Engagement within interest-driven learning environments

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This paper develops a theory of short term, shared engagement accompanied by a spatial notation system in open ended, interest driven learning environments to support, extend and assess interest-driven and connected learning (Ito et al., 2009; Crowley & Barron, 2014) across everyday, informal and formal boundaries. It simultaneously introduces the notion of personal curation, broadly defined as the ability to capture, edit and share information with personal information devices, to describe emerging socio-technical practices that expand the possibilities of interest-driven, connected learning.

The empirical basis and setting of this research is a two year ethnographic study to understand how visitors cultivate interests in and learn about the diverse historical and cultural heritage of American Roots and Country music while visiting a nationally renowned museum located in the mid-South region of the United States (“The Hall”). We conducted 22 multi-perspective video recorded case studies of visitor group mobility and interaction (including 11 family groups) across a complete visit within the museum’s gallery spaces. We additionally conducted 1-2 hour post visit interviews with all visitor groups that often included walks back through the museum, and when possible, we followed online content curated by visitors from their museum visit across a variety of social media platforms. Our analysis and findings reflect a growing body of research focusing on how learning can depend on or arise from making places for engaging with entities or phenomena that interest learners relevant to both the design and evaluation of formal and informal learning environments (Ma & Munter 2013; Lave, 1988; Lave, 1984).

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As a member of the Space, Learning and Mobility Lab at Vanderbilt’s School of Education, Ben conducts research projects, designs experimental teaching and learning activities, and writes about relations between space, mobility, and learning. His most recent projects include collaborations with the Country Music Hall of Fame & Museum to map historical archives onto surrounding cities through emerging digital technologies and various projects with the Nashville Public Library. Ben is co-founder of Design for America Vanderbilt, part of a network of student-led studios creating local and social impact through interdisciplinary design. He also serves as a T.A. for Professor David Owen’s Massive Open Online Course (MOOC), Leading Strategic Innovation in Organizations.
Supporting and extending interest-driven and connected learning across everyday, informal and formal boundaries is of increasing interest to educators and learning scientists (Ito et al., 2010; Crowley & Barron, 2014), but how it gets organized and assembled in particular settings is not fully understood. Likewise, it is recognized that in order to understand, assess and design for such learning educators and learning scientists must develop new and empirically rigorous methods to define and communicate the development of interest across space and time (Lemke, 2015; Crowley & Barron, 2014). This study aims to better understand interest driven and connected learning by theoretically advancing our understanding of the dynamics and qualities of engagement while simultaneously developing tools to capture and communicate these dynamics and qualities of engagement across space and time.

Likewise, this particular study is informed by and contributes to a growing body of scholarship on visitor behavior and learning in museum spaces. We do not survey that literature here, however, it is relevant to point out two trends in this literature. First, museums and archival collections are redefining their mission, from curating and conserving collections to engaging the public in conversations about the meaning of archival material in relation to broader societal themes. Second, studies of visitor behavior are shifting away from understanding gallery exhibits as a fixed curriculum that visitors succeed or fail at understanding, and towards a view of visitor engagement and interaction as an “enacted curriculum” (Crowley & Jacobs, 2002). Learning opportunities can be designed, but learning is in the hands of visitors.

We begin by providing an overview of this study that occurs within a museum context alongside our research questions and methods. We then focus a detailed case analysis around a family of five from Big Sur, CA supported by a representational system we call a Mondrian Transcript™ to illustrate the dynamics and qualities of their engagement and learning within a particular museum gallery space.

We conclude with findings regarding engagement and interest-driven and connected learning applicable to educators, designers, and professionals working in formal or informal learning settings.

**Overview of the study, research questions and methods**

The empirical basis and setting of this research is a two year ethnographic study to understand how visitors cultivate interests in and learn about the diverse historical and cultural heritage of American Roots and Country music while visiting a nationally renowned museum located in the mid-South region of the United States (“The Hall”). We frame this learning theoretically as being elective (i.e., learning is voluntary, without formal teaching), driven by personal interests (Azevedo, 2013) and the cultural identity of visitors, and connected (Ito et al., 2009) to friends and family members who need not be present during the museum visit.

Initial fieldwork included observations of typical visitor activity in gallery spaces and working with museum staff and exhibit designers to develop and install new exhibits. Subsequently, we began our study with two primary research questions pertaining to visitor engagement and learning within the museum:

1. How do visitor groups engage with exhibits in gallery spaces? Are there typical ‘engagement forms’ within the talk and mobility of visitor groups?

2. How do visitors make sense of their experiences with exhibits in ways that further their interests and connected learning?

