

Cloud Column

Joyce Ma

January 2007

THIS IS NOT A DEFINITIVE FINAL REPORT

FORMATIVE evaluation studies like this one often:

- **are conducted quickly**, which may mean
 - small sample sizes
 - expedited analyses
 - brief reports

- **look at an earlier version** of the exhibit/program, which may mean
 - a focus on problems and solutions, rather than successes
 - a change in form or title of the final exhibit/program

Mind – Formative Evaluation

Cloud Column

Joyce Ma

January 2007

PURPOSE

The Cloud Column is an exhibit area in the back of the Mind Section that is designed to allow people to sit, rest and reflect on philosophical questions either individually or with others in the area. (See Figure 1 and Figure 2.) This formative study takes a first look at:

- What did visitors do at the exhibit? For example,
 - How long did they stay?
 - How long did they sit?
- What were visitors thinking about while at the exhibit? More specifically,
 - Did they listen to and think about the questions that were broadcasted at the exhibit?
 - What were visitors' opinions about the spoken questions?
- What were visitors' reactions to the Cloud Column?
 - Did visitors find the experience interesting?
 - How did they feel while under the Cloud Column?
 - What were visitors' suggestions for improving the exhibit?

METHOD

We observed and interviewed visitors on two different days, Tuesday, January 16, 2007 in the afternoon, when it was quiet on the museum floor, and Sunday, January 21, 2007, a busy and noisy day. On the quieter day, an evaluator stood close to the Cloud Column and observed every person, 8 years old and older, who entered the Cloud Column. For the other day, she selected every third visitor, again 8 years or older.

For the observation, the evaluator noted how long the visitor stayed in the exhibit area, how long s/he sat, and where s/he and her/his companions sat. We tried to note if visitors pushed the button and what exhibit questions played, but these were too difficult to discern on the floor.

After observing each visitor, the evaluator approached that visitor for an interview. The interview questions are in Appendix A.

Figure 1. Cloud Column Prototype



Figure 2. Cloud Column – What visitors see overhead



DATA COLLECTED

N = 17 observations; 14 interviews. (Two of the 17 people we observed did not speak enough English to complete the interview, and one other was a child who did not answer any of the questions.)

Gender	Count - Quieter Day (out of 8)	Count - Noisier Day (out of 9)	Count Total (out of 17)
Female	3 ¹	2	5
Male	5 ¹	7 ¹	12

¹ One was not interviewed.

Age Group	Count - Quieter Day (out of 8)	Count - Noisier Day (out of 9)	Count Total (out of 17)
Child	1 ²	1	2
Teen	0	0	0
Adult	7 ²	8 ²	15

Group Type	Count - Quieter Day (out of 8)	Count - Noisier Day (out of 9)	Count Total (out of 17)
Adult peer group	3	3	6
Multigenerational group	3 ²	3	6
Individual adults	1	2 ²	3
Individual child	0	1	1
Children peer group	1 ²	0	1

