Let's play in the museum: museum exhibits that support children's play

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Introduction

This paper explores children's interactions within a child-centered museum environment with regard to the use of play in the museum. The paper begins by providing a brief overview of the organization of the museum exhibition as a learning environment, as well as of the research that has examined so far the use of play in museums. It will then focus on the children's museum paradigm as a museum environment where play is used as a major interpretative medium to help cultural initiation and empower the child to create meaningful encounters with the natural and man-made world. Some preliminary findings will be presented from a pilot study undertaken as part of a PhD thesis on museum spaces for children, to demonstrate the elements that render the children's museum environment supportive of children's play choices. Methodological issues, concerning the tools used for analyzing the museum environment as well as eliciting the children's perspective on it, will be discussed alongside.

A. The Museum Environment and Play

Museums are considered cultural and educational institutions, offering a learning environment that has fundamental differences in comparison with that of formal education. This is not only due to the self-directed and self-regulated learning that takes place in every informal setting, but mainly draws from the physical dimension that the museum experience entails. Museum objects, apart from their symbolic, ideological and emotive connotations, have a materiality that affords a different kind of learning: learning which does not exist only in our minds, in a representational state, but is embodied, that is influenced by the properties of our body and its interaction with the environment[2]. Furthermore, the learning process in the museum is structured temporally and thematically, according to spatial terms[3]. The choice of which exhibit to approach and the movement of the visitor's body from exhibit to

[1] The research has started at the University of the Aegean, but there has been a change of University until the time of the conference.
[2] Shapiro 2011: 4.
[3] Wineman & Peponis 2010.

exhibit and from gallery to gallery, as dictated by the visitor's goals and motives in conjunction with the museum's stimuli, determines the beginning and end of the elaboration of a conceptual unit[4]. Therefore, the ability of the museum environment to attract and engage the visitor is recognized as an important part of the learning process. Museums are in a continuous effort to find ways to promote motivational processes and enhance engagement[5].

Museums employ a wide range of exhibition techniques in order to engage visitors in a meaningful encounter with museum objects. The museum environment is multimodal, and apart from objects (such as authentic artefacts, replicas and models), it includes text, photographs, drawings, moving images, and sound. A shift from static and representational exhibits towards exhibition units that involve the visitor both mentally and kinesthetically, marks a performative turn in exhibition practice: «the exhibition is no longer conceived as a medium for representation, but becomes instead a medium for "enactment"»[6]. Immersive three-dimensional environments or interactive exhibits are increasingly introduced in all types of museums; they call visitors to explore actively with all their senses, as well as their intellects, inviting them to be not only passive observers, but active users, or even become part of the exhibit[7].

As Jeanne Vergeront[8] has suggested, the shaping of the museum learning environment and the choice of the preferred exhibition techniques depend on the view of the learner that the museum holds. Museums that support the learner as an observer will focus on the best presentation of the museum artefacts, "providing a 360-degree view, perfectly lit and complemented by text"[9]. In comparison, a museum that celebrates the visitor as an active meaning-maker and seeker will nurture visitor's curiosity and exploratory behavior, by putting emphasis on qualities such as novelty, surprisingness, ambiguity, and puzzlingness.

[4] Annis 1986: 168-169.
[5] Wood & Wolf 2008, Ansbacher 2002, Paris 1997.
[6] Basu & Macdonald 2007: 12.
[7] Basu & Macdonald 2007, Henning 2006.
[8] Vergeront 2002.
[9] Vergeront 2002: 9.

So what about the view of the visitor as a playful being, as homo ludens? What are the qualities of the museum environment that support play as an interpretative medium?

