Looking Through the Glass:
Reflections of Identity in Conversations at a
History Museum

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This study is one of several that have been designed under the auspices of the Museum Learning Collaborative (MLC) to inform a model of how learning occurs in museums (Leinhardt & Crowley, 1998). The MLC takes a sociocultural perspective on learning, one in which the conversations people have as members of a cohesive conversational group during a museum visit are seen as places where ideas are brought forth for public sharing in a way that allows group members to build on each other’s knowledge and understanding. Studying conversations provides a window into this joint meaning-making activity (see Silverman, 1990; Wertsch, Hagstrom, & Kikas, 1995). The MLC takes conversational elaboration as a measure of learning and presumes there are three interconnecting elements that contribute to conversational elaboration: the nature of visitors’ identity, the structure of the learning environment, and the degree of explanatory engagement (Leinhardt, 1996; Leinhardt & Crowley, 1998; Schauble, Leinhardt, & Martin, 1998). In this study we focus on one part of the model: the connection between a cluster of background characteristics and interests that visitors bring to a museum—what we call visitor identity—and the nature of visitor conversation during a museum tour—what we call explanatory engagement. We suggest that the conversations visitors have with friends or family members as they tour a specific exhibition both reflect certain aspects of the identity of those visitors and mediate visitors’ engagement and understanding. In turn, various levels of explanatory engagement are indicative of, and related to, learning. The main purpose for conducting this study was to trace and understand the connections between visitors’ identities and the structure and content of their conversations in a museum.

The study involved audio taping conversations among small groups of visitors in a history museum and examining those conversations in light of what the visitors told us about themselves in interviews prior to the tour. We analyzed their conversations in terms of both the structure (the pattern of talk as visitors toured) and the content (thematic emphasis) in order to understand connections between various background characteristics of group members and the conversations that evolved in each group. We looked for evidence of some recurring structural patterns in the talk that showed increased conversational elaboration on certain thematic topics depending on the presence of particular identity characteristics in the group.

One common conception of identity is that it is comprised of a set of demographic characteristics such as age, gender, socio-economic status, race, and ethnicity, characteristics that influence people’s attitudes and behavior and sometimes influence how they are treated by others in the society. Another conception of identity is that it includes the kinds of knowledge and patterns of experience people have that are relevant to a particular activity. This second view treats identity as part of a social context, such that the prominence of any given feature varies depending on which aspects of the social context are most salient at a given time.

Museum researchers have typically examined the role of visitor identity as part of evaluative studies undertaken to understand the demographic characteristics of the population the museum had successfully attracted or to ascertain what kinds of exhibits would attract repeat visitors. These efforts have primarily served a marketing goal rather than a goal of improving visitor understanding or learning (e.g., Falk, 1998; Mintz, 1998). A few other researchers have
explored the concept of identity in more in-depth ways. One such line of work is that of Doering and Pekarik (1996), who propose that visitors have “entrance narratives” comprised of their “interest in the subject” and “knowledge and opinions about it.” For Doering and Pekarik, the background interest and knowledge that visitors bring with them to a museum exhibition provides them with an “internal storyline” that guides them through their visit. Although Doering and Pekarik do not use the phrase “visitor identity,” they invoke elements that we consider part of visitors’ identity, namely, background knowledge and experience. Unlike those who view knowledge as a finite entity that people have in varying measures, which needs to be augmented or transformed in specific ways for learning to occur, Doering and Pekarik take a broader view that includes attitudes and pre-dispositions (such as the propensity to be a knowledge-seeker, for example). From a sociocultural perspective, this broad view of the role of visitor identity supports the expectation that visitors touring a museum exhibition in the company of friends or relatives will talk among themselves in ways that reflect their joint identities—they will seek to make meaning from the museum content based not only on what the museum provides but also on what they as a group know about each other and value. We consider visitor background knowledge and experience to be intertwined with interest and motivation.

When people visit a museum as part of a socially cohesive conversational group there are, in addition to the influences of the content and organization of the museum displays, both explicit and implicit social influences that shape, support, or perhaps curtail their conversation. These influences come primarily from the nature of the relationship among the group’s members—the degree to which they are familiar with each other and the ways in which they normally handle subtle social issues such as turn-taking, topic control, or—in a museum setting—who gets to choose the pathway, the length of time at each stop, the together-time versus apart-time, and so forth. Much of these “social dynamics” have been worked out by family members and close friends before a specific museum visit. In some cases a novel situation affects the way the group interacts, or the presence of a less-close family member or friend in the group introduces the need or an opportunity to adjust the “rules.” We believe that some of these social influences are bound up in the joint identity of the visiting group and thus influence the nature of the conversations that evolve.

Another component of the MLC’s overall model of learning in museums is one that reflects visitors’ interaction with the information or message the museum is providing and with the information visitors are exchanging with each other in order to make meaning for themselves and their companions. Whether the museum presents information in a didactic way or in a way that fosters visitor inquiry, and whether one or another visitor tends to do more of the talking, the conversations that evolve give us a sense of the way the visitors are “engaged.” We call this component explanatory engagement (Leinhardt & Crowley, 1998; Schauble, Leinhardt, & Martin, 1998). Engagement is a measure of the degree to which visitors become involved in particular explanatory opportunities, whether those opportunities exist at specific exhibit stations or in some overarching exhibition theme.

An alternate, developmental approach to visitor identity is found in the work by Housen (1980), who classified art museum visitors into one of five categories based which of five different hierarchically organized “modes of aesthetic understanding” they possess. Housen’s categories provide a useful tool for considering the kinds of support an art museum might offer to less well-informed visitors to help them move to the next level.
We can describe explanatory engagement in several ways, one of which emphasizes physical interaction and another that emphasizes verbal interaction as a way of inferring the depth and degree of intellectual connection with the material. In using the latter framework, four levels of engagement are discernable: (a) People may engage in a simple, uni-dimensional, response to the content in the form of a phrase that identifies an object or a list of features, but seldom extends further. We call this Listing. (b) The conversation may include analyzing underlying features of an object, a process, or an abstract concept. We call this Analysis. (c) The conversation may integrate multiple ideas across knowledge sources (e.g., from outside the museum or from other exhibit stations within the museum) in order to support an idea. We call this Synthesis. Finally, (d) some combination of analytic and synthetic discourse may be brought to bear on the task of helping one or another member of the group (including oneself) understand how or why something exists as it does, works the way it works, or happened the way it happened. We call this Explanation. (For a more detailed discussion of these levels of explanatory engagement, see Leinhardt & Crowley, 1998. For a slightly different take on these dimensions see Abu-Shumays & Leinhardt, and Leinhardt & Gregg, this volume).

Throughout a museum tour, as visitors are talking among themselves, they may exchange brief comments or they may expand on an idea that is triggered by some aspect of a museum display. In terms of the levels of explanatory engagement outlined above, we expect listing, analysis, and synthesis to be present in their brief comments—that is, a single phrase can reflect analysis (“That vase is etched not molded”). Although analysis and synthesis are expected to occur within the expanded talk as well as the abbreviated talk, explanations require more expanded talk; therefore we expect explanations to be found only in the expansions. Thus, while the length of a conversational utterance may vary from a phrase to a paragraph in this study, we were primarily interested in those portions of the conversations that exhibited some noticeable expansion that was recognizable in terms of both length and depth. We argue that expansions indicate some level of increased knowledge and/or interest on the part of one or another member of the group.

Heinz History Center

The study took place at the Senator John Heinz Pittsburgh Regional History Center in Pittsburgh, Pennsylvania, in a permanent exhibition —Glass: Shattering Notions—completed by the museum in 1998 (see Madarasz, 1998). The museum itself is housed in an 19th century former ice warehouse situated between the downtown business and convention area and a busy narrow piece of land known as “The Strip” (bounded as it is by cliffs on one side and railroad tracks and the Allegheny River on the other). The Strip is dominated by wholesale vendors, active warehouses, and railroad tracks. Many Pittsburghers go to the Strip early on Saturday mornings to buy their week’s produce from wholesale vendors. In addition, the Strip has always

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2 Explanations as an indication of learning in museums was also considered in the work by Borun and her colleagues in the Philadelphia-Camden Informal Science Education Collaborative (PISEC), where an increase in behaviors such as “explain the exhibit” implied increased learning at specific exhibit stations that had been enhanced in some way (see Borun, Chambers, Dritsas, & Johnson, 1997). The MLC is attempting to provide a less goal-referenced examination of museum visiting, one that values personal meaning making.
reflected in its foodstores the rich cultural diversity of the city. Within these surroundings, the
six-story museum building was used originally to store blocks of ice for both commercial and
private ice boxes prior to the advent of electric refrigeration, thus it provides a kind of historical
context for much of the temporal and physical content the museum portrays.

In its structure, location, and focus, the museum speaks to the working people of the
region and provides a unique sociocultural milieu. Set neither on a grand boulevard nor on
palatial grounds high on a hill, the museum sits in the heart of the wholesale warehouse district
where it resonates with the working class people who have toiled in the region for generations.
The huge old ice-house has been carefully restored and re-directed to a different yet fitting role.
It now houses collections of artifacts and documents, some precious and some common, that tell
the stories of people both great and small, familiar and unknown, with whom everyone can
communicate at some level.

On entering the museum, visitors find themselves in a large ground-floor gallery with
high ceilings, thick rough wooden support beams, walls of exposed brick, and giant aluminum
air ducts coming down from the ceiling. This expansive gallery space features historic modes of
transportation that were used in the region, including a covered wagon, an antique motor car, and
an electric trolley that people can climb onto and pretend to ride. In striking contrast to these
authentic historic vehicles, a mobile robot is often present and actively engaging visitors with
information (both spoken and available on its screen) about exhibits to be found throughout the
museum. At the back of the ground-floor gallery, visitors come to an open steel staircase that
leads to the upper floors, which are also accessible via one of two freight-size elevators located
behind the staircase.

Glass Shattering Notions, a 4600-square-foot permanent exhibition that portrays the
history of glass making in Western Pennsylvania, is located on the fourth floor of the museum,
along with three or four other permanent and temporary exhibitions. An expansive “foyer” on the
fourth floor by the elevators contains an atrium-like opening that has been retained from the
building’s original warehouse function and which reveals the sights and sounds of exhibits on the
floors below. A sign near the elevator points across the way to a glass door and a hallway leading
to Glass: Shattering Notions (as well as two other exhibition halls beyond it).

