

Going Inside and Leaving Footprints: Supporting Inquiry and Collaboration in Museum Spaces: A Design Proposal

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Abstract: the following is a nascent design proposal for a museum space which explores the use of handheld technologies and constructivist learning theory to support generative inquiry and meaning making with intelligent agents playing the role of matchmaker. The proposal includes a use case vignette and requests hardware and development support from the LTC community.

Keywords: museum, art, constructivism, inquiry, generative, concordancer, design, learner, education, facilitation, scaffolds, use case, palmtop, network.

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Background:

Often in museum spaces, patrons struggling to enter content which is culturally dissonant from their own life experience could benefit from dialogue with other patrons. Yet, many such occasions go unrealized due to a lack of transparency between the thoughts and intentions of each learner. Cultural and societal norms discourage vocalized inquiry and interaction between museum patrons (especially inter-party interaction). Breaking through the opacity of artistic intent and facilitating mutually beneficial dialogue between patrons engaging in learning of a parallel or perpendicular nature comprises the goal of this design proposal, a design which works to thoughtfully fulfill the need for enabling knowledge while also inciting interaction between individuals puzzling over similar content.

Take the example of museum goers getting a first look at an exhibit featuring content and themes outside the scope of their expertise and cultural experiences. From the Louvre to regional MFAs, the lion's share of museum exhibits transmit information in a unidirectional way via image and descriptive text to islands of often contemplative but ill-equipped learners. Informative yet isolating one-size-fits-all audio tours or docent-guided tours offer greater bandwidth but still adhere to the transmission model of learning, a model and a tradition in which the exchange of information seldom goes beyond artifact-specific facts or definitive/dialogue-squelching responses from docents to questions posed by a diverse, unfocused audience.

Exhibit designers, adhering to implicitly held museum traditions, appear to believe that patron understanding blossoms through mere exposure to works of art; and that supporting this blossoming consists of granting access to works that are thoughtfully arranged and coupled with individual-piece placards as well as a page of explanatory text at the beginning of an exhibit.

To be sure, Museums operate under strict budgets with little resources allocated to cope with the lack of enabling knowledge patron need to make sense of museum spaces as typically constituted. Additionally, this same lack of resources precludes a leveraging of the myriad and diverse perspectives patrons do bring with them. These days it is the internet, more than the museum bookstore, which serves as a source of more information on a particular work of art or genre. Just 10 minutes on Google, armed with the right keywords, may send an individual on a deeply meaningful journey of discovery for which an exhibit or one of its pieces served as catalyst. Yet while such museum-inspired inquiry can and does take place, understanding gains contingent upon after-the-fact inquiry underutilize an exhibit's potential to make explicit in situ connections with the cultures and ideas that helped to produce its artifacts –thereby offering additional points of entry to museum patrons from diverse backgrounds.

Social constructivism states that understanding gains come through the active construction of knowledge; that the role of the instructor, the tools and institutions is to support this co-construction of knowledge in ways generative to its beneficiaries (individually and collectively). Furthermore, that the purpose of instructional facilitation involves not pushing an educational agenda on learners, but rather attempting to guide and incite better thinking relative to content-related perspectives and personally-held interests [1].

Additionally, this knowledge-construction process takes place not in quiet hyperbolic chambers isolated from human interaction, but rather in fellowship with others situated in communities with imperfect tools, incomplete materials and fuzzy understandings [1] wherein learners are put in a position to define their collective identity as they co-construct and negotiate meaning via a synthesis of multiple perspectives –thereby leveraging the array of diverse and developing understandings brought to bear on the *questions* at hand [2].

Encouraging learners to choose from a list of predetermined, domain-central bottomless questions [3] or to explicitly state the lines of inquiry generative to them at the outset of a learning experience uniquely frames the conceptual territory. In using a focusing question, the entire learning experience is guided by the objective of manipulating / exploring / playing with the content as it relates to their inquiry. Materials, dialogue and stimuli are filtered for relevance and funneled toward useful conclusions [1].

Even though ordinary individuals enter museums every day and build their understanding via exhibit pieces, placards and textual overviews, this contingent of supports does not reflect the advances made in the fields of technology and learning theory. Today's patrons deserve better, they deserve support which enables them to learn from culturally dissonant and contextually dense exhibits via tools and technological supports which respond to the learner's evolving inquiry [4] springing out of a different set of assumptions about learning and understanding than those currently in place at many of today's museums. Finally, such scaffolds should seek to support and encourage authentic inquiry via multiple pathways with no single endpoint, no set body of terminal/goal state knowledge in mind [5].