Huizinga identified four characteristics of play[10], which can be considered compatible with the museum environment: a) *Freedom* to conduct an enjoyable activity for its own sake: museums are structured in a way that could support ideally visitors to follow their interests at their own pace. Visitors' research both with adults as well as with children, identify museum going as an enjoyable activity[11]; yet, children are often forced to follow a certain route, especially when it is a school visit, with few chances for child-initiated and child-led activity. Strictly academic objectives and the goals of the museum staff could lead also to a rigid structure, leaving little room for personal exploration and connection with prior knowledge and experience b) *Imagination*: play mobilizes imagination. When pretending, we can imagine being someone else, somewhere else, and this helps us develop our sense of identity, difference, and otherness. Museum objects are valuable in intriguing imagination. If accompanied by the right prompts, pretend play could develop and create memorable experiences in the museum. c) *Disinterestedness*: play is a non productive activity, in an economic and material sense that has a positive affect; enjoyment comes from the performance of the activity, rather than its outcomes. Museums have the quality to support activities that people find pleasurable as ends in themselves. "No one flanks museums", as Franz Oppenheimer of the Exploratorium stated, and this fact constitutes a liberating museum quality for releasing intrinsically rewarding and playful behaviours. d) *Tension*: Play involves contest, uncertain outcomes and chance. This is the least likely characteristic to appear in the museum environment. Situations where visitors challenge themselves or enter in competition are rare; however contemporary museums experiment increasingly with interactives or web 2.0 technologies to create games or events that offer visitors a sense of adventure.

Little research has been conducted as regards children and play in the museum. Most of the research focused on learning and the use of play as a learning medium, while

[10] In Rojek 1995: 185.
[11] Pekarik et al. 1999, Kaplan et al. 1993, Packer 2008, Packer & Ballantyne 2002, Moussouri 1997, Prentice 1998, Kindler & Darras 1997, Piscitelli & Anderson 2001, Harris Qualitative 1997, Morris Hargreaves McIntyre 2002.

some investigated social play or attributes of playful exhibits[12]. For example, Rennie & McClafferty[13] carried out a research with children 3-7 years old in an Australian science museum in order to investigate children's learning with interactive exhibits. Using Hutt's theoretical distinction between epistemic and ludic behaviour[14] to interpret the relationship between patterns of use and understanding of concepts that the exhibits were designed to present, the researchers acknowledged that much learning is associated with play, although not all playing is learning. According to Hutt, ludic behaviour stems from the question "What can I do with this object?", and occurs only when the child is relaxed and gets into contact with familiar objects or surroundings. On the contrary, epistemic, exploratory behaviour stems from the question "What can this object do?", and is related to the presence of unfamiliar stimuli, which the child investigates in order to get to know them and familiarize with them. Ludic behaviour can occur afterwards. Therefore, learning is associated with epistemic behaviour, while ludic behaviour mainly consolidates skills. The research results of Rennie & McClafferty documented that children whose interaction with the exhibits was more epistemic, had greater levels of learning and understanding of the exhibits' concepts; this behaviour was enhanced by social interaction, especially with adults, as well as by the design of the exhibit. Rennie & McClafferty concluded that effective exhibits have scope for both epistemic and ludic behaviour, the former because of the greater potential for learning and the latter because it is fun.

Gallagher & Snow Dockser's research on parent-child interaction in familiar and novel exhibits[15] of a children's museum in the USA, also confirmed that familiar objects in an exhibit support play, especially pretend play, while new stimuli favour exploration that leads to new information and better understanding. Museums, due to the wealth of new stimuli are more likely to provoke high levels of epistemic behaviour, however exhibit design should strike a balance between familiar and novel experiences so that children engage immediately in playful behaviour, because they feel competent to manage their experience with what they already know.

[12] Hands On! Europe Conference 2001, Rennie & McClafferty 2002, Gallagher & Snow Dockser 1987, Shine & Acosta 2000, Sykes 1993.
[13] Rennie & McClafferty 2002.
[14] Hutt 1981.
[15] Gallagher & Snow Dockser 1987.

A different dimension of play in the museum, that complemented the aforementioned findings, was the focus of a research by Shine & Acosta in a US children's museum[16]. The research investigated parent-child social play only to find that despite the designers' intent, parents and children use divergent play strategies: while children engage in role play, parents seem to remain outside the play scenario, directing, prompting and guiding children through the activity sequence. Therefore, they have only brief, sporadic and non contingent interactions, rather than mutually engaging and verbally responsive role play. This fact contrasts to reports of parent-child pretending at home, where role play is more contingent and sustained. Researchers believe that a possible reason for this mismatch is the fact that parents assume the role of the teacher in the museum, and give emphasis to cognitive and procedural learning, although they acknowledge that their didactic efforts often lead to the termination of symbolic play and the withdrawal of the child. Hence, familiar objects and settings in the museum would not only facilitate children involve immediately in pretend play, but also parents, who would feel released from their propensity to act as explainers when they perceive novel stimuli and information in the environment. Shine & Acosta add a few interesting recommendations to further support parent-child pretend play in children's museums' contextual exhibits, such as small enclosed pretend settings where parents will not feel exposed, well-defined roles and adult-sized props, as well as museum staff modeling pretend play.