Coming through this doorway, visitors can see the glass facade of the Glass: Shattering
Notions exhibition on their right, with a dramatic, central, semicircular, portal bordered in glossy
black glass. Within that semi-circular black frame, a pair of tall clear glass doors are flanked by
sets of glass shelves of varying widths that display both artistic and functional glass objects. On
either side of the semi-circular black frame, the clear-glass, floor-to-ceiling window-walls
provide a “window” on the exhibition, dominated by two large three-dimensional wooden
cutouts—one of a Model-T Ford and the other of the Statue of Liberty—that are intended to
convey some of the functional uses of glass.

From this hallway, visitors move through the pair of glass doors to the exhibition’s own
entrance foyer where they see ahead of them a wall of “shattered” glass engraved with the title of
the exhibition and a general introduction. To their left is a display block showcasing modern,
abstract, hollow glass sculptures in swirls of vivid primary colors, created by a Pittsburgh-area
glass artist, Kathleen Mulcahy. To the visitors’ right is a partition constructed of glass block in various patterns. Mounted on the face of the glass-block partition are photographs of famous structures in other cities that contain glass made in Western Pennsylvania (e.g., glass tiles in the Lincoln Tunnel and glass windows in the crown of the Statue of Liberty in New York) and famous people using glass products from the Pittsburgh region (e.g., President Harry Truman dining at the White House). Like the view from the hallway, the entrance foyer of the exhibition fosters the theme of the importance of the glass industry in Western Pennsylvania and the varied nature of glass products made in this region.

The exhibition has historical, aesthetic, and technological themes woven throughout. It is a densely packed hall with roughly 70 exhibit stations, containing art objects, historical documents, cultural artifacts, maps, and interactive exhibits as well as video presentations. According to the chief curator of the museum, the exhibition title was chosen to reflect the museum’s goal of correcting two common misconceptions: that Pittsburgh is only a “Steel City,” and that aesthetics is “the sole criterion for inclusion of glass in museums” (Rosenthal, 1998, p. iii). Both of these misconceptions are addressed by the exhibition’s emphasis on glass production and related industrial issues, although examples of strikingly beautiful glass objects are prevalent as well. The gallery consists of thematically grouped exhibits arranged in room-like areas that allow for multiple pathways through the exhibition. Textual information is provided in the form of large section headings (at least 19, including Miracle Material, Why Pittsburgh?, From Craft to Industry) that are in turn supported by sub-headings, wall panels, case labels, and object labels. Throughout the exhibition, object names (e.g., egg cup, rolling pin, microscope, stained glass) in faint cursive writing serve as borders along the bottom of some of the large, wall-mounted, text panels, reflecting multiple uses of glass.

How Do Visitors Construct Meaning?

In conducting this study in Glass: Shattering Notions, we were interested in how visitors touring in small groups build meaning for themselves. In particular, we had two underlying questions: 1) What is the pattern or structure of visitor conversation as groups tour through an exhibition; that is, how exactly do people talk among themselves as they tour through an exhibition in the company of friends or family members? and 2) How are visitors’ conversations influenced by their identities; that is, how do visitors’ background knowledge, interests, and experiences influence the nature and focus of their talk? We hypothesize that visitors with high levels of knowledge about or experience relevant to the content of the exhibition (in this case, glass—either its collection or production), with high levels of museum experience (whether at history or other types of museums), or with strong ties to Pittsburgh or Western Pennsylvania (long-term enough to have been exposed to some of its history and to feel a connection to it), will engage more deeply with those aspects of the exhibition than will people who have lower levels of such background characteristics. This means we expect to see places in the tour conversation where there are conversational elaborations or expansions of talk beyond the content provided by the museum, and that the location of those expansions or elaborations will differ depending on the multiple identity characteristics of the conversational group.
METHODS

Data Collection

The data for this study come from conversations among small groups of visitors while they toured the exhibition and from interviews with these small groups before and after their tours. All conversations and interviews were audio taped and transcribed, and all visitors were assigned pseudonyms.

In total there were 10 visitor groups involved, 5 observed during the fall of 1998, and an additional 5 during the fall of 1999. The first 5 groups consisted of pre-selected visitors with particular background characteristics that were expected to be relevant for their response to the exhibition; that is, people known to the researchers were chosen based on their having either a high or low level of three attributes—(a) knowledge of glass (as a maker, professional user, or collector), (b) familiarity with the Pittsburgh/Western Pennsylvania region, and (c) prior museum-visiting experience. All participants were asked to sign informed-consent forms at the outset of their participation. The Pre-Selected visitors were interviewed in depth one to three days prior to their museum visit. They participated in another very brief pre-interview on location immediately prior to entering the exhibition and a post-interview at the end of their tour. All interviews and tours with this set of participants were audio taped by means of a portable tape recorder held by the researcher who conducted the interviews and who accompanied the visitors as a participant-observer. An additional one or two researchers followed behind the touring group, taking field notes on their route, recording a fragment of their talk at each location, and timing the duration (in seconds) of each “stop.” in order to later annotate the audio transcripts with location information. Among our Pre-Selected visitor groups, two were dyads that consisted of one participant and one participant-researcher whose role was intentionally subordinated in order to give voice to the target participant. Those groups are identified by a single name—the pseudonym of the target participant.

The second set of visitors (On-Site) was randomly sampled from the naturally occurring museum population over the course of three weeks, including both weekdays and weekends. Researchers stationed themselves outside the entrance to the exhibition for three or four hours, and visitor dyads or small groups who walked toward the entrance were approached and invited to participate. For those who agreed to participate, two members of the group were asked to participate...
sign consent forms and to wear small microphones that transmitted their talk to remote tape recorders held by observers. The target members of each group were asked to participate in a self-administered pre-interview that was designed to foster discussion. For these On-Site visitor groups, the researchers functioned as observers. Each group sat at a small table outside the entrance to the exhibition and talked among themselves in response to a set of pre-visit questions that were printed on 5 by 8 index cards. As with the Pre-Selected visitors, interview discussions among members of the On-Site groups were audio taped.

Following a pre-interview with the target participants, the full group of sometimes 3 to 6 people would proceed on their tour and would engage in conversations with various members of that group either all together or in subgroups. Although we often could not hear the dialogue of unmiked group members, we could detect that something was being said to a target participant and we understood the response given by one of the microphoned participants to be relevant to what was being said by other members of that group. Those conversational episodes were included in our data.

During the On-Site tours, observers again took detailed field notes on the visitors’ progress through the gallery. For these visitor groups, information about the sequence of their stops, as well as their opening and closing fragments of talk at each stop, was recorded on a small-scale floor map of the exhibition. Following the tour, all On-Site visitor groups were asked to participate in a post-interview discussion that was conducted just outside the exhibit hall using card prompts in the same manner as the pre-interview, with researcher/observers monitoring at a distance.

All the interviews and tours were transcribed and then coded. We used information from the pre-interviews to establish identity characteristics for each group; the tour transcripts provided data on the group’s museum conversations.

Participants

Based on information from visitors’ discussions about their backgrounds during the pre-interviews we rated each group as being either high or low with respect to their connection to glass, their relationship to Pittsburgh, and the frequency of their museum experiences. Visitors were given a High glass-knowledge rating if they indicated background experiences such as having worked in a glass factory, having made glass themselves, or having studied or seriously collected glass objects. A High rating on the relationship-to-Pittsburgh dimension was given to visitors who had lived in the region most of their lives. A High rating on the museum-experience dimension was given to people who indicated they either worked in a museum or visited museums routinely. We also used observer notes that contained estimates of basic demographic characteristics of the visitors in order to build a “profile” of our visitor groups. A summary of each group’s characteristics and identity ratings is shown in Table 1. Because it turned out that most of the visitors had a high connection to Pittsburgh, we will not consider that dimension further.

“You don’t want us...not THESE kids!” implying she felt they would do or say things that would embarrass her (or us).
Table 1. Background Characteristics of Groups and Their Classification as High or Low on Three Identity Dimensions

<table>
<thead>
<tr>
<th>Group</th>
<th>Relationship</th>
<th>Gender &amp; Age Range</th>
<th>Education</th>
<th>Glass Background (Level &amp; Source)</th>
<th>Pittsburgh Connection</th>
<th>Museum Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Selected Visitor Groups</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Riley &amp; Clara</td>
<td>2 Spouses &amp; 1 Friend*</td>
<td>1M, 2F 60-70</td>
<td>University</td>
<td>HIGH -serious collectors -1 worked in glass factory</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
<tr>
<td>2. Minsu &amp; Yuri</td>
<td>Acquaintances*</td>
<td>1M, 2F 20</td>
<td>University</td>
<td>LOW -1 chemistry -1 publ. hlth</td>
<td>LOW</td>
<td>LOW</td>
</tr>
<tr>
<td>3. Jason</td>
<td>Acquaintances*</td>
<td>1M, 1F 40-50</td>
<td>University</td>
<td>HIGH -architecture</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
<tr>
<td>4. Julia &amp; Elsa</td>
<td>Friends*</td>
<td>3F 60-80</td>
<td>University</td>
<td>HIGH -chem. lab &amp; docenting</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
<tr>
<td>5. Armand</td>
<td>Friends*</td>
<td>1M&amp;1F 40-60</td>
<td>High School</td>
<td>HIGH -worked on glass factory floor</td>
<td>HIGH</td>
<td>LOW</td>
</tr>
<tr>
<td>On-Site Visitor Groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Sarah &amp; Pat</td>
<td>Cousins</td>
<td>2F 50-60</td>
<td>1 High School 1 not avail.</td>
<td>LOW -grandma collects</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
<tr>
<td>7. Kimiko &amp; Herbert</td>
<td>Sister- &amp; Brother-in-law</td>
<td>1M,1F 60-70</td>
<td>1 University 1 not avail.</td>
<td>HIGH 1 worked in glass industry</td>
<td>HIGH</td>
<td>LOW</td>
</tr>
<tr>
<td>8. Jasmine &amp; Yvette</td>
<td>Friends</td>
<td>2F 50-60</td>
<td>1 University 1 High School &amp;Nursing</td>
<td>LOW -nursing -some collecting</td>
<td>HIGH</td>
<td>LOW</td>
</tr>
<tr>
<td>9. Brenda &amp; Amelia</td>
<td>Cousins</td>
<td>2F 30-40</td>
<td>1 University 1 High School</td>
<td>LOW -some collecting &amp; grandma collects</td>
<td>LOW</td>
<td>HIGH</td>
</tr>
<tr>
<td>10. Pauline, Andy, &amp; Kyle</td>
<td>Family (Mother, Father, Son)</td>
<td>2M, 1F 10-50,</td>
<td>2 University 1 Grade 6</td>
<td>LOW -some collecting -1 works in steel industry</td>
<td>HIGH</td>
<td>HIGH</td>
</tr>
</tbody>
</table>

Coding

To understand the structure and focus of the conversations that evolved during the museum visit, we examined the tour transcripts. Transcripts were segmented into conversational episodes that could be seen as having a natural start and end in that they focused on a coherent topic. Episode boundaries usually corresponded to the move from one exhibit station to another;

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6 All names are pseudonyms. An asterisk indicates the presence of a participant-researcher in the group.
therefore, the number of episodes for each group tended to be close to the number of exhibit stations at which they stopped, although some conversational episodes continued across two or more exhibit stations. In other cases, there was more than one conversational episode at a given exhibit station, because the variety of content on display, or a related idea offered by one of the visitors, fostered two or more different mini-conversations. The demarcation of conversational episodes served as a means of identifying the primary unit of analysis for many of the issues with which the study is concerned. The mean number of episodes for a tour was 46, with a range of 23 to 59.