Genesis:

The organization of technology practice [6] described herein began as an idea put forth by this author in an Instructional Systems Design learning community at the University of Texas at Austin. More recently, conversations with classroom teachers, museum educators and the completion of the Blanton museum on the campus of UT have convinced us that the goal of calibrating the emerging design to support the unique needs of the Austin-area population is both important and timely.

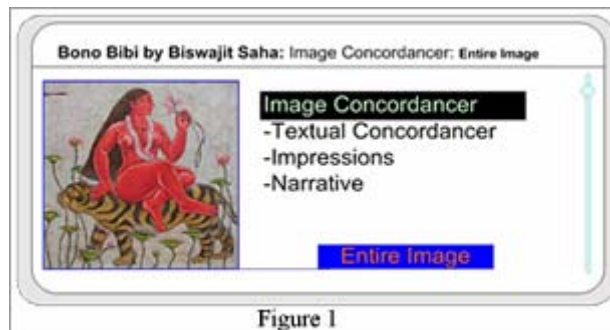
A preliminary needs assessment found that due to a lack of patron supports and scaffolds, a robust understanding of the content prior to viewing, along with experience in or knowledge of the milieu in which the pieces were created, appeared requisite for

meaningful learning to consistently occur. A lack of enabling knowledge seemed to impede patron entry into the exhibit as well. While it is possible to see every work of art within an exhibit as an entry point and each compositional element as a potential catalyst for understanding, entry implies a movement toward the center, toward growth and understanding gains which, are notably absent in typical interactions with exhibits due to a dearth of timely access to enabling knowledge and/or guiding questions.

In brief, the exhibits/collections need tools to better facilitate domain exploration, communication between patrons, active inquiry and risk taking. Tools/supports should, from the outset of the experience, immerse the learner in the wonder [7] of exploring, understanding and negotiating their way through meaningful content via questions, specialized tools, puzzling juxtapositions and dialogue with others [8]. Perhaps the most effective way to reveal the proposed design is through a use case.

Use Case:

Shirley and Bradford arrive at the Blanton Museum with their eleven year old son Jesse. As they make their way to the front desk to purchase admission, Jesse notices that several patrons in the museum are using palmtop like devices as they view several works of art in the lobby. After inquiring about the device the three each decide to use them in their personal exploration of the museum's exhibits. The woman at the information desk explains that radio frequency identification tags are placed behind each work of art, this tells the devices which painting, sculpture or installation is being viewed and that piece's image and options are brought up on the screen [Figure 1].



The three power up their devices and answer a few questions about personal preference and learning goals. Finally each is given the opportunity to focus their learning via a guiding question; Shirley decides that of the available questions offered, she is most interested in exploring the juxtaposition of women and power in an exhibit of Indian art, Bradford chooses to investigate the changing depiction of heroes in Greek art and Jesse decides to skip choosing a guiding question and to just see what happens. Armed with their palmtops, they set off toward their respective exhibits.

Shirley takes a moment to read the brief overview of her exhibit, as she finishes reading and enters the exhibit space she notices that a suggested path through the exhibit is laid out on screen for her. She remembers that this was one of the features she requested when she calibrated her device for personal preferences. She decides to follow the device's suggestion and stands before the first painting. It is of a woman sitting on the back of a

tiger. After contemplating the painting she looks down at her palmtop and notices that the image in front of her is displayed on screen along with some options [Figure 1]. It appears that she can frame her search for more information about this painting by selecting the entire image or predefined sub images such as the woman, the tiger or the flowers within the painting.

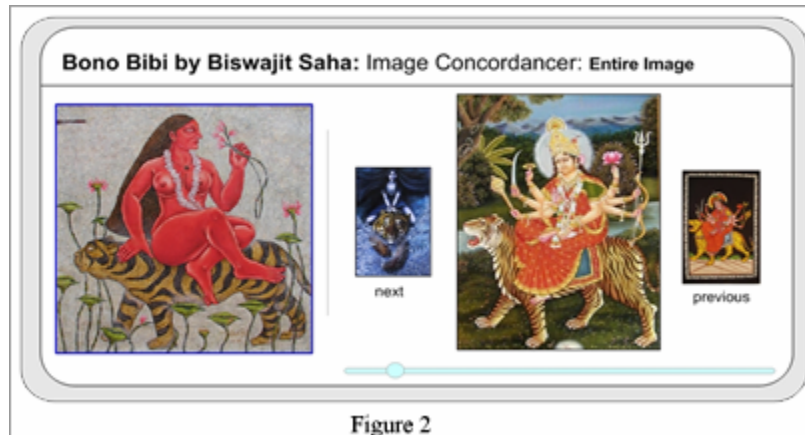


Figure 2

She selects the entire image and accesses the image concordancer [Figure 2]. She scrolls through about seven different images of a woman riding on the back of a tiger depicted in other works of art of the region and period –while this interaction has not given her any definitive answers she feels like she has gained a more holistic sense of what this image is about through viewing its use in a variety of contexts. Shirley then transitions to the textual concordancer [Figure 3] only this time she has selected the sub image of the tiger itself; it works the same way as the last tool only it offers textual snapshots of the image’s significance in written work of the period.