Last but not least, Sykes conducted a research and evaluation program in a US children's museum, in order to investigate what constitutes a meaningful play experience and to ensure that an educational as well as en engaging play environment is available for children[17]. Meaningful play was defined as an enjoyable and sustained interactive learning experience, promoted by self-directed exploration and discovery that can be shared with others. Percentages of children's behaviour, elicited by the most and least engaging components of two exhibits, were allocated to a list of behavioural and social interactions that were thought as significant for meaningful play: hands-on, large motor activities, pretend play, adult and peer interaction, child-initiated activity and child-directed activity. Guidelines were suggested for exhibit design and evaluation, according to which hands-on play and self-directed exploration were set high on the list. The research confirmed also the findings of Gallagher & Snow Dockser that the familiar was more attractive, held

[16] Shine & Acosta 2000.
[17] Sykes 1993.

more interest, and inspired more pretend play, while the novel imparted more new information.

B. The Children's Museum Environment in Focus

It is not a coincidence that most of the studies mentioned so far were carried out in children's museums. Children's museums are a unique museum type that appeared at the eve of the 20th century as an effort to provide a museum environment that caters more effectively about the educational and developmental needs of the child[18]. Children's museums use artefacts, both authentic and replicas, as tools for the visualization of concepts and the provision of meaningful learning experiences that build on children's interests and inner motives, and empower them to understand their place in the world. Experimenting with progressive teaching strategies and innovative learning environments for over 100 years, children's museums have functioned as an educational laboratory for child-centred methods and techniques that were later incorporated in general public museums as well. Interactive exhibits are the best known example, widely recognized as their prominent characteristic by the museum community[19]; however, the creation of multi-sensory, contextual exhibits, that invite children to initiate actions and participate with their body and mind, are also an important characteristic, maybe even more than interactivity per se. The importance of context was evidenced by Piscitelli's and Anderson's research of young children's perspectives of museum settings and experiences. The research has shown that exhibitions which provide readily accessible links with children's past experiences result in more positive affect than exhibitions which are hands-on, engaging and/or multi-sensory in nature[20]. Children's museums are effective in all of the above attributes, plus recognizing play as an essential learning and interpretative medium for cultural initiation. Hence, choosing a children's museum as a case-study for play in the museum seems an appropriate choice that can serve as a model for other child-centred exhibition spaces.

In relation to the theoretical framework of the research that will be presented, the following facts should be considered:

[18] Maher 1997: 2.
[19] Freedlander Gibans 1999, Caulton 1998.
[20] Piscitelli & Anderson 2001.

a) Children's museums are specially designed museum spaces made for children by adults, with usually limited or non existent children's participation in the design process. Play situations are carefully structured with more or less strong underlying cognitive or social objectives. Thus, spontaneous free play, as developed by children in children's spaces[21], is likely to be less spontaneous and less free, or at least have different nuances in a museum environment. Rasmussen suggested that spaces for children and children's places are not usually identical and that children manage to create their own places in the "corners" of their institutionalized childhoods, that is identify places that engage them physically and emotionally and to which they attribute special meanings. Do children's museums provide the space for children to create their own places? What sense of place do they foster, and is this sense positive enough for the deployment of play in ways that children find meaningful and important? As Burke stated "Understanding how children appreciate spaces and places for play is important in countering the balance of adult agendas which may or may not have an accurate appreciation of children's priorities"[22].

b) When considering the implementation of a play-based curriculum in any setting, including the museum, it is necessary to start from children's perceptions on play and learning[23]. Howard et al., in an overview of children's categorization of play and learning in preschool classrooms, report that children's decisions take into account behavioural, environmental and social cues, such as the their enjoyment of the task, the opportunity for pretence, the absence of predetermined goals, the level of control afforded to them during the activity, where an activity takes place (e.g. an activity might be considered as play if completed on the floor), and if adults or teachers are absent, but peers present[24]. Research on children's play in settings other than museums[25] has revealed also that a distinction should be made between the content of play and the feeling of playfulness. An activity may be classified as play or not, depending on context, situation and experience. Hence, it is important to investigate what children perceive as play, because this could be different from the characterizations adult give. In order to create playful situations in any setting, one should consider how to evoke feelings of playfulness. Therefore, detecting how