Within each episode we coded all conversation that was in any way related to the content of the museum exhibition, and excluded all talk pertaining to self-monitoring of the overall museum enterprise. Thus any talk related to such activities as general route-planning (“Should we go to the left now?”), keeping track of companions (“Where’s David gone?”), or monitoring of time (“Do we still have time to get to the Byzantine exhibit?”) was not considered in our analyses. 7 The remaining talk was coded for evidence of structural patterns, explanatory engagement, and content emphasis.

**Pattern of the Talk**

Within each episode we examined the conversation among the members of the group to determine the general pattern of talk. We noticed a tendency for many of the episodes to have a cyclical pattern of conversation that contained some recurring elements, not always in the same order and not always present in every episode, but recurring enough to warrant coding for their presence. We therefore coded each episode to determine whether one or more of the following elements were present:

1) **Identification**—either a statement that identified something, such as an object, place, or process; or some indication that the visitor was trying to identify an object, place, or process (e.g., “That’s a cut glass vase.” “Which company used to be in Coraopolis?” “What is that?”). Identification queries could be explicitly in question form or they could be or implicitly embedded within a statement (e.g., “I wish they would say the names of these companies; they say only where they were located”).

2) **Evaluation**—either positive or negative comments about the aesthetic quality of an object (e.g., “I like that one.” “That’s so pretty” or “You could find that at any flea market”), the overall appeal or usefulness of an exhibit station (“a wonderful movie”), the level of skill involved in producing an object or engaging in a type of work (“There’s a whole lot of talent in that”), or the quality of an exhibit at another museum (“They have a fabulous collection of glass at that museum in New York”). These statements indicate some level of opinion or judgement along a continuum.

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7 These self-monitoring and management comments occupied an average of 4.2% of the talk during the tours, ranging from a high of 8.1% to a low of 0%.
3) Expansion—an extended form of interaction with museum content or with an idea stimulated directly or indirectly by the exhibition, which indicates a level of visitor engagement beyond a simple or direct comment or response and which is lengthy enough to occupy at least three lines of transcript. Expansions consisted of rich pieces of conversation that either reworked the given information or added to it (e.g., “When we had to blow glass in chemistry lab we . . .”). Expansions may take the form of a story that is called up in response to an idea the museum display has triggered (e.g., “Oh my gosh! We used to have one of these . . . and one time we were playing football and we knocked it off . . . and broke it”) or it may take the form of more analytic talk in support of an idea (e.g., “These molds revolutionized this industry. Can you imagine? One hundred dollars worth of cut glass there--looks the same at a distance and it’s made for a few pennies by pressing it.”). We identified all expansions in a transcript and then counted the number of episodes that had at least one expansion in them.

Within those episodes that had identification and/or evaluation activity, there might or might not be expanded talk, although there could be some brief analytic or synthetic conversation that did not become an expansion. We did not expect to find an explanation, however, in any episode that did not have an expansion; thus we focused considerable attention on the expansions. Those portions of the conversations that contained only unexpanded talk were used to identify or confirm the episode boundaries and the topic of focus as well as to determine the presence of identification activity and evaluation comments in an episode.

Explanatory Engagement in the Expanded Talk

Within the expansions we examined the level of explanatory engagement that was present and classified each expansion as belonging to one of three categories:

1) Analysis—an explicit or implied comparison of the features of something to something else (e.g., “Look at these three canes. One is . . . fluted. That one is a spiral. . . This is also spiral but it’s inferior, it’s hollow . . .”)

2) Synthesis—a drawing together of ideas that have been noticed across exhibit stations (e.g., “This jar looks like the one we just saw around the corner . . . I think they were used by storekeepers for . . .”), or ideas that visitors bring into the discussion from their outside knowledge or experience (e.g., “Times have changed [for apprentices] . . . in terms of signing an indenture. I served a three-year apprenticeship . . It’s a little different . . . You can move around. You’re not stuck studying under one person . . .”)

3) Explanation--a more comprehensive exploration of how or why something is (or was) done, works, or happens (e.g., “They’ve done a really nice job here and they’re showing us shattered notions here with the tempered laminated glass. They shattered the glass in between two layers of regular glass and we can see . . .”).
Content of the Talk

We wanted to see whether there was a link between visitors’ identities and the location of the expansions in their museum conversations—that is whether the places where they tended to engage in expansions were located in, or were focused on, topics where they had a special interest or some form of background knowledge, or whether expanded conversations were randomly distributed throughout a museum visit. Thus we also coded each expansion according to the content of the talk, which we classified in terms of six major thematic topics that emerged from the data. These themes reflect ideas that were present in the exhibition and also present in varying degrees throughout the conversations of most visitors. Each expansion was classified as belonging to one of the following thematic categories based on the content that was dominant within it:

1) Technology--features of a scientific or manufacturing process, including methods or materials used.
2) History/Pittsburgh--discussions of people, places, events, dates, social conditions, and change over time, as well as Pittsburgh area institutions such as sports teams or companies other than glass manufacturers that are tightly identified with the region.
3) Aesthetics/Value--the visual attributes of an object (such as color, pattern, shape), the visual appeal of a display; or the intrinsic or monetary value of something (including notions of rarity).
4) Work--the tasks involved in or the skills needed for certain jobs, including those for artists and laborers.
5) Museum--the way objects or ideas are organized or displayed in this or other museums, including individual exhibit stations or overall museum characteristics.
6) Function--the way an object is used, or the attributes of a material that make it suitable for certain functions.

After the transcripts were segmented into conversational episodes and coded for the presence of type of talk, thematic focus, and level of explanatory complexity by one researcher, another researcher independently segmented and coded a subset of transcripts for purposes of obtaining a measure of reliability. Reliability was 92% for segmenting the transcripts and 88% for coding them.

Relationships Within Groups

In addition to examining the pattern and the thematic content of the talk, we watched for intra-group social interactions that indicated some influence of the relationship among the members of the group on the way the conversations evolved in that group (here too we excluded the general self-monitoring or management talk that was not tied to the exhibit in some way). We noticed instances of social moves such as dominating the conversation, curtailing gossip, pedagogical moves with a school-aged child, in-jokes between friends or family members, and so forth. However, one feature of particular interest for this study was the degree to which one or another member of a group had and was considered by the group to have particularly relevant knowledge or experience about certain aspects of the content of the exhibition or about museums
in general. We expected that in such cases, there would be a tendency for that person to feel empowered to offer expansions on some aspect of the content for the other member(s) of the group. Doing so implied some understanding among the others in the group that yielding the "floor" to that speaker was appropriate. Sometimes this acknowledgment of expertise or authority to speak is understood among groups members prior to the visit, sometimes a member of a group has authority that comes from power relationships unrelated to knowledge or expertise, and sometimes the authority or acknowledgement of expertise evolves as the group moves through an exhibition. Allowing or even encouraging a group member to offer expanded talk during the tour allows other members of the group to have a richer experience than they otherwise might have. The group, then, can add their companion’s experiences to their own repertoire of experiences and they can expand on that with their own ideas, thereby enriching the group experience further. Although not all visitor contributions to museum conversation are enlightening or even accurate, we felt that expansions in the talk were an indication of at least a certain increased level of interest and this interest is bound up in their identity. We also examined the data for information about the relationship among members of each group with respect to the presence of a difference in knowledge or experience within a group, or a kind of gradient, that might be expected to prompt the giving of more expanded talk by one member or another at different places along the way. Groups were classified as having or not having this differential (or gradient) among its members in the area of glass knowledge.

Analysis of the Data

Analysis focussed first on the structure of the talk in each episode. Results from coding the structural pattern of talk were tabulated and used to determine the prevalence (expressed as percent of all episodes) of identification, evaluation, expansion, and explanation that occurred in the conversations of all groups as they toured the exhibition. (Note that since anywhere from one to four structural elements could be present in a given episode, the percentage values represent overlapping measures and thus will sum to more than 100.) To see whether the pattern of conversations differed among groups with different identities in terms of their glass background or their museum experience, the data was split in two different ways--once according to the groups’ High or Low connection to glass and then according to their rating as High or Low on museum experience. For this comparative analysis we again focussed on the relative proportion of episodes (expressed as percentages) that contained at least one instance of identification, evaluation, expansion, and explanation.

Following the analysis of the episodes, we looked more closely at those places in the tour conversations where expansions occurred, this time taking into account every instance of an expansion and determining both the level of explanatory engagement involved and the dominant thematic topic of focus in each. Results from this dual coding of all the expansions were used first to see which levels of engagement and which topics were most prevalent among visitors in general. The data on the expansions were then cross-tabulated to see which kinds of thematic topics generated the largest proportion of each level of explanatory engagement--that is, whether visitors were more likely to engage in explanation-level talk when they were considering historical versus aesthetic themes, for example. To see how groups who were rated high on the connection-to-glass dimension reacted relative to those rated low, we examined the expansion
data separately for the Highs and Lows in terms of their thematic emphasis, levels of explanatory engagement, and then the way thematic topics interacted with levels of engagement. In summary, what we are trying to understand from this data is the kinds of talk people engage in as they tour an exhibition and have conversations in a small group. We want to describe that talk in terms of its structural features, its subject-matter focus, and its level of engagement. Further, we want to examine the degree to which certain identity characteristics that people bring with them, such as background knowledge relevant to the exhibition content, and certain social relationships within the groups are related to the observed patterns.

