# The Constructivist Museum

George E. Hein

Introduction

Current education literature is dominated by discussions of constructivism. This new name for a set of old ideas has major implications for how museums address learning. Constructivism is particularly appropriate as a basis for museum education if we consider the wide age range of museum visitors. How can we accommodate this diverse audience and facilitate their learning from our objects on their voluntary, short visits?

The elements of any theory of education

In order to understand constructivism, it is useful to consider the nature of any theory of education. As two articles in last year's Journal of Education in Museums point out (2) an educational theory consists of two major components: a theory of knowledge and a theory of learning. In order to consider how a museum is organised to facilitate learning, we need to address both what is to be learned and how it is to be learned.

Our beliefs about the nature of knowledge, our epistemology, profoundly influence our approach to education. It makes a difference whether we believe that knowledge exists independently of the learner, as an absolute, or whether we subscribe to the view that knowledge consists only of ideas constructed in the mind. Plato believed in the existence of ideal forms, independent of the learner. Thus, for him, learning consisted of arriving at knowledge through an intellectual process. Conversely, Berkeley believed that knowledge existed only in the mind of the knower. Thus, he answered in the negative the hypothetical question about the sound of a tree falling in the forest when no one is there to hear it. We can represent this epistemological dichotomy as a continuum, with the extreme positions at each end, as illustrated below:
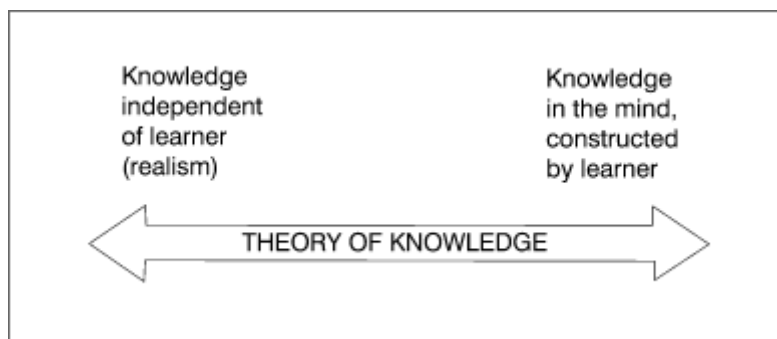
The second component of an educational theory encompasses our beliefs about how people learn, our psychology of learning. As was the case for the epistemological domain, two extreme positions are possible. One assumes that learning consists of the

incremental assimilation of information, facts and experiences, until knowledge results. This view leads to a behaviourist position; to the conclusion that learning consists of the addition of a myriad number of simple associations (responses to stimuli) and that the resultant 'knowing' is simply the aggregate of these small steps. Usually associated with this view is the belief that the original condition of the mind is a tabula rasa, and that all that is known has been acquired through experience. Locke is the best known proponent of this view. A diametrically opposed view of learning postulates that the mind constructs schemas and that learning consists of selecting and organising from the wealth of sensations that surround us. This synthetic view of learning is exemplified by Piaget's work. Proponents of this view also usually take the position that certain structures, such as learning language, are part of the anatomy with which we are born (3).

This second dimension of educational theory can also be represented by a continuum along the dimension of the process of learning thus:
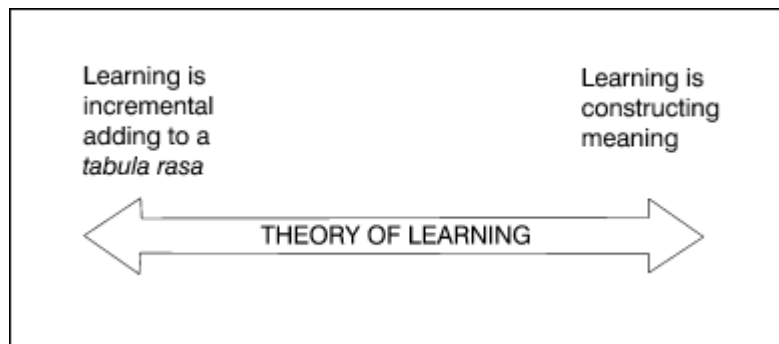

These two dimensions of any educational theory can be combined to produce a diagram that describes four possible combinations of learning theory and epistemology. Figure I illustrates this combination. Each of the quadrants represents a different approach to education. One familiar position is represented by the top left quadrant, which I have labelled traditional lecture and text. Within this traditional view of education, the teacher has two responsibilities. First, s/he must understand the structure of the subject, the knowledge that is to be taught. This structure, the logical organisation of the material, is dictated by the content that is to be learned. Much of the intellectual work of the Western world since the Renaissance was devoted to elaborating systematic domains of knowledge with the assumption that the resulting schemas referred to something that existed independently of the minds that organised it. This intellectual work attempted to develop laws governing the movement of the solar system, classifications of plants and animals, or rules for the organisation of societies that would be true under all conditions, independent of the humans that developed them.