[21] Rasmussen 2004.
[22] Burke 2005: 28.
[23] Ceglowski 1997, Howard 2002.
[24] Howard et al. 2006.
[25] Smith et al. 1985, Howard 2002.

children consider play in the children's museum environment is a necessary step so as to be able to evaluate and enhance it.

c) To better assess the organization of the museum environment in terms of its significance for the child and the feeling of playfulness it provokes, an analysis of its functional qualities should be done. In order to do this, the theoretical concept of affordances is very useful. The term "affordance" was invented by the ecological psychologist James Gibson to describe the complementarity and the dynamic relationship between an acting organism and its environment[26]. Affordances are the functionally important qualities of an environment as perceived by the acting organism that provide various opportunities for interaction and for the development of an individual's activities. Hence, they are unique and different for each individual, as their perception depends on the physical dimensions, capabilities, personal and social needs, as well as the personal intention of an individual.

A description of a child-centred museum environment using the concept of affordances would focus, not on forms, such as the existence of showcases, free-standing objects, interactives etc., but on functions such as the opportunities it affords for manipulating objects, sitting or jumping over, passing from one place to another, constructing, modificating surface features, or creating a short of shelter or microclimate. This is valuable because it helps detect the psychologically significant qualities of a museum environment for children in relation to their goals and purpose; above and beyond it is the way that children themselves evaluate the places they use. Environmental psychologists have developed functional taxonomies that focus not only on physical affordances, but also on social ones, such as whether it affords role playing, rule games, sharing adult's businesses etc[27].

In addition, Kyttä has developed a four-tier model of assessing the child-friendliness of an environment according to the degree of independent mobility and the number of actualized affordances[28], that is the utilized or shaped affordances. The ideal child-centered environment is named "Bullerby", after the name given by the famous Swedish novelist Astrid Lindgren to a village where children have full access to every aspect of social life. A Bullerby environment welcomes children to develop their full

[26] Gibson 1986.
[27] Heft 1988, Kyttä 2002, Clark & Uzzell 2006.
[28] Kyttä 2004, 2006.

potential in order to actualize the physical, social and cultural affordances embedded in it. Whether the children's museum environment manages to be a Bullerby environment that departs from the "Glasshouse" model of a more traditional museum, where autonomous exploration is inhibited and affordances although perceived, are not fully actualized, is a matter to be investigated and a matter that will certainly have implications for the kind of play promoted by the museum and actualized in it.

C. Research Methodology

Using the Hellenic Children's Museum as a case-study, the paper will present data from a pilot study that forms part of a larger PhD research on museum spaces for children, that is still in progress. The pilot study aimed, apart from testing the methodological tools, at investigating children's use of place and manifestations of play experience in terms of the spaces, places and objects preferences inside the museum.

In order to analyse the functional qualities of the exhibition space, a taxonomy of physical, social and cultural affordances that apply to a museum environment was developed and incorporated in an observation sheet. Smilansky's categories of play were included in the list as part of the physical, social or cultural affordances available[29], plus Hutt's distinction for epistemic behaviour[30]. In addition, Parten's categories of social participation in play were integrated into the social affordances[31].

Twelve children 3-9 years old, that were visiting the museum with their family, were observed interacting with exhibit elements for about half an hour in order to detect patterns of use and children's perceived, actualized or newly shaped affordances. Consequently, child-led tours, child conferencing and interviewing were used so that children document by means of photography their favourite places and activities in the museum and talk about the sense of place and the sense of play the museum fosters. The involvement of the child as a researcher of its own experience is a well-documented and increasingly popular technique[32]. Thus, the research follows a phenomenographical perspective that is backed up by evidence extracted through an

[29] Smilansky 1968 (functional, constructive, dramatic play and games with rules).
[30] Hutt 1981.
[31] Parten 1932 (Unoccupied, Solitary, Onlooker, Parallel, Associative Play, Cooperative Play).
[32] Clark & Moss 2001, Burke 2005, Mauthner 1997, Waller 2006.

ecological psychology lens. Phenomenography as a methodological tool aims at "describing conceptions of the surrounding world"[33], that is how people experience, conceptualize, perceive, and understand various aspects of the world around them, while ecological psychology aims at providing categorization of the surrounding elements, and exploration of the connections between behaviors and the environment in which they occur[34].