RESULTS AND DISCUSSION

Pattern of the Talk—Overall

To understand the overall pattern of the talk that visitors engaged in, we examined the structure of conversational episodes of all the visitor groups combined. A summary of these results is shown in Figure 1, which is in the form of a Venn diagram that displays the overlapping categories of talk (identification, evaluation, expansion, and explanation) and the percentages of all episodes that contained various combinations of these talk elements. Of the 460 total conversational episodes, we found that 98% contained talk that reflected some form of identification activity (see light grey large oval).\textsuperscript{8} Almost half of these episodes (46% of all episodes) contained evaluations as well (see checkered oval). Also within the portion of episodes containing identification, there was a subset of episodes (see right oval) in which some form of expansion occurred (52% of all episodes). Some of the episodes with expansions also contained evaluation—27% of all episodes (see overlapping ovals in center). Nested within the episodes that contained expansions were the set with explanations—10% of all the episodes (see smallest oval)—some of which also occurred in episodes containing the full cycle of identification-plus-expansion-plus-evaluation.

What is most noticeable about the results of coding for type of talk across all visitor groups is that there is an overwhelming tendency for visitors to engage in some form of identification activity at almost every stop in their tour. Clearly conversations need an agreed-upon target, but what is also clear is that much visitor energy is expended in trying to identify the objects on display or the features of a display that are relevant for their understanding. The two percent of the episodes that did not have any identification activity consisted primarily of non-specific evaluation-type comments (e.g., “that’s really beautiful”), where visitors may have been communicating the focus of their comment via gesture.

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\textsuperscript{8} All percent values are rounded.
Figure 1 also shows that episodes containing evaluation in combination with identification represented a major proportion of the talk. The cycles within those episodes varied with respect to whether the identification happened prior to or following the evaluation (“That’s a cut-glass vase. Isn’t it magnificent?” versus “I like that! Look at the dark green. That’s pretty, isn’t it? Monongahela Valley, olive green glass. . .”). Sometimes an evaluative comment acted as the conclusion of the episode and indicated a move to the next topic or exhibit case (e.g., “. . . so it’s quite a mixture here, leading from the sublime to the mundane”). Some evaluative comments were primarily affective (like/dislike), whereas others were more analytic, but their prevalence in nearly half the episodes indicates how important they are to visitor conversations. If nothing else, they were likely to stimulate a response from a companion, even if that response was simply “Mm-hm.” Thus, even if these comments provided little in the way of substantive exchange of ideas, they supported conversation generally. At times they led into or wrapped up a more detailed conversation at an exhibit station.

<table>
<thead>
<tr>
<th>Type of Talk</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification</td>
<td>98</td>
</tr>
<tr>
<td>Identif. &amp; Evaluation</td>
<td>46</td>
</tr>
<tr>
<td>Identif. &amp; Expansion</td>
<td>52</td>
</tr>
<tr>
<td>Identif. &amp; Evaluation &amp; Expansion</td>
<td>27</td>
</tr>
</tbody>
</table>
Figure 1 further shows that more than half the episodes contained a combination of both identification and at least one expansion. This means that more than half the time visitor groups engaged in conversations that added to or reworked the material in the exhibition, either by analyzing some aspect of an object or idea in an exhibit, synthesizing information from elsewhere with information in an exhibit station, or explaining some feature or idea in a way that was not already explicated. The cycle of talk that occurred in episodes with an expansion sometimes began with an identification activity and/or an evaluative comment prior to the expansion, but at other times began with a rush of enthusiastic expanded talk on an idea sparked by something in the museum, which was then followed by a focussed identification comment, as in the example below, where Sarah and Pat are viewing glass objects at the entrance facade:

Sarah: Did you know Monica is a glass blower? . . .
Pat: It’s amazing to watch someone who’s really good at this . . . (whispering) You take deep breaths because the glass is [very precious].
Sarah: And there’s a glass [globe] . . .

Whether or not an episode contained an expansion or an evaluation, it often contained instances of brief analytic or synthetic information; some episodes also contained attention moves (e.g., “Look at this over here!”). Some contained explicit comments about learning or wanting to learn more (e.g., “I didn’t know that!” or “They don’t tell us how the color is put in.”); and occasionally there was some comic relief, where people teased each other or shared inside jokes which seemed to relieve the intensity of inquiry that so often leads to museum fatigue. Although some of the “work” in building understanding from museum exhibits in conjunction with companions could take place within the unexpanded talk, we were more interested in the expansions because that is where explanations could occur and where we expected to find the strongest links between visitor identity and conversational elaboration.  

Pattern of the Talk in Groups with High vs. Low Glass Knowledge

Beyond the issue of identifying a general pattern of visitor conversation in Glass: Shattering Notions, we also wanted to know the effect of different backgrounds and experiences on the pattern of group conversations. We have already indicated that visitors’ Pittsburgh identity was not considered in our analyses because so few groups were rated Low on that dimension that we could not construct a meaningful comparison. For the Museum identity dimension we found that there was no particular pattern in the data; thus we will not discuss the museum dimension further. We did see a difference for groups with a High connection to glass as opposed to those rated Low on glass. By separating the results for High glass groups (n=5) from those for groups with a Low connection to glass (n=5), we were able to see where the pattern of their talk was similar and where it differed. Figure 2 shows two Venn diagrams that illustrate the pattern of talk

9 In some cases a pair of visitors would query each other (or the invisible curator) but be unable to resolve their query with the information available. The sense of query, however, could be quite strong, as could the sense of curiosity and interest; so the level of involvement could be considered high even though the level of explanatory engagement did not extend very far and there was no notable expansion in the dialogue. (See Leinhardt & Abu-Shumays [this volume] for an example of Julia and Elsa’s unresolved queries on how glass is made in different colors.)
Figure 2. Percentage of Episodes with Different Types of Talk for Groups with High versus Low Glass Knowledge or Experience. (Note: Venn diagrams are not to scale).
for the High and the Low glass groups based on the percent of episodes that contained each of
the following talk elements: (a) identification; (b) identification plus evaluation; (c) identification
plus expansion, including the overlap with b; and (d) those episodes within the expansions that
also had explanations.

Overall, the High groups had 25% more episodes than the Low groups. As can be seen in
both the chart and the schematic Venn diagrams of Figure 2, groups with a high connection to
glass had the same percentage of identification activity throughout their tours as groups with a
low connection to glass; they had similar percentages of episodes with evaluative commentary;
but the High groups had a noticeably higher percentage of episodes that contained expansions
(59% vs. 43%) and also a much higher percentage of episodes (five times greater) that contained
explanations. (The percentages for episodes with explanations correspond to 6 episodes for the
Low glass-knowledge groups compared to 38 for the High knowledge groups.)

The findings from this analysis indicate that in general visitor groups who came to a
museum exhibition with prior knowledge or experience relevant to the content of the exhibition
had a greater likelihood of engaging in a more expanded way than did those with less connection
to the content. A more detailed examination of the thematic emphasis of those expansions and
the instances of explanation-level talk generated in certain expansions will help us see how
visitor identity affected the content and depth of the conversations.

Thematic Focus of the Talk

In listening to the tour audiotapes, we became aware that visitors generally engaged in
meaningful discussion at places where they paused and expanded on the museum presentations
in some way. Thus, to understand more about the nature of visitors’ conversations we looked
more closely at the content of those expansions. Because more than one expansion could occur
within a single episode,\(^\text{10}\) we used expansions rather than episodes as the unit of analysis here.
The purpose of this part of the analysis was to see whether visitors with certain identity
characteristics were more or less likely to engage in expansions on particular thematic topics or
to engage in more or less sophisticated levels of explanatory dialogue on certain topics. As
stated above, each expansion was coded as belonging to one of the six thematic categories
(Technology, History/Pittsburgh, Aesthetics/Value, Work, Museum, or Function); and each
expansion was also classified according to whether the talk was primarily Analyzing,
Synthesizing, or Explaining. The percent of expansions falling into each of those thematic
categories and levels of engagement was tabulated for all visitor groups combined.

Across all groups, there were a total of 290 Expansions. As Figure 3 shows, most of the
expanded talk emphasized either Technology (32%) or History/Pittsburgh (29%), with each of
the other thematic topics receiving smaller percentages of the expanded talk. This thematic
emphasis in visitors’ expanded talk in part reflects the dominant themes of this exhibition, in

\(^{10}\) Of the 460 conversational episodes, 9.3% had multiple expansions in them.
which texts, artifacts, and displays tell the history of the development of a technologically-based manufacturing industry in the Pittsburgh/Western Pennsylvania region. We wondered, however, whether some visitor groups emphasized certain thematic topics in their expanded talk more than other groups did, and whether the group-specific thematic emphases were related to any identity characteristics of those groups. We therefore examined the data on thematic emphasis in terms of how groups with a high connection to glass compared to those with a low connection and the results of that analysis are shown in Figure 4.

Figure 3. Percentage of Expansions by Theme

Figure 4. Percentage of Expansions on Each Theme by Groups with High vs. Low Glass Knowledge
As Figure 4 shows, groups with a high rating on glass knowledge or experience generated expansions that focussed more on technology than did those groups with a low rating on glass (37% versus 20%) and the High groups also focussed considerably more of their expanded talk on the history/Pittsburgh theme than did the Low groups (32% versus 19%). Taken together these findings suggest that groups with high levels of experience with glass could make use of the affordances in the museum exhibits in more detailed and specific ways than could those with less background experience. Conversely, these findings suggest that visitors with less sophisticated connections to glass were more likely to expand on those features of glass that are more readily accessible and require less technical depth. But it also shows that even without sophisticated access to the material, visitors engaged. Examples of expansions on three specific themes are shown below--two that occurred in the conversation of a High group and one in a Low group.  

**Technology Theme/High Group**

The first example is a technology expansion that occurred in the conversation of a High glass group at an exhibit area called “Handmade.” This exhibit consisted of a display of traditional tools for making glass by hand as well as a set of large photographs showing a glass blower at three stages in the process of making a glass pitcher.

*Riley:* For example, see, he’s blowing a bubble...then he puts his pipe on here, and he rolls it back and forth and spins a flat plate. Then they mold the plate into what they want...say, a salad bowl with frets....The fascinating thing about glass is it never melts. You see it’s always being worked like taffy. See them cutting it with this pair of shears there.