The second responsibility of the traditional teacher is to present the domain of knowledge to be taught appropriately so that the student can learn. Thus, there is a logical order of teaching dictated by the subject to be taught that would make it easiest to learn. The concept of a linear textbook, a great 19th century invention, is predicated on this view of learning. The author presents material in a logical sequence, starting with the simplest elements of the subject and moving on to more complex, until the entire field is covered.

This approach to education can lead to 'The plain, monotonous vault of a school room,' containing, 'the little vessels then and there arranged in order, ready to have imperial gallons of facts poured into them until they were full to the brim' (5).

A second educational position represented on the top right quadrant of Figure I, is discovery learning. It subscribes to the same positivist belief about knowledge as the previous one, but it takes a dramatically different view about how this knowledge is acquired. Proponents of this position argue that people construct knowledge themselves, they come to realise concepts and ideas as they build them up using personal, mental constructions. Thus, they also can acquire misconceptions. Proponents of discovery learning believe that in order to learn, students need to have experience; they need to do and see rather than to be told. Rather than organise the subject matter based on its logical structure, from the simplest to the more complex, the teacher organises it so that it can be experienced. Pedagogic simplicity takes on a practical aspect rather than an intellectual one. But the purpose of this hands on approach is still for the student to comprehend ideas and concepts that are independent of the learner. Through experience, misconceptions will be replaced by correct conceptions.
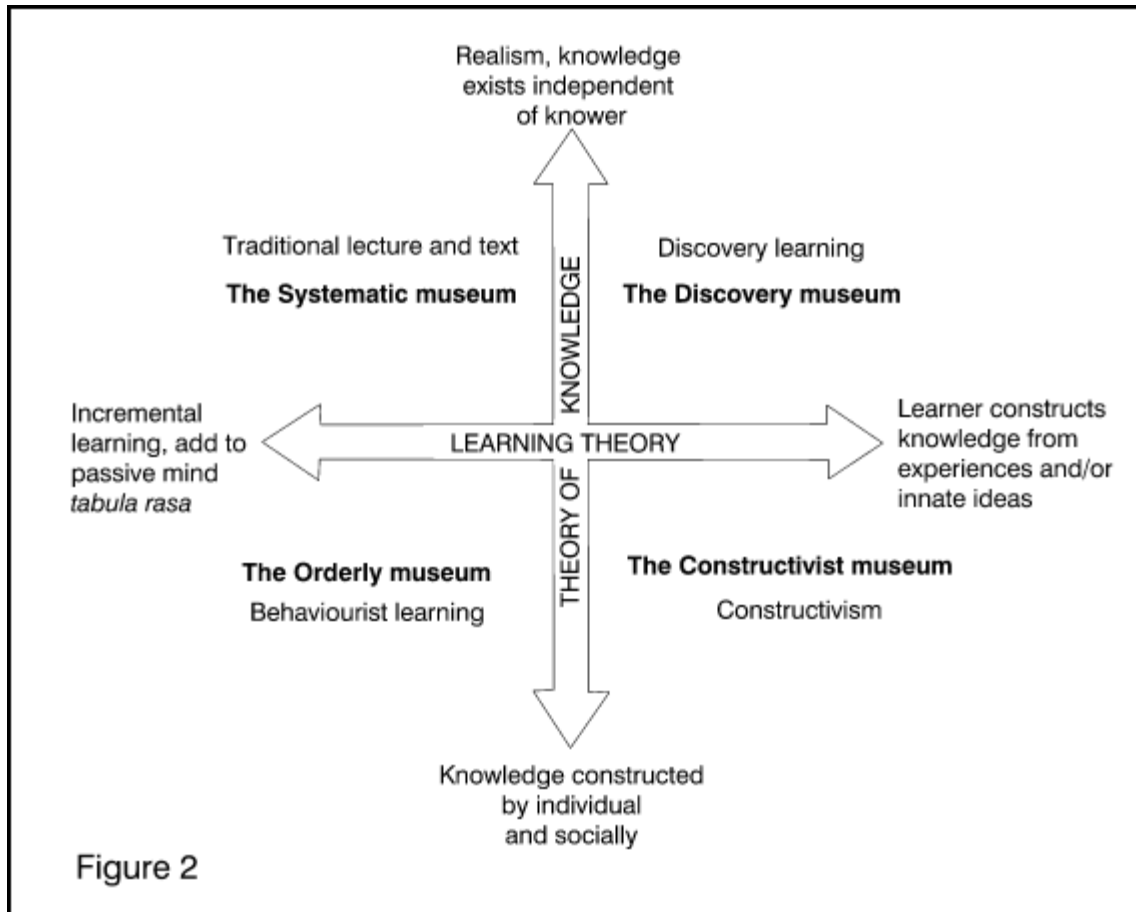

