By October 2006, the State's first interactive science museum appears to be finally underway and 'should be up and running near Heuston Station, Dublin by 2009'.¹⁵ A detailed design concept is outlined by author Danny O'Hare, now the museum chairman, in his second article in this thread.¹⁶ He suggests the interactive science 'centre' will by nature be a more exciting experience than other museums, employing both aesthetic and ludological themes, with a subtle switch in terminology from 'museum' to 'centre'. One of the stated purposes of the museum/centre, as noted by O'Hare in his earlier article, is to 'glamorise science' and make it more attractive to students. This aesthetic quality is different to that described by the Discovery group. The attraction appears more superficial and is aimed at connecting interactivity to other outcomes in other contexts – e.g. choosing science subjects in school – rather than the sensory effects on individual visitors or indeed any immediate pedagogical outcomes. The exhortative constructivist pedagogical discourse style around interactivity appears again:

Though it will be a resource visited by school groups in the same way they now go to museums and art galleries, this centre will offer a different and (hopefully) a much more exciting experience. It will not merely be a question of 'let's push the button, look and walk away'. Instead it will be a real laboratory for learning about all science disciplines, maths and engineering, with workshop spaces to provide opportunities for hands-on experimentation and investigation. Interactivity is at the very heart of the concept, and each gallery in the centre will be staffed by people trained to engage the visitor in learning and understanding.

This 'exciting experience' of 'hands on' exhibits and 'interactivity', echoes Hughes's (2001) observation of the 'fetish of the interactive exhibit'. It reveals a commercial

¹⁴ 'EUR 60m expected for site at Heuston Station' by Jack Fagan, Property Editor, *Irish Times*, 18 January 2005.

¹⁵ As reported in 'Brave new world of Exploration Station can light the spark for science' by Danny O'Hare, *Irish Times*, 17 October 2006.

¹⁶ The concept was devised by Californian exhibition design company Gyroscope and an artist's impression is available at <http://www.gyroscopeinc.com/ExplorationStation.html> [accessed March 1, 2011]

theme, where the value of interactivity is found less in pedagogical effects for visitors, and more in its allure and the visitor numbers it is seen to attract. The interactivity here ‘is at the heart of the concept’. Staff are as much part of the interactivity of the museum as the exhibits and the design of the space itself. However, where staff are trained to help visitors to use interactivity – via social interaction – to pedagogical ends, the pedagogical effect may be multiplied, but it describes an instructional rather than discovery style of learning.

The author goes on to describe the museum as a key project in the programme for government, ‘an essential need in our pursuit of leadership in the knowledge society’. This directly alludes to the concept of the knowledge or ‘information society’ (KS/IS) which appeared sporadically in the sample as a minor theme in discourses around interactivity. As a policy concept, it is assumed to have an inherent association with investment in education, although has also been used as a general ‘buttress’ for many policy positions (see Trench, 2009). However, it echoes the Victorian perspective of linking education and progress to a society’s view of itself. The question is if the KS/IS is created by the pedagogical tools available to disseminate knowledge (e.g. an interactive science museum) or whether their presence proves its existence. The perspective emerging from this article is that interactivity promotes the uptake of science in higher level education and serves KS/IS policy goals, inasmuch as these are measurable. Both the governmental sponsors and the author as museum/centre promoter (and now chairman) are at one in this regard. This position would also have been supported by the *Irish Times*, seen to regularly endorse KS/IS policy during this timeframe (Trench, 2009).