*Mary:* Yes.
*Riley:* Then they’ll bend it over and...touch it to here and that’s how they make the handle.
*Mary:* Oh, I see.
*Riley:* See, lift it up here at the lip...Guide it with a stick...and it would bond because everything is the same temperature. [Group 1, lines 704-761]

**History/Pittsburgh Theme/High Group**

The second example of a thematic expansion is one given by the same High glass group at an exhibit of old glass flasks, where the visitors’ experience as collectors provided the background for the following historical commentary:

*Riley:* Here are the old flasks. A fascinating history on them. Back in the early 1800s people couldn’t read. So when they wanted to identify the liquor that they were drinking, they identified it by the-

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11 Original transcripts were typed in lines of 3 1/2” width. Ellipses in these transcript excerpts indicate portions of dialogue omitted here because of redundancy, irrelevance, or the need to abbreviate for space considerations. Square brackets within the transcript indicate an inaudible word or phrase.
Mary: the shape...
Riley: -by the bottle. . . some would be in the shape of a log cabin. Remember the old Log Cabin maple syrup?
Mary: Yes.
Riley: . . . you knew you were getting maple syrup if it came in a log cabin can or bottle.
Mary: I see.
Riley: The same way here. Your bottles were all indicating the type of, of liquor that was in them. [Group 1, lines 595-621]

Function Expansion/Low Group

The third example is an expansion on the theme of Function, given by a group with a low connection to glass. This discussion by Amelia and Brenda occurred at the glass-block partition early in the tour and it provides an example of how visitors drew on their outside experiences to help them connect to the museum content—in this case the function of a particular glass product.

Amelia: These block glasses are nice. A lot of people do these in basement[ways] and [things]
Brenda: What did you say? Oh, these- Yeah, they’re arranged interiors, over in England now, if people buy them . . .
Amelia: . . .Yeah. [Group 9, lines 30-38]

Levels of Explanatory Engagement

In examining the expansions that visitors engaged in, we looked not only at the thematic emphases of those conversations but also at the depth of their engagement; that is, we wanted to know the extent to which groups engaged in expansions that were analyses, syntheses, or explanations. Figure 5 shows that the expanded talk came in the form of analyses, syntheses, or explanations at the rate of 42%, 39%, and 19% respectively.
What these results help us to see is that most visitors were able to formulate substantial analytic contributions to the information available in the exhibition and to an even greater degree most were also able to elaborate on ideas they drew in either from outside the museum or from exhibit displays elsewhere in the exhibition to enrich their understanding of what the museum was offering. To a lesser extent, visitors were able to elaborate on the museum’s presentation to the level of what we call explanation. Within these general trends, however, there was considerable variation between groups in terms of the degree to which they were likely to do engage in analysis, synthesis or explanation. An examination of the performance of High versus Low glass groups reveals how visitors’ backgrounds influenced their level of explanatory engagement (see Figure 6).

As Figure 6 shows, the High and Low groups differed little with respect to the percentage of their expanded talk that was at the level of analysis. Low groups, however, engaged in a greater percentage of expansions at the level of synthesis. (It should be noted that a large proportion of these syntheses in the Low groups’ conversations came in the form of personal stories about people they knew or about events in their lives. High groups had a smaller percentage of their expansions in the form of syntheses than did the low groups, and fewer syntheses that were quite so grounded in personal stories about friends and relatives.) The greatest difference between the High and Low groups was found in the percentage of explanation-level expansions, as shown on the right-hand side of Figure 6. To give a sense of how expansions at these three levels sounded, examples of visitors expanding in the form of analysis, synthesis, and explanation are provided below, some from groups with high connections to glass and some from groups that were low.
The following example of an expansion in the form of analysis was given by Jason as he considered the aesthetic features of a jar at the exhibit for Print Advertising, where some of the items featured in old advertisements mounted on the wall are also displayed in a case of glass objects. The specific object of focus here was a tall, cylindrical, clear glass container with a lid. Deep blue rings of glass that protrude slightly from the surface of the jar provide decorative markings at approximately one-third and two-thirds of the way down. Jason, the architect, was interested in the use of glass for both its structural and aesthetic qualities and was drawn to unusually designed objects in this exhibition, as can be seen below in his analytic focus on the aesthetic qualities of the jar’s rings:

Jason: It’s a, it’s a jar with cobalt rings around it. . . . covered jar. ‘The addition of blue rings of glass makes this utilitarian object beautiful.’ I agree, I think you know-
Joyce: -Yeah, you were, your eye was attracted to-
Jason: -sometimes it’s the little [---]
Joyce: [---]
Jason: Well, that’s right. You could, yeah. [Don’t know] that it’s just the color either, I think it’s -
Joyce: -It’s the design-
Jason: It’s the, it’s the… Yeah . . . [Group 3, lines 1363-1375]

The following expansion was in the form of a synthesis that was provided by Jason at an exhibit on Polarized Glass. The exhibit included three back-lit photographs of famous Pittsburgh professional athletes set behind rotatable lenses of polarized glass, such that in certain positions the photographs could be clearly seen and in other positions the polarized lens blocked all light and the images disappeared. Jason’s expansion at this exhibit was a synthesis that drew on his outside experience as an architect who uses glass in his profession in a way that requires a deep understanding of various glass products and their properties and also requires him to be up-to-date on technological advances in his profession anywhere in the world. Here he tells about another usage of this feature of glass in a different setting that is architecturally relevant.

Jason: What’s happening here? Polarized glass. Oh, this is great stuff. The Japanese have been using, uh, electronics with polarized glass. (synthesis)
Joyce: Uh-huh.
Jason: [--] and electronically the glass polarizes and so you have this jet-clear glass all around you in the conference room, and when you want privacy, you press a button, and the glass polarizes, and you can’t see through it- (synthesis continued)
Joyce: Ooh!
Jason: -Electronically, and they’re doing that in the outside of buildings [and walls] . . .
It’s blackout shades for conference rooms, and-
Joyce: -privacy-
Jason: Yeah . . . So we have here, we can’t see [a darn thing], but when we turn it 90 degrees, we watch the Pirates play ball.
Synthesis/Low Group

The following synthesis occurred in the conversation of a group with a low connection to glass. As with many stories told by visitors who were less connected to glass, this one recalls a personal experience that reveals an authentic but peripheral connection to glass. In this synthesis, Sarah and Pat were looking at a display of intricate glass tubes and containers at Lab Glass and Sarah describes a time when she ordered objects like this for a school district.

Pat: Oh, [these are the old-]
Sarah: [--].
Pat: Yeah. “Gulf Research, Harmarville.”
Sarah: When I worked in the schools in St. Louis, I used to call Fisher Scientific.
Pat: Did you?
Sarah: All the time. To order our beakers . . . and all the stuff for the chemistry department. And we use to order the frogs for the dissection . . . [P-- ----]
Pat: [Petrie tray]. [Group 6, Lines 120-131]

Explanation/High

The following expansion was in the form of an explanation given in a High group where one member, Herbert, had experience working in a stained glass factory. At the Stained Glass exhibit, Herbert provided the following lengthy explanation for his group about how stained glass is repaired. They are looking at two back-lit stained glass windows mounted on the wall under the sign of a local manufacturer, Rudy Brothers, accompanied by text and photographs from that factory. There is no information given in the exhibit about full antique glass, about how stained glass is repaired, nor even that a repair is involved in the display. This transcript excerpt is annotated (in parenthetical italics) with indications of various conversational moves that build toward the explanation.

Herbert: This is, this, this is as full antique as they make at Blenko . . . (identification) and there’s hardly any place in the country that makes full antique anymore.
Kimiko: Oh.
Herbert: I had a repair job that had. . . six different kinds of full antique and I hear you can’t replace ‘em. (synthesis/personal)
Kimiko: What did you do with it? Just to [get] the color close to it? (query/prompt)
Herbert: [Just put what is close as you could. Whatever color takes.]
Kimiko: Is this, umm, a design behind the glass that, what is that--
Herbert: No, no, this is little chips-
Kimiko: Oh-
Herbert: -of glass, and they put it on a piece of clear glass or whatever color you want on there-. (explaining how it’s done)
Kimiko: Um-hum.
Herbert: -and then you fuse it in the kiln. Stick it on there. (explain actions)
Kimiko: What, what- I don’t get this. Down here. (prompt to continue)
Herbert: Oh that’s just painted on.
Kimiko: Oh, looks like toes.
Herbert: Well, you paint it, well, that’s what it is, but I mean you paint it and put it in the kiln. (explain actions)
Kimiko: Of course.
Herbert: Yeah, that’s why it looks like feet.
Kimiko: (laughs)
Herbert: You put it in the kiln . . . and cook it. And that fuses the- The paint is mixed with fine, fine, fine, ground glass . . . You see here, there’s a whole bunch of repairs on this. (explanation continues)
Kimiko: Are there? How can you tell? (prompt for further explanation)
Herbert: Well, see these should match. And these pieces that they’ve got now cross pieces- (starts new explanation of stained glass repair)
Kimiko: Uh-huh.
Herbert: -of different levels.
Kimiko: I see.
Herbert: . . . [There’s a cross there…]
Kimiko: I see. So they mi- repair it where it needs it.
Herbert: They can’t replace the piece-
Kimiko: Uh-huh.
Herbert: -so they put a piece of lead-
Kimiko: I see.
Herbert: -there on the other side, that same level-
Kimiko: Uh-huh.
Herbert: -that covers the crack. (explanation continues)
Kimiko: So, the-these two should match, you’re saying.
Herbert: Yeah.
Kimiko: And this, this should match. I see.
Herbert: No, this is covering a crack in the glass . . . they can’t get a piece like that. So they just covered the crack.
Kimiko: I see. Hmm. (explanation understood)
Herbert: And they put a piece on the other side-
Kimiko: Um-hum.
Herbert: -matching it so it looks like it’s part of the picture there. (explanation ends)

In each of these examples we see visitors having conversations about objects or ideas in the exhibition by expanding on what the museum has provided and making meaningful connections between the museum content and their own backgrounds. In each case the museum display prompted visitors to engage their companions in discussions that included details or points of view that were sparked by the exhibit and this prompt often called up into active memory an idea that had laid dormant for some time. What these examples failed to show clearly was the dominant tendency among Low groups for much of their syntheses to come in the form of a personal story that helped to make a feature of the exhibition more meaningful. These story-like syntheses seemed to help visitors to connect to the exhibition by means of recollections about objects they owned, people they knew, places they had been, or events in which they had participated. If their companions were familiar with some element in the story, the story served
to call up a familiar and shared idea for the group and made an immediate link to the museum content for everyone. If the story was more individually sourced, it became, in the telling of, it a shared expansion on the museum content, whether the story was about a collectible object or a technological process. Their prevalence reflects one of the intentions of the exhibition curator, who says in the catalogue:

Clearly the American public feels a special connection to the substance, as glass collectors form one of the largest group of collectors in the country. Many more people also identify with a single piece or group of objects that has special meaning to them alone. . . .Glass [may become] infused with personality when it is passed person-to-person by those who share a relationship. The object’s form and being are unchanged, but its value increases because it reminds one of the previous owner . . . Use and shared understanding [of all forms of glass] have created a cultural construct whereby the material is assigned symbolic meanings. By looking at the glass in our lives and in the past we can begin to unlock those meanings (Madarasz, 1998, p. 13-14).