Figure 1
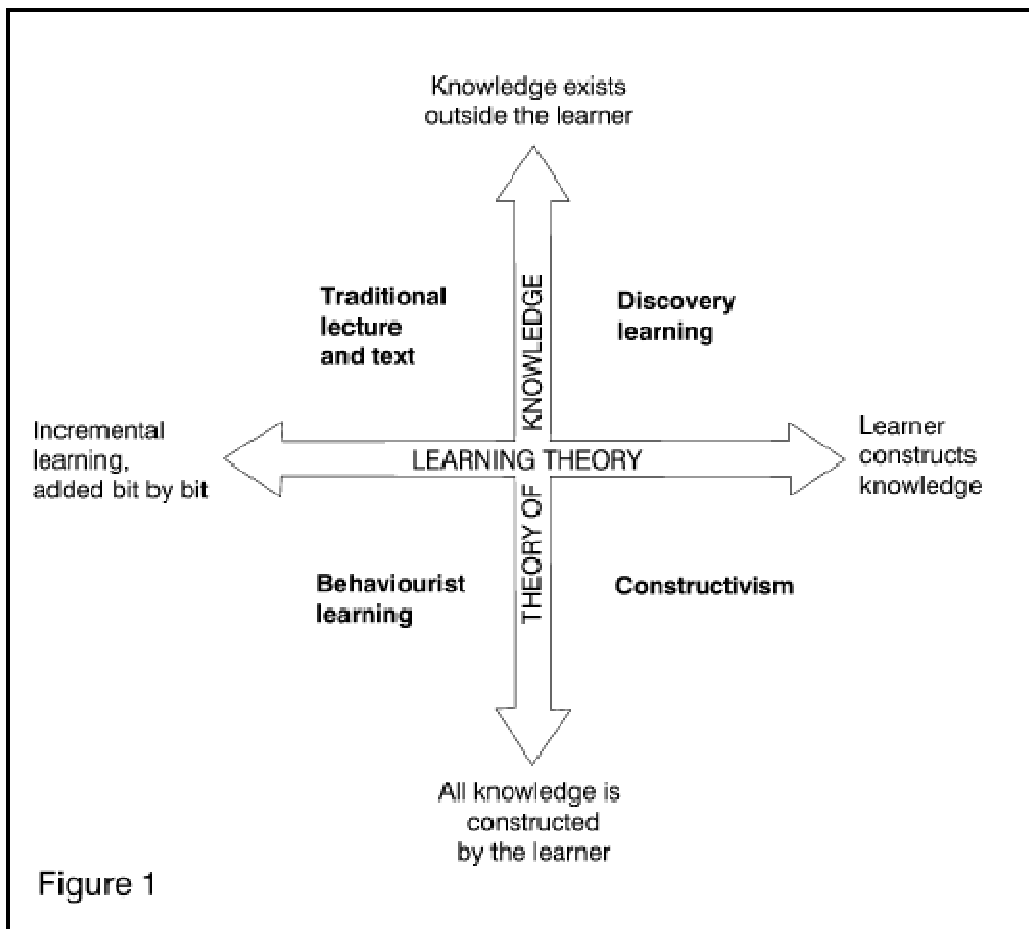
Constructivism, the bottom right hand corner, represents still another quadrant of the diagram. Constructivism argues that both knowledge and the way it is obtained are

dependent on the mind of the learner. This view, based on idealist epistemology as well as developmental psychology, and in recent years supported by research in cognitive psychology, comes as a shock to those who wish to preserve the idea of knowledge independent of individual learners or communities of learners. It has been called radical constructivism (6). Proponents of constructivism argue that learners construct knowledge as they learn; they don't simply add new facts to what is known, but constantly reorganise and create both understanding and the ability to learn as they interact with the world. Further, the knowledge that is constructed through this process is individual or social, but has no ontological status outside the mind of the knower.

There is, of course, a fourth position illustrated in Figure I, that based on the belief that knowledge is gained incrementally but need not have existence outside the learner. Simple behaviourism fits into this quadrant, since behaviourism was originally a psychological learning theory and made no claims about the status of the knowledge gained from responses to stimuli.

The constructivist museum

The educational positions outlined above can be applied to museums. For any consideration of learning in museums, we can ask an epistemological question, What is the theory of knowledge applied to the content of the exhibitions? We also need to ask a question about learning theory, How do we believe that people learn? These two components of our museum educational theory will lead to a set of four positions, similar to the ones described above, each of which represents a different kind of museum. These are illustrated in Figure 2.