Preferred affordances, as elicited by children's 200 photos and interviews, were examined alongside potential and used affordances, as recorded during observation, so as to accomplish a multidimensional description and assessment of the exhibition space that combines the promoted, actualized and preferred use of the museum environment. In addition, discourse analysis was implemented in order to bring forth how children perceive the children's museum and construct a sense of place according to what it offers them.

D. Research preliminary findings and discussion

The pilot study was conducted during April and June 2011 at the Hellenic Children's Museum. The Hellenic Children's Museum is a multi-disciplinary museum for children up to 12 years old. Since 1994, it has been operated in collaboration with the municipality of Athens, in a residential house of 1900 at the centre of the city. The Hellenic Children's museum mission is to help children understand and enjoy the world in which they live, develop their full potential and become citizens with social consciousness. Its current exhibits include:

- Build and create (for children up to 6 years old)
- The Market
- Water experiments
- Discover myself: how do I move?
- Factory
- Hello Pythagoras (Math exhibit)
- Kitchen
- The attic
- Children's collection

[33] Marton 1981, Svensson 1997.
[34] Tesch 1990: 65.

The Hellenic Children's Museum educational methods and exhibition techniques are based on the use of authentic artefacts that children can observe but also manipulate and use; replicas and custom-made exhibits that offer children a concrete, embodied and contextualized experience; and, the use of play as a major interpretative strategy. Text is kept to a minimum, usually concerning props or instructions for an activity, and images are used either as a complementary source of information or as context.

Children's sense of place as derived by their comments in the interview is strongly linked with play and activities. When asked to provide a definition of the museum, children usually describe it as a place with toys and a place for play. The next most referenced word is "things", either things to get engaged with, or things to see and learn, and activities. A few children described it in relation to whom is addressed to, that is as a space for children or a museum for children, while one commented that "it is not a simple museum, and it is not exactly a museum".

When asked what they expected to do in the Children's Museum when they thought of visiting it, analogous patterns were found. Play was the most frequently mentioned word. Some referred to specific activities which had strong playful elements, such as cooking, creating, or role-playing in the market, or to specific objects and places. One child mentioned learning and seeing things, one stated that he wanted to have fun and another one that she wanted to meet people.

When asked what they liked best from the things they did on that day at the museum, most of the children referred to specific activities, such as selling things and making bubbles, or to specific objects and places. A couple of them mentioned that they liked everything, or that they liked playing or creating something with a friend.

Children are very positive of their experience in the Children's Museum (they like it very much or a lot), with only one frequent visitor stating that sometimes he likes it, sometimes he doesn't, because sometimes he has fun but sometimes he is bored, as he is used to it. The most frequent reasons for liking it are having fun, playing and doing things, as well as learning. These are also the reasons they would recommend it to a friend.

The aforementioned comments confirm that children perceive the museum as a place for fun activities and play, while acknowledging in part its learning objectives. What kind of play does the museum foster in its exhibits? Observation has shown that children get involved in all kinds of play; however epistemic behaviour and dramatic play enjoy the greatest percentages. Epistemic behaviour is documented as the most frequent in museums due to the wealth of new stimuli available. Dramatic play on the other hand is encouraged by the nature of the children's museum exhibits, which is contextual and imitating real-life situations, such as the Market and Build and Create. The vast majority of the activities are child-initiated, with adult intervention playing a greater role in epistemic behaviour and in games with rules.