Among the stories told during conversations in this exhibition about glass objects and people who owned them, many were shared by members in the two groups whose expansions contained no explanations, but which often took the form of personal reminiscences used to support an idea at the level of analysis or synthesis. In their pre- and/or post-tour discussions, both groups talked about the nostalgic pleasures of viewing such an exhibition, and this nostalgic thread can be seen in the stories they tell. Although their expansions were often anchored to a personal reminiscence, the stories they shared were relevant to particular thematic topics being portrayed by the exhibition, most often in the Aesthetic/Value, History/Pittsburgh, or Function strands. Examples of some of these more narrative, story-like syntheses are shown below.

In the first example, Yettet and Jasmine were looking at decorative glass objects in the Handmade section of the exhibition, which included a display case of “Cut and Engraved” objects. Something in the display triggered recollections of the aesthetic qualities of a special glass vase owned by someone Jasmine knew, and which she described eagerly to her companion.

Yvette: I used to- I can remember watching them, umm, do the etching on the glass up at Washington, I was so fascinated with it. (Pause) Hmm. (synthesis/reminiscence)

Jasmine: B____’s mother has a vase that comes out real nice with big fluted edges, and when you put the flowers in . . . the edges flop out all over . . . Oh, it makes the prettiest arrangement you ever want to see. Just gorgeous. (laughs) (synthesis using reminiscence of personally relevant object’s aesthetic qualities)

The second example of a synthesis in story form comes from Sarah and Pat as they viewed a display of objects at “Pressed Glass.” Something in the display case makes Pat recall a favorite object used by their mutual grandmother on special occasions. Their shared reminiscence of those events seems to be imbued with a sense of fond nostalgia as Pat provides details to enrich the memory.
Pat: I remember . . . Grandma [had] a relish tray . . . On holidays she had . . . celery and carrots and all the vegetables. You know the relish tray? (synthesis using reminiscence of personally relevant object and its function)
Sarah: Oh, I remember that too. (shared reminiscence)
Pat: . . . this glass, let’s see . . . It’s the same shape . . . (identification)
Sarah: It’s exactly the same, yeah. Awww.
Pat: She always had carrots and celery and pickles and olives and onion . . . For holidays she always got that out. (synthesis/personal story continues)
Sarah: It’s so fun to see all this . . .

The third example comes from Yvette and Jasmine again when they were at the Stained Glass exhibit and Jasmine was reminded of a moment in her life when she realized that not everyone shared her sense of the value and aesthetic qualities of stained glass windows. She told that story to her companion with the element of “shock” that she felt at the time.

Jasmine: It’s just so beautiful.. (aesthetic evaluation)
Yvette: Hmm.
Jasmine: . . .Y’know, the people that bought our house in Pittsburgh . . .the first thing they did was take the [stained glass] windows out . . . (synthesis/personal story)
Yvette: Oh!
Jasmine: It was like, (laughs) I was shocked! I don’t know what they did with them. I wish I would have known. I would have bought them from them! (synthesis/story continues/aesthetic-value theme)
Yvette: Yeah.

Explanatory Engagement within Thematic Topics

Although our results from analyses of thematic emphasis and levels of explanatory engagement are interesting on their own, one additional question is whether certain levels of explanatory engagement were more or less likely to be associated with certain thematic topics; that is, whether visitors tended to engage in expansions at the explanation level on aesthetic/value issues, for example, more than they did on issues of the nature of work. We cross-tabulated the results from the coding of thematic topics and levels of explanatory engagement (shown separately in Figures 3 and 5) in order to see which levels of explanatory engagement were likely to be associated with each topic. Figure 7 shows the percentage of expansions by thematic topic and level of talk for all groups combined.

What Figure 7 lets us see is that people synthesized information across all types of thematic talk. The largest proportion of expansions occurred as syntheses within the thematic strand of History/Pittsburgh (21%). As indicated earlier in this chapter, much of the expanded talk in the History/Pittsburgh strand involved personal stories about objects, people, places, or events in people’s lives that allowed them to make a personal connection to some historical idea that was present in the exhibition. In the earlier examples we focussed on personal reminiscences and stories invoked by groups with a low connection to glass, but groups with high glass backgrounds did so as well, as the following excerpt from Julia and Elsa’s tour demonstrates. Julia and Elsa were at the “Cut and Engraved” exhibit, looking at the display case of intricately
carved objects. Julia expanded on the idea of the popularity of cut glass at a certain point in time, based on her recollection of her mother’s ownership of it. Although there is a personal story underlying this history synthesis, it also contains an analysis of the cost and affordability of glass based on what Julia knew about the “poor people” who owned it.

*Julia:* Well, see, there is cut . . . glass . . . At the time my mother married, cut glass must have been a very popular wedding gift, because many women of her age had many pieces of cut glass. And I don’t think it was expensive, ‘cause they were poor people. [Julia & Elsa, lines 507-517].

![Figure 7. Percentage of Expansions by Theme and Type](image)

Some of the personal stories people invoked and used to expand on an idea were social in nature, such as those calling up memories of family gatherings where a particular object was used long ago. If a companion shared a family connection with the speaker, then the social event became a jointly constructed recollection of a family event or a family member, as in the case of Sarah and Pat’s discussion about their grandmother’s relish tray cited above. Occasionally visitors engaged in a form of synthesis that allowed them to expand on a more fundamental, historical idea, such as change over time, as in the following example from Yuri and Minsu:

*Yuri:* By the way, I think the mirror was produced not so long ago. Is the mirror also antiquated?

*Minjung:* I know that Cleopatra used mirrors.

*Yuri:* At that time mirrors [were] bronze . . . [Group 2, Minsu & Yuri, lines 91-94]

Returning to Figure 7, we see that the next largest sets of expansions occurred as explanations and analyses within the Technology strand (14% and 13% respectively). What this finding suggests is that for expansions in the technology strand, which we know from Figure 3 was the theme that dominated the expanded talk overall, visitors were often able to target features of the exhibit content in more analytic or explanatory ways because they found a ‘hook’...
in the exhibit that connected to something they knew more about. In general, then, it seems that
visitors tended to expand on history themes primarily in the form of syntheses and to expand on
technology themes in the form of analyses and explanations. We wondered what features of the
museum experience might account for that trend and in particular whether the level of
explanatory engagement in each thematic strand was influenced by visitors’ backgrounds. We
suspected that these results reflect particular areas of competence that our visitor groups brought
with them, which enabled them to connect with the affordances of the museum exhibition in
particular ways. We have already seen that those visitors who came with a strong background in
glass, especially those who were involved in the production or professional uses of glass, were
much more likely to engage in expansions in the technology strand than were other visitors. If
we focus more directly on those expansions that were explanations and compare explanations
given by High versus Low glass groups we can delineate the differences more clearly.

Connections Between Visitor Identity and the Conversations

We focussed on the explanations that groups engaged in because that is the most complex
level of engagement. The percentage of explanations for groups rated High versus Low on the
glass dimension is shown in the right-hand portion of Figure 6, where we see that 22% of the
High groups’ expansions come in the form of explanations compared to only 5.4% of the Low
groups’. This roughly four-fold difference in explanatory behavior indicates that visitors who
came to the exhibition with a high connection to the content were more likely to engage in
conversations that extended the information provided by the exhibition than were less
knowledgeable visitors, and to do so at more a more complex, sophisticated level. The elevated
rate of explanations among High glass groups was true whether they had a high level of
educational attainment (e.g., Herbert & Kimiko) or a low formal education level but personal
glass-making experience on the factory floor (i.e., Armand). An example of an explanation by
Armand early in his tour helps to illustrate the way a specific type of experience or knowledge
relevant to the content of an exhibit can foster the offering of explanations that embellish the
museum exhibit. In this instance, Armand was looking at a display of small glass objects of
mostly bird and animal shapes that were set on shelves inside a tall metal cage and labeled
“Glass Menagerie.” Although Armand had not been to a museum in over 40 years, and although
he continually expressed dismay at his inability to adequately describe the many beautiful
objects he was encountering as he toured, he was in fact able to engage at the level of
explanation on the content of the exhibition in ways that none of our other visitors were able to
do.

Armand: Look at the, look at the colors in this . . . candy dish. . . All very, very beautiful
stuff that’s individually made. What a talent they had to make this stuff, to put the
colors in there . . .

Kate: How do you . . . think they would make the birds lighter than the back part?

Armand: There’s a dye, there’s certain, they put like, a dye in and-- I’ve seen it done
where they know exactly how to pour that. It’s like a liquid dye is what I remember. .
. . They know where they’re putting the dye or the painted sections in it. And they just
roll it. They keep rolling and rolling it. They get it on the table, it goes back and forth
on the table and… Amazing. Amazing. Now what I, where I worked at it was just
simple. You just put the glass on a pipe and put it in the mold . . . you open the mold,
put the glass in, you close the mold. And after it cools down, you open the mold and
pull your item out. That was . . . a job, but it wasn’t a talent like really rolling the glass to get the colors and different designs in.

Although Armand had not produced glass objects with color embedded in the design himself, he repeatedly had observed first-hand how it was done and was able to describe that in detail to his companion. Of Armand’s 25 expansions, five (20%) were explanations either on the theme of technology or the theme of work. This percentage is slightly higher than the mean percent of expansions (18%) that were explanations for all groups combined, as shown in Figure 3.