RESULTS

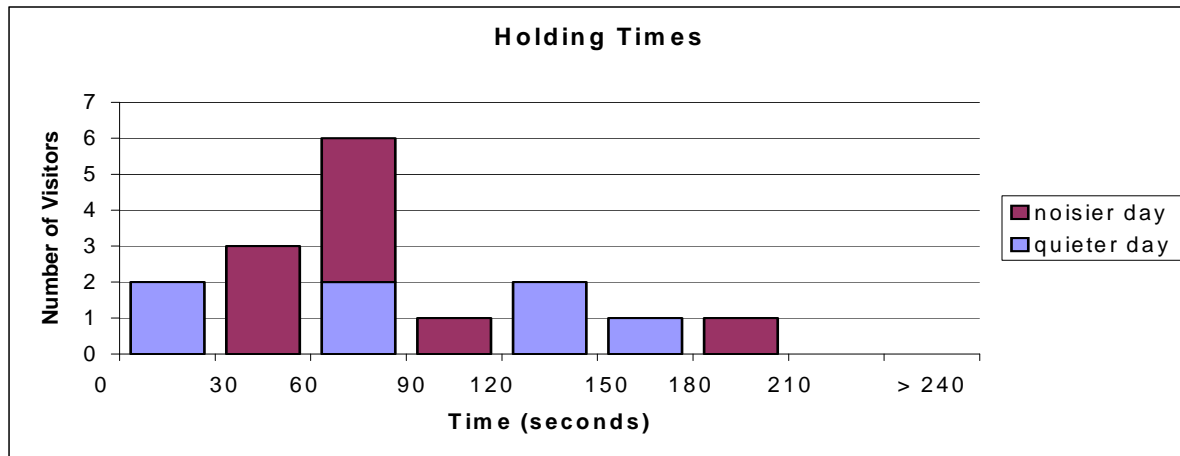
What visitors did at the exhibit

How long did visitors stay?

On the quieter day, visitors stayed 1:08 (median), while on the noisier day, visitors stayed 1:12 (median). Overall, people stayed 1:10 (median). The shortest amount of time anyone stayed at the exhibit was 26 seconds; this was during the quiet day. The longest holding time was 2:59 for a visitor who came on the noisier day. See Figure 3.

² One was not interviewed.

Figure 3. Histogram of Holding Time. Overall, median = 1:10. On the quiet day, median = 1:08 and on the noisy day, median = 1:12.

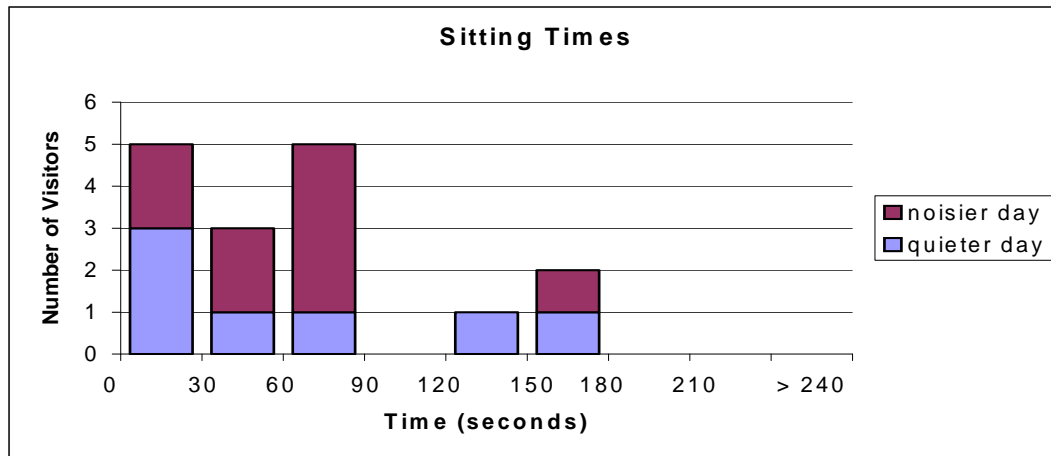


How long did they sit?

On average, the people who came to the exhibit were sitting on one of the seats 74% (mean), or 87% (median), of the time. The smallest percentage of time anyone spent sitting down was 13%. This person came with a child and spent most of her time kneeling next to her seated daughter.

Figure 4 shows the amount of time people spent sitting in the exhibit. On average, people sat for about 1 minute (56 seconds on the quieter day and 62 seconds on the noisier day). One person sat for only 6 seconds before attending to her child. On the other end, a visitor sat for 2:59.

Figure 4. Histogram of Sitting Time. Overall, median = 59 seconds; on the quiet day, median = 56 seconds, and on the noisier day, median = 62 seconds.



Where did they sit?

For 11/17 (65%) people, at some point during their exhibit visit, someone else in their group also sat down either in the same seat or in a different seat.

Observations suggest that parents want to stay close to their children at this exhibit, much closer than that afforded by the current seating arrangement unless the pair shares a seat.

- 3 out of the 6 adult-child pairs who came to the exhibit sat together, with the child lying on top of the adult.
- In 2 out of the 6 adult-child pairs, the parent remained close to the child, either standing or kneeling next to the seated child.

Adults, whom we observed, who come together never shared a seat.

Listening and thinking under the Cloud Column

What did visitors think about, in general, while they were at the exhibit?