A functional analysis of the physical, social and cultural affordances of the exhibits might be revealing of the elements that support children's play. As analysis is still at an early stage and for reasons of time available, I will focus, as an example, on the exhibit "the Attic", which seems to elicit analogous instances of epistemic behaviour and dramatic play, although epistemic behaviour in most cases lasted longer. The current state of the Attic resembles that of a storehouse. It is located at the actual attic of the house, thus releasing the feeling of adventure, or even fear sometimes, as children climb the narrow ladder. Once upstairs, children encounter two small rooms full of things that might be found in a domestic storehouse. The feeling of privateness is strong; it can't be a coincidence that children prefer to photograph more the inner smaller room. Things can be found on the floor, inside drawers and cupboards, and they can all be manipulated. Children engage immediately in exploratory behaviour, searching inside the boxes, trying on clothes and accessories, and pressing buttons or opening and closing parts of the apparatuses available. Physical affordances include moving around, sitting on the floor to use some of the apparatuses, dressing up and mirroring, rolling things, manipulating or observing closely. As for the social affordances, children enter into dialogue with their parents to find out the use of some objects, but also parents appropriate a show-and-tell behaviour, as they recognize things that form part of their childhood memory and they want to share it with their children. Hence, the learning and social objective of the exhibit, that is to foster intergenerational dialogue seems to be accomplished. Children also develop usually short sessions of dramatic play, like the "this is my profession" role play, where a couple of friends used different objects to pretend

being the professional associated with them, until they found the one that each one felt it suited them better, or even shorter sessions such as strolling the baby with the pram or going for a picnic with the picnic basket. Parallel play was high when peers were present, sometimes evolving to shorter sessions of associative play.

Children respond well to the physical affordances or the symbolic connotations of the attic's objects but miss some of the cultural affordances available. A text panel at the entrance of the attic informs the visitors that they can discover objects, toys, professions and daily habits of the family that lived in the house at the first half of the 20th century. Yet children rarely pay attention to the panel or try to make such correlations. Children frequently notice the red boxes that contain structured activities with prompts or information for the imaginary family, but they rarely open them and engage in the suggested activity. Thus, children can't find the necessary clues to solve emerging questions such as who is the couple appearing at the photo on the wall, who was wearing all these clothes etc. So this is a missed opportunity in the exhibit; children seek a narrative that might prolong their pretend play or provide a more meaningful play experience, but the used exhibition technique (activity box) doesn't seem to work. A treasure game might be more appropriate and enhance the feeling of adventure; plus a different organization of the setting, resembling more to a room where certain people had left objects connected with a more discernible thread of certain life habits, might also be helpful towards the narrative direction. It should be noted however that children readily make comparisons with how things look today, as some of the text panels prompt them to do, although the initiative of comparing emerges spontaneously and not as a result of responding to the text. Children enjoy also being able to move freely, choose and control their experience, connect with prior experiences and see themselves in different roles in a relaxed atmosphere.

A final comment I would like to make is that children, especially those beyond the age of seven, do not always photograph more the places where they spend the most time playing. This is may be due to the fact that they have already established a concept of what is considered of value in a museum setting so they search to photograph more elements that are connected with learning and exploration of strange or intriguing artefacts, as these are the typical cultural affordances in a museum. When asked to specify their criteria for the photographic choices that they

made, most of the children say that they have a personal interest or a personal experience with the elements appearing in their photos (either parts of the exhibition area or specific exhibits), that they appreciate learning things from them, and for aesthetic reasons. Appreciation of their potential for play comes fourth on the list.

It is interesting also to see that most photographs are from the "Attic", the exhibit with the most authentic artefacts present, and where epistemic behaviour and dramatic play were equally observed; the "Build and Create" and the "Market" exhibit, were dramatic play was the main type of play occurring; and the "How do I move?" exhibit, were epistemic behaviour was at the top, but dramatic and constructive play were also present, as well as games with rules. These four exhibits were also the most favourite exhibits mentioned by children in their interviews.

Further analysis is needed of the affordances that children identify as preferred in the exhibits and revealed by their photographs and interviews; these could be seen against the used affordances that observation revealed, and the potential affordances available in the exhibit. Sex and age differences are also variables that apparently will prove significant.

In conclusion, it seems that the Hellenic Children's Museum environment manages to create an atmosphere of openness and freedom that is the prerequisite for spontaneous play to happen. What these preliminary findings might also suggest for the museum environment in relation to play, is that museums of all kinds should not be afraid that they compromise their learning objectives, if play is more used as an interpretative strategy. Children enjoy playing but also acknowledge that they learn; they learn while having fun, discovering, and sharing with friends and family. Ongoing research in other museum settings such as children's wings or child-friendly zones in general public museums will further specify the affordances appreciated by children towards meaningful play experiences in the museum.

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