Social Factors in Museum Conversations

In addition to considering the effect of visitors’ identities, especially with respect to their background knowledge in and experience with glass, we considered other factors that might account for the relative presence or absence of explanations within each conversational group. One of the features of the groups rated High with respect to their connection to glass was that there was also a gradient in the knowledge level among individual members of those groups. That is, within each High group, one or another member was acknowledged by the group to be more expert with respect to glass. For Riley and Clara, for example, who were both keen glass collectors, Riley had in addition to that knowledge base a very strong technical understanding of the processes involved in making glass. For Julia and Elsa, both of whom had been chemistry majors, which required them to blow glass in the lab, and both of whom had provided extensive docent support at a natural history museum where glass had once been a featured exhibit, Julia was considered to be more expert for two reasons--she had visited and observed at the Kopp Glass factory on numerous occasions thanks to a friend who worked there, and she had toured the Glass: Shattering Notions exhibition previously. Kimiko and Herbert (and their other companions) were visiting the exhibition in large part because of Herbert’s interest in glass. Although they did not specify the nature of his connection to glass during the pre-tour conversation, evidence of his expertise emerged during the tour as Kimiko and other group members listened to and queried him about things he knew. In a sense, then, the gradient in levels of knowledge and expertise was what motivated this group to come to the exhibition in the first place.

In a similar vein, one of the groups with a Low rating on connection to glass--Group 2 (Minsu and Yuri)--had a greater percentage of their expansions that were explanations (13%) than the other Low groups. Many of Group 2’s expansions and explanations evolved in conversations prompted by Yuri’s interest and expertise in epidemiology. Unlike visitors in our other groups, Yuri saw health and public policy issues embedded in several displays and she shared these insights with the members of her group as she engaged them in historical discussions of the impact of industry on workers’ health. Thus, it was the difference in areas of expertise, not simply levels of expertise, which may have accounted for the presence of more explanations in that group than in other Low groups. In other words, the gradient in knowledge among members of Group 2 resided largely in the domain of public health rather than in glass, and although that pushed the level of their explanatory talk, their lack of experience in glass limited the percentage of their expansions that were explanations relative to the High glass groups.
Among the other groups with a Low connection to glass, Group 10 (Pauline, Andy, and Kyle) had the next highest percent of their expansions as explanations (10%). Those explanations were prompted, we believe, by the parent/child relationship within the group. This family had no particular connection to glass and although they were knowledgeable about Pittsburgh they were not life-long residents. They did describe themselves as regular museum-goers and we suggest that in part it was this aspect of their identity that led them to engage in expansions and explanations about the museum. Clearly the parents were providing for their child a way of understanding how museums work. They told him, for example, that the reason why the model of the Statue of Liberty was included in this exhibition was because of the fact that there were glass windows in the statue’s crown, although the two-dimensional, matte-finished, monochromatic, wooden cut-out model of the statue’s head and crown did not make that feature obvious. Many other visitors wondered why a seven-foot replica of this famous American icon was included in the exhibition and was placed in such a prominent position. Although the Statue of Liberty is instantly recognizable to visitors from around the world, the fact that there are windows in its crown is not as well known, and the sense that there were glass panels in the crown was not supported by the dull green facade of this replica. Pauline, the mother in this family, discovered the glass connection for this piece by reading the wall text and then she told the other members of her group about it. The fact that those windows were produced in the Pittsburgh region made sense once one knew that there were windows.

A few moments later in this tour, the father and son began to engage in an extended analysis of the meaning of a display in the Glass-as-Metaphor case. One pair of objects in this case consisted of two half-filled drinking glasses that were set side by side and partly “filled” to illustrate the common metaphorical phrase “half full or half empty.” In this instance, the case label (Metaphor) was either overlooked or overshadowed in the father’s mind either by the overarching exhibition topic (glass) or by the object label that was expressed in the form of a question (Is the glass half empty or half full?). The father took the question literally and debated with his son for some time about whether there were different amounts of white “stuff” in the two glass tumblers, or if perhaps one of the glasses had a thicker base. The father called the son back to this case a couple of times from other exhibit stations where the boy and the mother were looking at something else, and at one point the father actually got down on his knees in order to examine the bottoms of those tumblers at eye level. The subliminal cultural message here for the child was that museum displays are organized the way they are for a reason and it’s partly the visitor’s obligation to figure out the meaning.

Thus we can see that there are various ways in which different levels of expertise can emerge among group members so as to produce more expansions in the form of explanation than occur among groups with a balanced level of expertise among its members. In the case of Pauline, Andy, and Kyle, we suggest that their expansions reflect the presence of another kind of gradient--where a difference in social roles provided the stimulus for much of the explanatory behavior as this family “rehearsed” their parent/child roles in the museum setting.

Conversely, the absence of a gradient in levels of expertise could account for the absence of explanations in the talk of two of our Low glass-knowledge groups. This notion of a gradient (or lack thereof) in acknowledged levels of expertise could also account for extreme cases where there is an overall suppression of talk between visitors who are highly knowledgeable about
exactly the same things and do not need to share their thoughts in much detail with their companion--a simple phrase will call up a whole network of unspoken ideas. (See Stainton, this volume, for a discussion of a dyad where both members had high knowledge backgrounds, were familiar with each others’ backgrounds and experiences, and thus spoke in a truncated/abbreviated fashion to each other during their tour of *Soul of Africa*.)

**Recurring Issues**

There were other ways that conversations were prompted by the social dynamics of the group or the by way the group was organized. We could see, for example, that people played out social roles in the course of dealing with an idea that was of special concern for them and became a recurring issue in their tour. For many of the groups there were one or more of these special issues or concerns that recurred throughout a tour, weaving in and out and appearing in places where the particular exhibit station did not seem to directly prompt that kind of response. Some of these issues surfaced as repeated brief mentions and did not show up in the expanded talk (see Young & Leinhardt, 1998, for a similar phenomenon that was found in the use of analogical language in history classrooms, where repeated brief mentions of a thematic construct tended to accumulate weight over time). In other cases the repeated discussions of a particular concern came in more expanded form. We saw above some examples of a recurring concern for the family group (Pauline, Andy, & Kyle) to convey to the child a sense of how museums work. We discuss three other examples of recurring issues below, two from Group 2 (Minsu & Yuri) and one from Group 6 (Sarah & Pat).

There were two different recurring threads through Minsu and Yuri’s tour. One thread involved their shared Korean background that provided them with a particular lens for viewing certain parts of the exhibition. While examining the Model-T Ford replica, with its decorative embellishment in the form of an external bud vase, Minsu was reminded of the way modern-day Korean taxi drivers decorate their vehicles (“In Korea, taxi drivers usually decorate the gear handle . . .”). Near the end of their tour, as they looked at a wide array of glass objects on display in a reconstructed hotel room that represented the annual glass show held in Pittsburgh years ago, he wondered why they, as Koreans, had never heard anything about Chinese glassmaking, although they knew about many other Chinese innovations.\(^\text{12}\)

\[\text{Minsu}: \text{I have a question. Um, most civilization or cultural development originated in China, at least in my knowledge. We knew [about] a lot of inventions [such] as pottery (china) and gunpowder (explosives) but I’ve never heard [about the] glass of China before. China had at most crafted Sam-chae\(^\text{13}\) that was colored production [on the] surface. I remember [the] Koryo dynasty had imported glasses from elsewhere. Why did China have no glass in [the] pre-modern period . . .?} \]

\[\text{Minjun}: \text{Where did they import it from?} \]

\(^{12}\) This discussion reflects the influence of China on Korean culture over many centuries (Kim, 1991, pp. 125-126; Macdonald, 1988, p. 11).

\(^{13}\) Sam-chae is a form of painting on pottery developed in China in the 10\(^{\text{th}}\) century that allowed three colors to be used together (Minjung Kim, personal communication, November 2, 2000).


_Minsu:_ A trade took place with Arabic merchants, so we exported papers and Chinese ink stick instead.

_Minjung:_ I know Ginseng was exported too.

_Minsu:_ Sure.

Although Minsu’s query essentially went unanswered, the issue was clearly an important one to the group. Not only were they using China as the anchor for their historical comparison but also they were identifying with China as the exemplary Asian cultural leader and technological innovator.

The other recurring thread for this group stemmed from Yuri’s public health background, which prompted her to engage her companions in discussions of public health issues at various exhibit stations where no other groups did so. At an exhibit called “Pittsburgh Lights the World,” which was part of the Machine Made section of the exhibition, they had the following discussion:

_Minjung:_ I think lead glass blowing must be harmful to glass makers’ health.

_Yuri:_ Definitely, you know they would suffer from mercurial poisoning. . .

_M insu:_ But did they understand the dangerous effects of lead?

_Yuri:_ [Many people died!] Its cumulative effects were understood [only] after several decades and required people to actually start to study it. And finally relevant laws were passed.

_Minsu:_ I wonder if people had enough of an understanding about it.

_Yuri:_ It needed, of course, a long time to be recognized.

_Minjung:_ I think the desire for mass production caused [this].

_Minsu:_ However, crystal glass was blown as before, wasn’t it?

_Minjung:_ It was. There is some apparatus to control it for workers’ health.

_Yuri:_ So certain laws to regulate it were made but actually didn’t work well.

_Minsu:_ I have heard of it before, so, I mean, are lead vapors seriously dangerous?

_Yuri:_ Absolutely . . .

Later, at an exhibit on Labor, this group viewed a life-size picture of the “Glass House Boys”—children who worked in a glass factory—as Yuri introduced another epidemiological discussion. The exhibit station actually was a semi-transparent scrim that showed two different images depending on the light source. In one image the young boys were present among adult men in the factory; in the alternate image, men held fancy glass canes and displayed glass chains or other decorative glass objects that they showed off in the annual glass makers parade. As this group considered the working conditions of the boys, Yuri expanded on the exhibit with the following information:

_Yuri:_ They employed kids from 8 through 13 . . . I can find many episodes related with glass industrial and labor union history here. One of the most famous studies is about cleaning chimneys, which needed small tiny kids to climb up. At the end, they had suffered from pneumoconiosis or silicosis. Do you know the well known case study about those little kids? . . . [Group 2, lines 360-368]
As the image on the scrim changed to reveal the alternate scene, this group built on their discussion of adverse working conditions to understand a particularly sophisticated curatorial message:

_Minsu_: Maybe, it seems to give meaningful message to us. There is something behind the apparent scene.