We asked early in each interview what visitors thought about while they were lying down at the exhibit. We found that visitors thought about:

- The exhibit itself, specifically what it is and what is or should be happening (7/14)

Visitor2 Noisy: I was trying to figure out what it was.

Visitor3 Noisy: No, mostly thinking about my kid's experience. Things to tell him or show him.

Visitor4 Noisy: I thought about whether pressing the button will impact others' experience, and wondered if I should do that.

Visitor5 Noisy: "What the hell is this?"

Visitor7 Noisy: Bored, wondering what's going on.

Visitor8 Noisy: Trying to pick out shapes in the clouds, wondering if I was squashing him.

Visitor9 Noisy: Am I only supposed to see clouds? [Anything else?] Is it working?

- Philosophical questions akin to what the exhibit asks (2/14)

Visitor3 Quiet: Curious, then interested in the idea of life being a dream.

Visitor6 Quiet: I've just been reading the past couple of days, Ray Kurzweil's Singularity is Near. It's about living forever. It asks lots of questions like the ones in the exhibit, so mostly I was thinking about the book.

- The sky (2/14)

Visitor2 Quiet: Reminded me of the skies of TX - very open.

Visitor4 Quiet: Thinking about the night sky, and thinking that lots of people don't do that anymore, lay down and look at the clouds passing.

- Other things outdoors (2/14)

Visitor5 Quiet: Nice day outside, I should spend some time outside.

Visitor6 Noisy: Kept thinking of polar bears and penguins - because it looked like snow up there.

- Physical comfort (1/14)

Visitor7 Quiet: That I wanted to be warm. I've been cold all day, left coat in car. I thought it would be warmer in here.

Did they listen to the questions?

It was difficult through observation to determine if visitors pressed the button, or to even hear what was being said. However, during their interviews, all the visitors reported hearing something under the column.

Yet, only 4/14 people we interviewed clearly heard a question. (See Table 1.) Note that even on a quiet day, only half the visitors heard a question clearly.

Table 1. Did visitors clearly hear a question?

Clearly heard a question	Count - Quieter Day (out of 6)	Count - Noisier Day (out of 8)	Count Total (out of 14)
Yes	3	1	4
No	3	7	10

Did visitors think about the questions?

All four visitors who reported hearing a question claimed that the question(s) prompted them to think. They thought about:

Visitor3 Quiet: It asked if life was just a dream...I thought about fate.

Visitor4 Quiet: [Question: What happens to your brain when you die?] That we are all just energy.

Visitor6 Quiet: [Question: Do want to live forever?] The book I just read yesterday [Ray Kurzweil's Singularity is Near].

Visitor3 Noisy: [Questions: Is lying okay? Do you lie to yourself? Would you want to live forever?] Yes, a little bit. But many of these questions I've answered for myself already. Lessons I've yet to teach my kids.

Visitors' opinions about the voice

Whether the voice added or subtracted from the experience depended on the type of day, noisy or quiet. On a noisy day, none of the visitors thought the voice made the exhibit better. But, on a quieter day, 4/5 visitors thought the voice made the exhibit better. See Table 2.

Table 2. Did the voice make the exhibit better or worse?

	Count - Quieter Day (out of 5)	Count - Noisier Day (out of 8)	Count Total (out of 13)
Worse	1	4	5
No difference	0	4	4
Better	4	0	4

More specifically, visitors thought the voice and the questions

- made the exhibit better because
 - It was soothing (3/13)
 - It (the questions) gave the exhibit meaning (1/13)
- made the exhibit worse because
 - They couldn't hear or understand it. (3/13)
 - It disturbed the peace (1/13)
 - Visitor5 Quiet: I thought it was peaceful, but the voice was a little loud and crass for the experience, to me.
 - The voice's tone made the visitor feel uncomfortable (1/13)
 - Visitor3 Noisy: It's a little too controlled. Like she was trying to always talk in the same tone. I felt like I was in a psychological experiment.
- It made **no difference** because
 - Visitors couldn't hear it anyway (3/13)
 - They didn't think it was even part of the exhibit (1/13)

Conversations with others

Five out of the 14 people we interviewed said that they talked with someone else while they were at the exhibit. They all spoke with someone from their own group usually about what they should be doing at the exhibit or what should be happening.