To answer these questions, we collected and analyzed a purposive sample of complete museum visits across 22 visitor group cases including 11 family groups (2-5 visitors per group). These 22 case studies captured continuous, multi-perspective video and audio records of visitor group mobility and interaction (including 11 family groups).
through small cameras worn by visitors with no researchers present. Visits ranged from 38 minutes to 3 hours and 43 minutes. Typically all members of the visitor group (2 to 5 people) wore a camera or audio recorder allowing us to follow the formation of varying ‘engagement forms’, what happened during interest-driven conversations, and how engagement ended. We additionally conducted 1-2 hour post visit interviews with all visitor groups that often included walks back through the museum (with researchers present), and we subsequently followed online content (e.g. photographs, videos, messages) curated by visitors from their museum visit with personal information devices across a variety of social media platforms.

Figure 1 provides an overview and descriptive information across the 22 visitor group cases. Comparisons can be drawn across the 22 cases with regards to a number of categories including hometown, length of museum visit and expertise in relation to museum content while also providing information on followed social media posts.

**Engagement in a ‘bluegrass family’**

We focus a detailed analysis of ‘engagement’ created by a family of five from Big Sur, CA during their museum visit within a particular gallery space (Visitor Group 18 in the preceding table). We call this family a ‘Bluegrass Family’ for reasons that should be clear shortly.

The members of the family include Blake, Jeans, and Lily, three siblings (6, 10 and 23 years old respectively) along with their mother Helen (mid 40s) and Lily’s significant other named Adhir (25 years old). Blake, Jeans, and Lily are

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**Overview of 22 visitor groups & followed social media posts**

The table reads from left to right with each row corresponding to one of 22 groups of museum visitors. For example, Group 1 from Pittsburgh, PA completed their visit together in 1:40. Of the 3 people in the group, 2 shared single posts to the followed social media platforms of Instagram and Facebook. Together, these posts received 16 likes & comments.

<table>
<thead>
<tr>
<th>Hometown</th>
<th>Visit Length</th>
<th>People</th>
<th>People w/ Post</th>
<th>Type of Post</th>
<th>Likes &amp; Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>* family group</td>
<td>(hr: min)</td>
<td>* musician</td>
<td>40-60 yrs old</td>
<td>single post/platform</td>
<td></td>
</tr>
<tr>
<td>Pittsburgh, PA</td>
<td>1:40</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Fresno, CA</td>
<td>1:09</td>
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<tr>
<td>Staten Island, NY</td>
<td>47</td>
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<td></td>
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<tr>
<td>South Korea</td>
<td>0:52</td>
<td></td>
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<tr>
<td>TX *</td>
<td>3:43</td>
<td></td>
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<tr>
<td>Nova Scotia &amp; MI</td>
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<tr>
<td>Cordele, GA</td>
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<tr>
<td>Holland, MI</td>
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<tr>
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<tr>
<td>GA &amp; England</td>
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<tr>
<td>Hazlet, NJ *</td>
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<tr>
<td>Washington, D.C.</td>
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<tr>
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<tr>
<td>Sunrise, FL *</td>
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<td></td>
<td>1:33</td>
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</tbody>
</table>

Range: 38 to 3:43 2 to 5 1 to 3 0 to 13 Online Postings 4 to 169

*family group (hr: min) * musician

![FIGURE 1 – Overview of 22 visitor groups and followed social media posts.](image-url)
homeschooled children with deep, long-term, and professional interests in Bluegrass music. Lily has played the fiddle since she was seven years old and studied traditional Appalachian string band music particularly from North Carolina and the West Virginia mountains. She currently attends a well-known university in California. Blake and Jeans have played Bluegrass guitar and fiddle for four years. Jeans also sings and is deeply interested in developing a wide variety of guitar techniques including flat-picking. The family often makes trips across the country to perform with others and one another. They have far less interest in modern Country/Pop music describing to us during the post interview, “We really don’t even know what Miranda Lambert sounds like.”

Our analysis focuses on the Bluegrass Family’s experiences within a particular gallery space that includes a semi-circular set of six exhibit displays containing the original instruments of artists Hank Williams, Lester Flatt, Earl Scruggs, Bill Monroe, Maybelle Carter, and Jimmie Rogers. The gallery space also features an exhibit that focuses on Crystal Gayle and hundreds of vinyl records of famous country and blues artists.

This gallery space contains content that has deep meaning to the cultural identity of the Bluegrass Family. Helen, Lily and Adhir describe their (individual and family) engagement within this exhibit space during the post interview as:

Helen:

“the most impactful was looking at instruments and thinking about what they created from that instrument... Maybelle changed the world with that guitar-you hear those sounds in your head.”

Lily:

“Seeing Maybelle Carter’s guitar and you hear all of the Carter Family recordings...the sound of her guitar is different than anything else. She had this “meaty sound.”