The article describes the project as ‘a partnership that unites the Government and the private sector’. Over half a million euro has been spent, raised from some public bodies and ‘from individual contributions by members of the Board of Exploration Station’. Without any further detail on who is involved, how much is contributed and by whom, questions arise as to which interests may be influential over the pedagogical perspectives in play. If, as this article clearly states, interactivity is at the heart of a concept which is estimated to cost €30 million to set up and a further €3.5 million in annual running costs (at 2006 prices), then the precise understanding of interactivity is an issue of public interest. On the subject of finance, a brief reference to the museum (again a ‘childrens’ museum’) appears two months later under funding announced in the 2006 December budget:

Initial capital funding of EUR 250m was allocated for a new national children’s museum, which aims to open in 2009 on Military Road, adjacent to Imma. The proposed interactive science centre, Exploration Station, has a board of trustees chaired by former DCU president Daniel O’Hare. The OPW is involved in its design and building.¹⁷

In February 2007, the architectural plan for ‘the state’s first interactive science centre aimed at children and young adults’ was launched by Taoiseach Bertie Ahern.¹⁸ This article briefly details the project design, as in previous articles, but also states the building will be a partnership of the Government, AIB bank and ‘the volunteer board

¹⁷ ‘Money, money, money’ by Deirdre Falvey, *Irish Times*, 9 December 2006.

¹⁸ As reported in ‘Interactive science centre plans unveiled’ by John Downes, *Irish Times*, 6 February 2007.

of trustees of the centre', while stating that 'figures for the costs of the project were unavailable'.

Taoiseach Bertie Ahern describes the 'stunning' new science museum as complementary to 'recent school and third-level based science initiatives funded by Government', saying it would be 'the departure point for a voyage of discovery ... its mission will be to inspire a lifelong passion for discovery and innovation.' This is an overt realignment of the government position on the interactive science museum with the 'discovery' or constructivist pedagogical perspective, emphasising local and individual benefits, with a little bit of Star Trek thrown in for good measure.

However, two and a half years later, in November 2009, the last reference to the science museum appears, ominously perhaps, in the *Property* supplement, in a feature about the development where the museum was to be built:

Given the state of the public finances, there is uncertainty over whether an interactive science museum, Exploration Station, will ever be built. Indeed, the OPW-owned site looks almost abandoned apart from its partial use as a carpark for the HSE, the Garda and the Revenue Commissioners data centre.¹⁹

And with that, the idea of an interactive science museum, both in terms of this analysis and as a national project came to a standstill.

Caution – Discourse Communities at Work

If there is no such thing as 'a neutral museum exhibit' (see Gregory and Miller, 2000) then there is probably no such thing as a neutral 'interactive' exhibit either. Each discourse community has a view on what interactivity means and what it is for but each is also identified by a clearly defined strategic goal.

The discourse community of 'science experts and popularisers' has a high level of expertise reflected in the academic achievements and public positions of various contributors to the thread. Their stated goal is the improvement of science literacy and therefore the style of writing and reporting tends to reflect the 'deficit model', assuming lack of knowledge on the part of the public, which continues to have a strong influence in science reporting generally (see Trench, 2007). They espouse a constructivist pedagogical perspective on interactivity – interactive science museums improve science literacy among the public by allowing them to discover science through hands-on exhibits. However, the analysis shows that this is not elaborated upon and the texts generally lack detail on how and why interactivity has an improving effect. This may reflect the debate amongst the science communication community over what literacy actually means, whether it is a detailed understanding or merely an appreciation of science (see Gregory and Miller, 2000). Physical access to science, achieved through interactivity, may be enough for some without any further analysis of what this literacy actually produces.

Science museum promoters and producers have a more specific goal of actually developing an interactive science museum. The pedagogical aspect of interactivity is supported by a variety of other discourse tools, which in turn depend on their position in relation to an actual or potential museum plan. Indeed in some ways, the

¹⁹ Eircom's new HQ makes the right connections', by Frank McDonald, *Irish Times*, 19 November 2009.