Interestingly, 2 of the 5 people who reported talking, did not want to talk at the exhibit but were pressed into it by their child.

The rest of the people who did not talk gave various reasons why they did not, having to do with

- The other people at the exhibit (4/14). That is; they didn't know the other people sitting down or there was no one else to talk with.
- There being nothing to suggest or enable conversation (3/14)
- Their own inclination to be quiet (2/14)
- Other distractions (1/14)

Visitor3 Quiet: [Had to go into Tactile Dome]

Reactions to the exhibitDid visitors find the exhibit experience interesting?

Visitors who came on a quiet day on average rated the experience between *Somewhat Interesting and Neutral*, whereas visitors who came on the noisier day thought the experience was between *Neutral and Somewhat Uninteresting*.

Interest Rating	Count - Quieter Day (out of 6)	Count - Noisier Day (out of 8)	Count Total (out of 14)
Interesting	1	0	1
Somewhat Interesting	2	3	5
Neutral	2	1	3
Somewhat Uninteresting	1	1	2
Uninteresting	0	3	3

Visitors' positive responses included:

- It was relaxing (3/14)
- It's visually interesting (2/14)
- The questions made you think (1/14)
- It was interesting for the children (1/14)
- Other reasons

Visitor6 Noisy: It was kinda interesting. I was looking at the ceiling.

On the other hand, visitors thought:

- It's confusing (5/14)
 - Especially because it was difficult to hear what was being said, for example

Visitor5 Noisy: I didn't understand what it was - and I couldn't understand the voice. It sounded a lot like the adults in Charlie Brown specials. Wha-Wha wha-wah-wah

- The questions were not interesting (1/14)
- It's too short of an experience (1/14)
- The sound is unappealing (1/14)

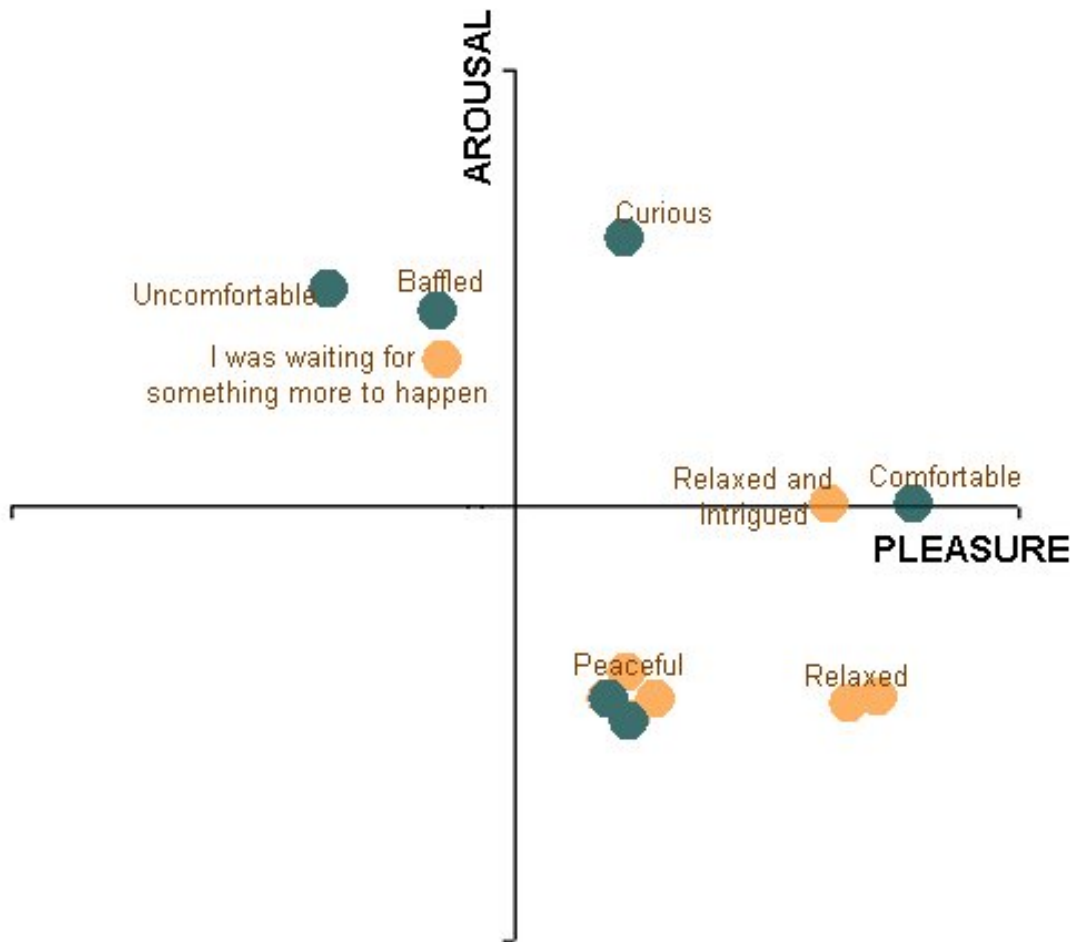
Visitor5 Quiet: Relaxing, but I don't like the sound. It was nice until I put on the sound, that was harsh, not at all what I was expecting.