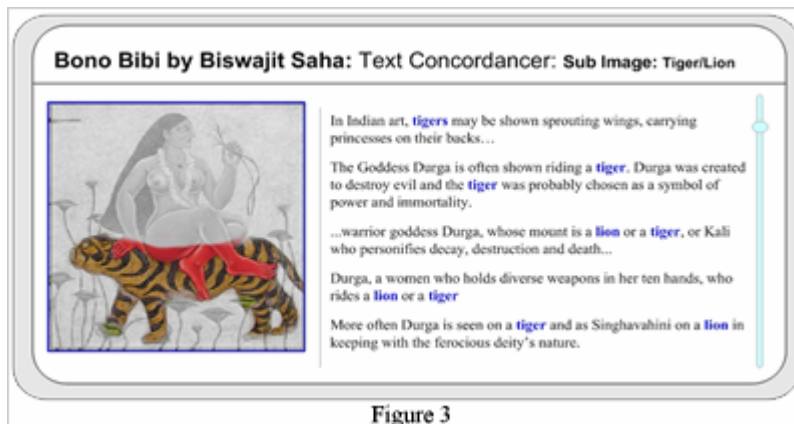
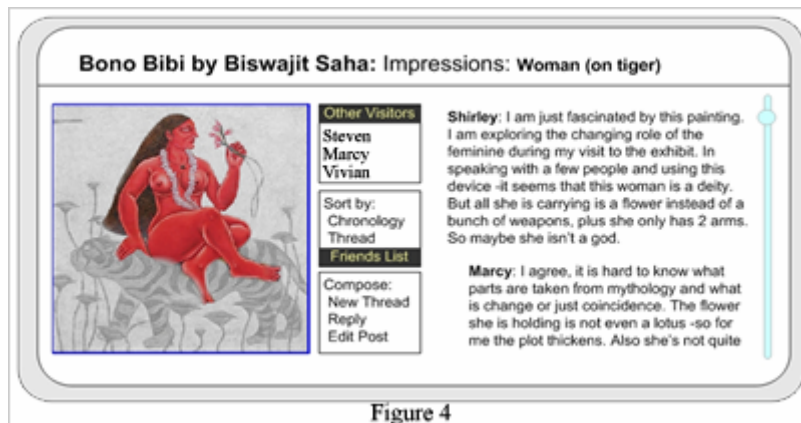


Figure 3

This particular sub image happens to be the vehicle of the Hindu deity Kali. Texts taken from Hindu manuscripts and other sources are used as the concordancer’s corpus. Each entry in the textual concordancer starts about eight words before the target word ‘Tiger or Lion’ is used and is then followed by another eight words after the target word. Again, this supports Shirley’s inquiry and knowledge construction without telling her what or how to think about the object in question.



After interacting with a few more paintings in the exhibit Shirley feels like she is really getting the hang of the tools in the palmtop and really building an appreciation of the messages in the exhibit and not just the vibrant colors. She has yet to leave a message in the impressions section [Figure 4] but she has read some of the impressions left by other patrons who came to the exhibit earlier, their impressions seem to be following the same line of inquiry as she is. As she approaches another painting Shirley's device beeps quietly and her screen blinks green. A text box pops up. Its contents read: "Marcy is here exploring issues of women and power too; she is also viewing this painting, would you like to talk with her about what you have seen and thought about so far?" Shirley selects the 'yes' box and looks around. Sure enough, another woman with the same palmtop device is looking in her direction too. They smile and introduce themselves. After some small-talk Marcy asks her what she thinks about one of the paintings in particular and how it seems to complicate the exhibit's portrayal of women and power. They talk about their impressions for a few minutes before moving on to another painting together, each offering insights and more questions as they go.

Design Challenges:

To date many of the challenges are not technological but rather cultural as museum curators are concerned that patrons will spend less time looking at the art on the walls and more time looking at the images in the handhelds. They also hold reservations about displaying images not owned by the museum. It is the belief of the author however that the guidelines of fair use enable such a design to withstand any legal challenge. Some technology-specific design challenges do exist. These include facilitating the entry of text-based impressions and creating an algorithm to determine when to propose inter-patron dialogue.

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