_Minjung_: We could see a gorgeous front, but couldn’t perceive those sacrifices . . .

_Yuri_: To noble man who used glasses . . . Yes, consumers just enjoyed glass [but] these workers were screened. [Group 2, lines 371-377]

Another recurring idea appeared in the conversations between Sarah and Pat. Throughout their tour, they made repeated references to Sarah’s niece, an artist who loves to blow glass but cannot make a living at it. (The first reference occurred at the Entrance Facade: “Did you know [--]’s a glass blower? . . . She can’t make a living at it full-time, so she has to do something else, but . . . that’s what she likes to do.” The second reference occurred at the display of artistic Mulcahy pieces: “[--] just loves all kinds of things like this . . . but she can’t really make a living. She works for a company there that . . . hand paint[s] wall paper . . .” The third reference came while they were moving from Bottles by the Billions [a ceiling high stack of green glass bottles], to Women Workers, to the Video showing how flat glass has been manufactured for over a hundred years: “Where did [she] learn glass blowing?” “In college . . . That’s what she wanted. She was an art major, and that’s what she loved doing, but . . . .”) The third time this issue came up for discussion, it was the focus of their conversation across multiple exhibit stations with little mention of the objects or ideas on display at those exhibits. After a brief glance at the video, which showed pictures of men blowing giant glass tubes and swinging them over an open pit—which riveted the attention of our other groups--Sarah and Pat moved on, although they indicated they would like to come back to see the video “some time.”

Clearly, this issue of a “starving artist” was a concern for these visitors. Although the financial plight of would-be glass artists was not an issue addressed by the museum, this topic was not extraneous to the exhibition--the visitors’ concern about the life of a would-be glass artist was triggered by the exhibition on glass in ways that it would not have surfaced in another kind of exhibition. Thus it represents an example of how visitors’ connection to the content may get called up in response to the overall context of a museum exhibition in ways that a museum could not possibly anticipate. Sarah and Pat’s discussions of the niece, which were based on personal connections to someone they both knew, enriched their thinking about the nature of “work” in a way that other visitors would not be able to do based on the exhibition information alone.

In a way, these recurring issues represent agendas people have; that is, visitors touring in small social groups are continuing a social dynamic from before the visit and will likely continue to play out the dynamics afterward. These social dynamics support the structure of the conversations people have during their visit in terms of topic control, turn-taking, route-choosing, and so forth.
CONCLUSIONS

We started this chapter with a set of questions that are designed to help inform the larger model of learning in museums. The model considers learning to be influenced by visitors’ identity, their explanatory engagement, and the nature of the learning environment. In this chapter we looked closely at locations for elaboration in the course of a visit to Glass: Shattering Notions and at the identities of the visitors who made those elaborations. We found a general pattern in all the conversations and then focussed on visitors’ expanded talk in order to examine conversational elaboration more closely.

From listening to and analyzing the conversations in Glass: Shattering Notions we found that visitors tended to talk in similar ways as they moved through the exhibition, revealing a pattern to visitor conversation; that is, most episodes in the transcripts contained some form of identification activity, almost half included some evaluative commentary, and a large proportion of the talk (more than half) consisted of expansions on what the museum offered. Within the expanded talk we found that there was a distinct influence on the nature of museum conversations depending on the identity of the people who were visiting. Groups with high glass knowledge and interest, especially those who approached glass from a technical viewpoint, tended to engage in more expanded “explanation level” talk than did others. The increased incidence of explanations was also associated with a gradient in the acknowledged levels of expertise among group members, and sometimes with a difference in the areas of expertise. These differences within a group seemed to provide an opportunity for the explicit expressions of information or reaction. Furthermore, the presence of certain social roles, such as those in a parent/child relationship, were likely to be associated with an increased level of explanatory talk within groups that did not necessarily possess high levels of content knowledge.

One of the features we noticed about the museum conversations was that within all groups some talk was narrative-like and personal whereas other talk was more content-based or expository in nature. The presence of both these kinds of talk across topic boundaries and levels of explanatory engagement reflects our sense that people make meaning from a museum exhibit in more than one way. Some groups came to the museum with deep knowledge of the content being offered there, whereas others came with an interest that was fostered more by informal experience or simply an openness to new ideas (see Leinhardt, Tittle, & Knutson, this volume). The entrée for visitors with more informal knowledge was often a personal experience that was prompted by a specific museum display; and that personal experience often evoked a narrative-like response. Further, we sensed that people who were touring the museum in the company of friends or relatives were in a social situation that pre-disposed the offering of stories about people they knew or events they had shared or about people or events that others could imagine because they knew something about the teller. Some of the stories were tangential to the museum topic, whereas others connected directly to the content and helped build shared meaning for the group. Visitors also exhibited in their conversations a tendency to repeat ideas that were of concern to them—questions they wished to have answered or issues that worried them—and these were very specific to each group. Only the prevalence of such recurring issues was common across groups.
As a final note, we offer an illustration of how members of a group can support each other’s museum experience through conversation. Kimiko and Herbert were two adult visitors touring together with four other adults, forming varying combinations of dyads as they moved through the exhibition. Because Kimiko and Herbert were as often in the company of a non-microphoned member of their group rather than sticking with each other, they often viewed specific exhibit stations at different times and in a different order. Towards the end of their visit, as Kimiko and one of the other members of their group finished watching the videotape showing changes in how glass has been manufactured over the past 100 years, Herbert rejoined them from another exhibit station around the corner. Herbert did not know exactly what they had seen on the video, but he did know a great deal about glass manufacturing processes and he wanted to share his knowledge with Kimiko. She, in turn, wanted to share her new-found knowledge with him. A portion of their exchange follows:

*Kimiko:* That’s very interesting how they made plate glass.
*Herbert:* Yeah.
*Kimiko:* Yeah.
*Herbert:* I didn’t watch the film—
*Kimiko:* I had no idea that it was rounded and they cut it off and put it back in the furnace and flattened it.
*Herbert:* Well, well what they do they, they, they blow it in a big, long tube.
*Kimiko:* Yeah.
*Herbert:* They used to make tubes *way* large.
*Kimiko:* Yeah.
*Herbert:* Then they cut off both ends and they put it in a, in a kiln. In a layer.
*Kimiko:* Yeah, that’s what we did see.
*Herbert:* And then it heats up and they-
*Kimiko:* Right, right! That’s amazing.
*Herbert:* -cut it and then they lay it flat.
*Kimiko:* So, it’s the same evenness around.
*Herbert:* Yeah.
*Kimiko:* That’s how they do that. I never knew that.
*Herbert:* But now they don’t.
*Kimiko:* That’s the old way.
*Herbert:* Right.
*Kimiko:* Now, yeah they were saying that-
*Herbert:* Now, now they just [--]--
*Kimiko:* -umm, that you can do it all mechanically, uh.
*Herbert:* Yeah, it’s, it’s amazing.

This conversation continued with Herbert elaborating further on the specific process for making “full antique glass,” which he knew about from his experience in the manufacture of stained glass. He has Kimiko’s full attention, including a very clear indication that she is learning something new from this part of the exchange (“I see. That makes it antique, then...”)

*Herbert:* When we saw it at [Blenko], when we were down there, in, in Milton—
*Kimiko:* Yeah?!
*Herbert:* They had some of that stuff.
Kimiko: Um-hum.
Herbert: And they still make the full antique glass; that’s what they call it when they mouth blow it and then flatten it.
Kimiko: Oh I see, that makes it antique, then. Because it’s hand done.
Herbert: Um-hum. Full antique is-
Kimiko: I see.
Herbert: -mouth blown.
Kimiko(simultaneously): Huh! Uh-huh.

This exchange shows how a group conversation in a museum can build on the joint experiences of visitors to create a much richer experience than any individual could have alone. As such, it supports our sense that conversations among members of a small, socially cohesive group of friends or family members is privileged and offers each member of the group a special opportunity for enrichment.

As part of our efforts to capture the experiences visitors had in Glass: Shattering Notions, we were concerned about the extent to which the groups understood the main story the curators intended to convey. Although we did not discuss these data in terms of our groups’ connection to Pittsburgh, we were nevertheless interested in seeing how these groups in general understood the overarching curatorial message about the importance of the glass industry to the Pittsburgh region. From the tour transcripts and from the post-interviews, we found that all groups “got” the overarching message. Some people indicated that they knew the importance of this industry before coming to the museum; others seemed pleased to be reminded (“I’d forgotten Western Pennsylvania is really the . . . home of glass, isn’t it, with Pittsburgh Plate Glass . . .”); and the newcomers (Minsu and Yuri) declared that they would now adjust their image of the region as a steel-dominated one to an image of Pittsburgh as an “industrial city,” although they felt steel was still dominant. Given that the curators had avoided providing any explicit or direct comparisons between the steel and glass industries—in terms of numbers of employees or amount of corporate earnings, for example, it is safe to say that all visitors did interpret the overarching curatorial message, regardless of the strength of the visitors’ connection to the region, as well as adding their own take to that message.

What we found from our study of small-group conversations at the Heinz History Center was that more than half the time groups tended to engage in expansions, sometimes lengthy and substantial expansions, on what the museum provided. In cases where there was at least one group member who had specific experience with, or knowledge about, the content, those groups engaged in more expansions and more of their expansions were at the level of explanation. Groups with less formal connection to the content tended to make meaningful connections by means of syntheses in the form of personal stories about people they knew, places they had been, or events in which they had participated, although all groups engaged in this form of personal meaning-making to some extent. The social roles operating within a group—its social identity, so to speak—also influenced the structure and content of visitor conversations, fostering or inhibiting certain emphases or patterns of talk, which in turn influenced the levels of explanatory engagement in that group.
This study suggests that the nature of visitors’ backgrounds--the knowledge, experience, and social dynamics they bring with them to the museum visit--constitute an important element in the combination of influences on what people can “take away” from their museum visits. Museums provide a platform on which meaningful conversations can be built, using the tools that people bring with them to extend and enrich the knowledge among group members by expanding on features that one or another group member is prompted to introduce for discussion. These expanded, more elaborated conversations support a sense of connectedness of visitors to the museum content and to each other. Museums, then, should look to ways of increasing the opportunities for visitors to expand ideas with companions during a museum visit. Visitors, in turn, should consider seeking opportunities to go to museums with friends and family members of varying backgrounds so that the press to expand for each other is enhanced.

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