How did visitors feel while under the Cloud Column?

Ten out of 12 visitors reported feeling a pleasurable emotion (represented in the right half plane in Figure 5) with 7 of those people saying that they felt either peaceful or relaxed.

A few of the visitors reported more negative emotions as shown on the left half of Figure 5.

Figure 5. Visitors' Responses Mapped onto the Pleasure-Arousal Plane. The orange circles are emotions reported by visitors on the quiet day; the blue are those reported by visitors on the noisy day. The coordinates were roughly derived from a previous study by Russell and Mehrabian (1977) in which pleasure and arousal ratings were collected from about 300 subjects for 151 words denoting emotions. That is, we used the average pleasure and arousal ratings from that study for words that visitors used when asked how they felt under the Cloud Column. In cases where they did not use any of the 151 words, we chose the closest approximation.



Suggestions for improvement

Visitors thought the exhibit experience could be improved in various ways:

- Tell visitors what it's about (7/14), for example
 - Visitor4 Quiet: Say what it's about.
 - Visitor5 Noisy: Make it more understandable.
 - Visitor9 Noisy: A little more explanation. I'm not sure what you're supposed to do. The seat is nice and comfy after all the walking around, though.
- Make it more quiet (2/14)
- Improve the sound and the voice (3/14)
- The buttons are confusing (2/14). That is,
 - Visitor4 Quiet: [Didn't know how buttons worked.] Buttons very confusing to companion. VFA didn't worry about it, but companion had frustration trying to figure them out.
 - Visitor6 Quiet: And the buttons - how do they work? I pushed one but thought maybe I'd messed it up for everyone. Companion said: That's why I left - I didn't know what to do with the buttons.
- Make it more enclosed (2/14)
- It doesn't work well for visitors who came with children (2/14)

SUMMARY OF KEY FINDINGS

The Cloud Column was designed with several visitor goals in mind. The following summarizes our key findings according to these main goals.

As a place for visitors to relax

Although half of the visitors reported feeling peaceful or relaxed while in the Cloud Column, some visitors were confused by the purpose of the exhibit. Half (7/14) of the visitors we interviewed specifically asked for help understanding what this exhibit was about. This suggests that visitors may be expecting something other than or more than just a place to rest. In fact one person commented:

Visitor6 Quiet: I don't understand it. I don't know what I was supposed to learn.

Because this exhibit is very different from most of the other exhibits at the Exploratorium, visitors may need more help in understanding what, if anything, the experience is about than that currently provided.

As a place for visitors to reflect, as prompted by the audio questions

In general, *people had difficulties hearing the questions being broadcasted*. We conducted the study on 2 days: a very quiet weekday, after the school groups had left, and a busy weekend day. We found that even on a quiet day, only half the visitors heard the questions clearly, and on the noisier day, 1/8 people heard a question. This is even though everyone we interviewed reported hearing something like a woman's voice. We also found that on the quiet day, most visitors thought the voice added to the exhibit experience, but on the noisy day, the voice did not, in part because most people could not discern what was being said. Four out of 8 visitors on the noisy day claimed that the (indistinct) voice actually made the experience worse.