Realism, knowledge
exists independent
of knower

Traditional lecture and text   Discovery learning
The Systematic museum   **The Discovery museum**

KNOWLEDGE

Incremental   Learner constructs
learning, add to   LEARNING THEORY   knowledge from
passive mind   experiences and/or
tabula rasa   innate ideas

THEORY OF

The Orderly museum   **The Constructivist museum**
Behaviourist learning   Constructivism

Knowledge constructed
by individual
and socially

Figure 2

The systematic museum, represented in the upper left quadrant is one based on the belief that:

1. The content of the museum should be exhibited so that it reflects the 'true' structure of the subject matter
2. The content should be presented to the visitor in a manner that makes it easiest to comprehend.

Examples of museums organised around systematic principles are common. The Deutsches Museum in Munich was intended to illustrate the structure of the sciences. Similarly, the Harvard Museum of Comparative Zoology was designed by Louis Agassiz to refute Darwin by illustrating the 'true' classification of animals. The National Portrait Gallery, for the most part, hangs its paintings chronologically on the assumption that this order will make most sense to its visitors. Similarly, it is common for exhibits to present material in a single, orderly manner deemed by the exhibit designers to be best suited for visitors to learn the message of the exhibit. In contrast, proponents of the constructivist museum would argue that:

1. The viewer constructs personal knowledge from the exhibit
2. The process of gaining knowledge is itself a constructive act (7)

Examples of constructivist museums are harder to find, but exhibits that allow visitors to draw their own conclusions about the meaning of the exhibition are based on this constructivist principle. There is also an increasing number of exhibitions that are designed so that multiple paths are possible through the exhibit and the learner (visitor) is provided with a range of modalities to acquire information.

Within this alternative and diametrically opposed educational view, the logical structure for any subject matter and the way it is presented to the viewer depend not on the characteristics of the subject nor on the properties of the objects on display, but on the educational needs of the visitor. In such a museum, it is not assumed that the subject matter has an intrinsic order independent of the visitor, nor that there is a single way for the visitor best to learn the material. Constructivist museum exhibits have no fixed entry and exit points, allow the visitor to make his or her own connections with the material and encourage diverse ways to learn (9)

The characteristics of the constructivist museum

What does a constructivist museum look like? The lack of predetermined sequence has already been mentioned, as has the use of multiple learning modalities. Howard Gardner had the constructivist museum in mind when he used the museum as a model for education. Another component of the constructivist museum would be the opportunity for the visitor to make connections with familiar concepts and objects. In order to make meaning of our experience, we need to be able to connect it with what we already know. Constructivist exhibits would encourage comparisons between the unfamiliar and new. Inviting South Asian immigrant women into the V&A to design and make their own embroidered tent hangings (11) can achieve the aim of making the museum more accessible to the community. Inviting hundreds of youngsters from diverse countries to make exhibits about their local rivers and to share them in a grand festival (12) can help them all learn about each other's cultures.

Conclusion

Constructivist educational theory argues that in any discussion of teaching and learning the focus needs to be on the learner, not oh' the subject to be learned. For museums, this translates into the dictum that we need to focus on the visitor, not the content of the museum.

Museums are remarkable sites for learning. Their power and influence for people is attested to by the amazing learning associated with them. Individuals can recount instances of epiphany-like experiences in all types of museums (13), Yet, the museum experience, on the whole, is fleeting and elusive.

By considering both the epistemological basis for our organisation of exhibitions and the psychological basis for our theory of learning, we can develop museums that can respond to the dispositions of our visitors and maximise the potential for learning. The

constructivist museum acknowledges that knowledge is created in the mind of the learner using personal learning methods. It allows us to accommodate all ages of learning.

References

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2. Jackson, R. and Hann. K. 'Learning through the science museum',jaurnal of Education in Museums 15,1994, pp 11-13; and Russell, T. 'The enquiring visitor: usable learning theory far museum contexts', Journal of Education in Museums 15,1994, pp 19-21
3. In this brief discussion I am leaving out the social component of learning. Although crucial for understanding education it is beyond the scope of this classification scheme (see Vigotsky. L S, Thought and Language. The MIT Press, Cambridge, MA, 1962)
4. 'Simplest' may refer to either the nature of the subject, or the nature of learning. Some textbook writers (in some subjects) start with the fundamental aspects of what they wish to teach, others start with what is considered easiest to learn. But in either case, the reference point is the perceived logical structure of the material to be learned.
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9. The two additional educational views also have their parallel in museufns. leading to the Orderi) Museum and the Discovery Museum. Examples exist, but are beyond the scope of this discussion.
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13. Falk, J, and Dierking, L. (eds). Public Institutions for Personal Learning; Understanding the Long Term Impact ofMuseums, Washington, DC, American Association of Museums, 1995

Professor George E Hein, director of the Program Evaluation and Research Group at Lesley College, Cambridge, MA, USA, has carried out extensive visitor studies in museums. During the spring semester 1996, he spent part of his sabbatical leave in England, associated with the Leicester University Museum Studies Programme, at work on a book on visitor learning in museums.

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