Adhir:

“Looking at Hank Williams guitar made him think of his voice, and then how he died and how the guitar represents the few moments of peace he had in his life.”

Jeans and Blake (the two boys) describe this space as the most important space during their visit to the museum as well as their larger visit to the particular city in which the museum resides. Adhir later equates his standing in front of Hank Williams’ guitar as a “gravesite” while also saying “this is the closest I will ever get to Hank Williams.”

The following visual representation (Figure 2) portrays the Bluegrass Family’s experience within this space during their museum visit. In particular, it shows individual movement paths over the eight minutes and 19 seconds they spent within the gallery space in both space and space-time views. This map-like visual representation illustrates a representational system that we have carefully designed and developed called a Mondrian Transcript™ drawing inspiration from time geography (Hagerstrand, 1970) and methods of interaction analysis (Jordan & Henderson, 1995) in relation to the design of learning spaces and any architectural space.

The transcript illustrates how the Bluegrass Family creates a series of varying engagement forms while walking through an exhibit space featuring many of their “heroes”. The exhibit space is shown in plan view. We superimposed paths in the gallery taken by each member of the Bluegrass family over a period of eight minutes and 19 seconds. We subsequently redraw paths for group members over time (horizontal axis), while preserving location in the gallery space with the vertical dimension and varying the line quality of visitor paths.

While we trace the path of every visitor in the gallery, the units of analysis of greatest interest are engagement forms created when individual paths intersect to produce places or to realize existing opportunities for learning. In this transcription system, utterances (not shown here) by individuals are also embedded along their paths, and engagement collects people (paths) and their utterances (fragments of transcript) together to make places for engaging with the exhibits. On the following page (Figure 2) we isolate the paths of Blake and Adhir to show Blake’s lively efforts to move Adhir to shift between engagement forms. As evident in the orange path of the older Adhir, he became transfixed by an exhibit showing the guitar used by Hank Williams during the late 1940’s. He remains in reverent silence at the exhibit for 5 minutes (horizontal path, minutes .5 to 4.5), while the younger Blake moves back and forth between him and the rest of the family, trying to collect Adhir for looking at and talking about the other exhibits. After checking in on Adhir five times, Blake finally (at 5 minutes along the horizontal scale) manages to lead him on a tour of the remaining instruments (their entwined paths between minutes 5 and 8).
Summary & findings

We often characterize engagement and learning as occurring in places. It is also the case that engagement and learning can depend on or arise from making places for engaging with entities or phenomena that interest learners. Our analysis of the Bluegrass family coupled with a Mondrian Transcript of their engagement in a particular gallery space within the museum illustrates how people can make places for learning as they are on the move, slowing their pace and creating forms of engagement that can produce or realize (existing) learning opportunities that can extend far beyond museum walls and present time. Likewise, while it has been tempting to treat museum exhibits (or other designed environments) as stable information caches for learning, attending to mobility and interest-driven (Azevedo, 2013) engagement with these environments reminds us that what visitors experience is always a personally-edited version (Lave, Murtaugh & de la Rocha, 1984; Ma & Munter, 2014) of what was designed. By analogy to studies of pedagogical practice, designers create an intended curriculum, but visitors produce the enacted curriculum.

This supports two particular findings in our study applicable to a variety of formal and informal settings. First, a Mondrian Transcript provides a representational system and technology to organize individual and group movement in space and space-time to understand how people create objects of interest, learn new things about them, and thereby create or experience interest driven learning. For example, our analysis illustrates how engagement in the Bluegrass family can move rapidly and involve intense movement and/or conversational sharing. Others can slow the pace of movement and conversation—they can create places of reverence.

Second, visitors experience a personally edited version of the gallery space shaped by their social history and personal interests. The Bluegrass Family’s experience described in our analysis is unique to their cultural identity and interests as individuals and as a family. Other visitor groups and individuals across our 22 cases illustrate how hobbies such as guitar building...
and weaving, professions such as teaching, dance and entrepreneurship and historical experiences as an African American family growing up in the United States that strongly oppose museum content create vastly different experiences and movement/conversation paths through the same space. Everyone experiences a different museum and understanding this process is of significant value to the design of formal or informal learning environments and perhaps any architectural space.

A Mondrian transcript of family engagement within a museum
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The transcript depicts the movement of a family of five across a particular museum gallery space featuring exhibits of artists including Hank Williams, Lester Flatt, Earl Scruggs, Bill Monroe, Maybelle Carter and Jimmie Rogers. Colour designates individuals within the family. Movement is shown as it unfolds over space and over space-time. Engagement occurs when individual movement paths intersect in space-time to produce places or to realise existing opportunities for learning.

FIGURE 3 – A Mondrian transcript of family engagement within a museum.
References


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