Yet, *the people who remembered clearly hearing a question (4/14), reported thinking about the question to some degree*. It is, however, not clear how deep this thinking was. In particular, we note that 2 of these 4 people did *not* talk about these questions until we specifically asked them if they recalled hearing and thinking about these questions at the exhibit. *This suggests that the questions, when they are audible, has the potential to prompt thought but that further work will be needed to determine a good set of questions to encourage deeper pondering*.

As a place for visitors to talk with each other about their ponderings.

Five out of the 14 people we interviewed reported talking to someone else at the exhibit, although all of them talked only with a member of their own visiting group, and *most talked about the exhibit itself (e.g. what should they be doing) as opposed to the questions posed at the exhibit*.

The current prototype does not encourage cross-group conversation: No one talked to a stranger because if felt uncomfortable or tacitly inappropriate.

ACKNOWLEDGEMENTS

The author would like to thank Mary Kidwell for conducting the observations and the interviews for this study and for her thoughtful insights on visitors' reactions.

This material is based upon work supported by the National Science Foundation under Grant number 0307927. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.



REFERENCES

Russell, J.A., & Mehrabian, A. (1977). Evidence for a three-factor theory of emotions. *Journal of Research in Personality*, 11, 273-294.

APPENDIX A

Observations

Observe and interview individuals not groups. Do not observe/interview anyone under 8. Choose every 3rd person who enters unless it is very slow; then, choose every individual as separated by at least 10 minutes.

Entry time: _____ (in – crosses border of carpet)

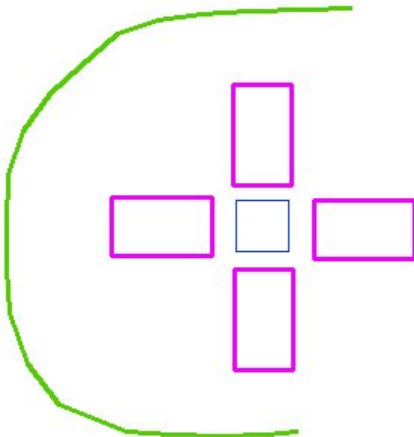
Sit Time

Start: _____ (down – butt onto chair)

End: _____ (up)

Exit time: _____ (out)

Which chair occupied?



Note:

<i>Who</i>	<i>Gender</i>	<i>Age Group</i>
Visitor observed	Female	< 8
Same group	Male	Child 8-12
Other group		Teen 13-17
		Adult
		Senior

Press button?

Question(s) played:

Other observations... (If you can, what is the person saying, if anything? What are the other people in the group doing?)

Questions

1. How interesting did you find that experience? Would you say that was ...
2. How interesting did you find that experience? Would you say that was ...

Uninteresting	Somewhat	Neutral	Somewhat	Interesting
	Uninteresting		Interesting	
3. What made it _____ for you?
4. Can you tell me what you did once you sat down in one of the chairs?
5. Can you tell me how you felt while you were sitting? For example, some people have said that they felt: peaceful or excited or happy or sad.
: excited or peaceful or sad or happy.
6. Can you remember what, if anything, you thought about while your were sitting? [Probe twice: anything else?]
7. Did you hear anything while sitting? Like a woman's voice asking questions. YES NO
[Only if YES]
 - a. Do you remember any of the questions she asked? [Which ones?]
 - b. Did you think about any of the questions you heard? YES NO
 - i. [If YES] What did the questions prompt you to think about?
 - ii. [If NO] Why not? Was there any particular reason?
 - c. Did the voice and the questions make the experience better or worse? Or did it not make a difference? Say more?
8. [Only ask if there were other people sitting] Did you talk with the other people sitting at this exhibit? YES NO
 - a. Did you want to talk with the other people at the exhibit at any time? YES NO
 - i. [If YES] What about?
 - ii. [If NO] Is there any reason why not?
9. Do you have any suggestions for making that exhibit experience better for people?