thread could be divided into the winning and losing teams. The losing team (Discovery) clearly express frustration that despite efforts to manage delicate political and policy issues, their vision of a deep exposition of the multisensory capabilities of interactivity, as part of a complete museum experience, would not be realised. Placing such strong emphasis on the aesthetic and sensory attributes of interactivity in relation to pedagogical outcomes was perhaps a utopian ideal that did not fit with the practicalities of developing an interactive science museum in Ireland. The winning team on the other hand (Exploration Station) moves between the discovery and instructionist perspectives, while also invoking aesthetic and ludological themes to promote the cause, describing an altogether more superficial aesthetic or 'wow' factor in interactive science museum visits. There is a clear awareness of the political space within which such a museum might be possible and the concluding position is aligned, either through winner's confidence or compromise, to the political discourse community goal of the 'knowledge society'. The winning team also have the added benefit of direct access to readers through editorial content, while the losing team must rely on somewhat less effective letters to the editor to argue their case.

The political discourse community has an overtly expressed goal of pursuing particular policies to promote science uptake at third level which is supported by the interactive science museum. They adopt a number of discourse perspectives, depending on the context of their utterances and the audience. When the context and audience are international, promotional strategies are to the fore, along with information society policy goals, which are evident in the terminology used. In fact the pedagogical effects of interactivity in science museums in the discourses here are as much about the benefits to society and the economy as to individuals visiting the museums and using exhibits. However, when announcing specific museum plans in a more local context (combined with the lack of detail on funding for the project), the language used reflects more localised and personal benefits for museum visitors.

Journalists generally belong to a number of discourse communities, depending on the genre they represent, their area of expertise and also what Swales (1990: 30) describes as their 'chameleon-like ability to assume temporary membership of a wide ranger of discourse communities.' Their goal is getting the 'story' and adapting to different discourse community perspectives may help. Science journalists have a similar outlook to the science populariser community in terms of the science literacy goal. However, they adopt a more sceptical news perspective (or contrarian science community position) on whether interactive exhibits are an advance over non-interactive exhibition styles, although with little discussion as to why. The environment journalist focuses on aesthetic and political aspects of design and development, joining the science populariser community in relation to the goals of the science museum development, and critique over perceived obstacles in its path. A political journalism outlook is adopted towards procedural and policy issues, and a straight news journalism perspective on the property market and funding position. Property journalists make the most minor contributions to the thread, but in retrospect perhaps their texts contain the most significant developments in terms of the story. The news journalists, meanwhile, report on all the above but also, crucially, aim to hold the public servants to account in relation to the public interest, asking who pays for interactivity.

Conclusion

Overall, the discourses revealed in the sample do not explain how or why interactivity is a 'key word' in science museums. There are allusions to the pedagogical benefits of interactivity, but other aspects, such as being aesthetically attractive for young people or emblematic of a 'knowledge economy' are more frequently used to build the case. Interactivity itself remains largely undefined beyond descriptions of generic exhibits which can be physically handled. None of the articles, for example, compare an interactive and non-interactive exhibit for pedagogical design and outcomes. The effects are frequently more promotional in nature, consisting of producing a 'wow' factor which somehow contributes to science awareness generally. But the only specific measurable aim outlined is an increase in third level take-up of science, supporting government educational policy.

The dominant pedagogical theory relating to interactivity is the 'discovery' approach, which is strongly associated with interactive science museums internationally and appears therefore to be adopted in an unquestioning manner in Irish public discourse. However, the pedagogical theme requires further 'ludological', 'aesthetic', 'commercial', 'empowering' and even 'information society' themes to explain how and why interactivity is employed. The 'sceptical' theme can be used to question the value of interactivity in museums, and when all else fails, interactivity can always be explained away as attractive for the 'kids'.

This analysis shows that interactivity is strongly associated with the museum experience, but that the particular meaning of interactivity used in discourse is a clear indicator of the strategic purpose behind the discourse and depends on the discourse community involved. It also shows that if/when the interactive science museum is eventually realised, it will be a valuable context for media and communications research not just into interactivity but other communications concepts also. Indeed, considering their context, content and contribution to cultural life, both science and general museums in Ireland should be considered as media.

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