SEEING Summative Evaluation

Tracking and Timing Study
with notes about the
Observation and Interview Studies

for the Exploratorium

by Serrell & Associates
January 2003

newer, cleaner, shinier, brighter and buffier*

**Visitor's description of how the* Seeing *collection was different from the rest of the Exploratorium*

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EIGHT SECTIONS

- Light and the Eye
- Seeing and Attention
- Seeing in Context
- Interpreting Images
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- Seeing Depth

SEEING, The Exhibit Collection

The *Seeing* collection is located in a semi-enclosed 8,500-square-foot area at the back of the Exploratorium. It consists of 93 exhibit elements—ranging from flat graphic panels, multimedia, and artwork to room-sized interactives.

Exhibits are loosely clustered into eight sections or thematic groups. The clusters are arranged spatially but all are not isolated physically with walls, tape on the floor, stantions, or other architectural cues. The exception to this is the Judy Scott gallery, which has separate rooms.

Outside the entrance to *Seeing*, there is a large title and a banner overhead on the left and, on the right, and introduction label and a credit panel. These graphics signal the entry and state the collection's intention.

Compared to many thematic exhibitions, the square footage and number of elements create a relatively large and dense area.

See Figures 1 and 2.

Figure 1. Floor plan layout of 93 exhibit elements in Seeing.

Figure 2. List of Sections, Element numbers, Element title/names

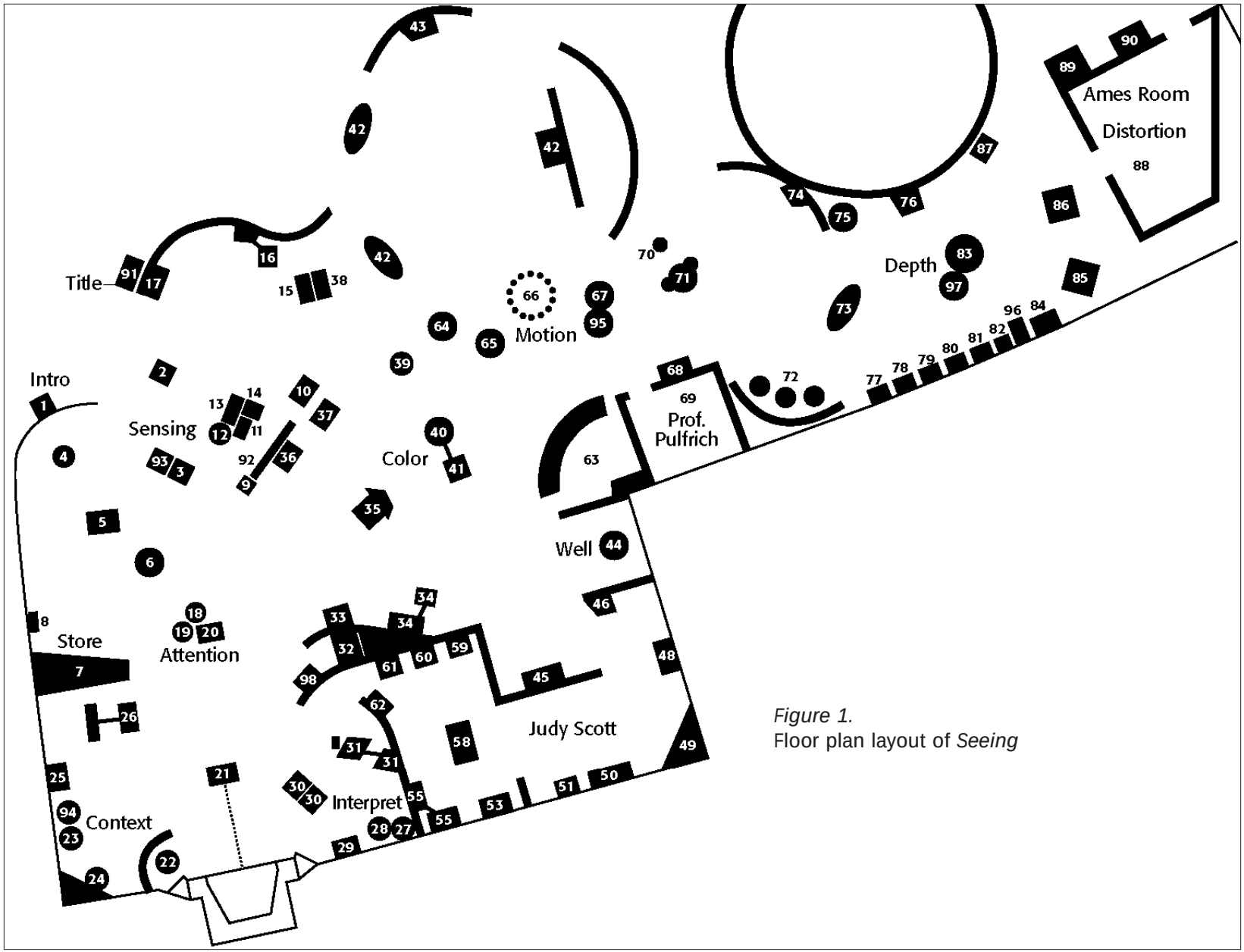


Figure 1.
Floor plan layout of *Seeing*

Figure 2. List of Sections, Element numbers, Element title/names

Section: Light and the Eye
91 Title
1 Intro panel
2 the eye (models)
3 sensing light **R**
93 hand and eye
4 image in the eye
5 mask with eyes (art)
6 focusing eye
7 storefront, Optica Moderna
8 parabola optica
9 adapting to color
92 big screen eye tracker
10 blood vessels in the eye
11 blood cells in the eye
12 pupil
13 blind spot
14 macula
15 light shapes
16 eye tracker **R**
17 seeing details…

Section: Seeing and Attention
18 seeing and attention **R**
19 disappearer
20 color conflicts
21 change blindness
22 count the bounces

Section: Seeing in Context
23 seeing in context **R**
94 pear
24 (re) framing photos
25 shadow colors
26 bright black (moon)

Section: Interpreting Images
27 interpreting images **R**
28 what do you see… images
29 inkblot projections (art)
30 what are they saying
31 watch, thief, hand, wallet
32 not fade away (computer)
98 panel Joel **R**
33 what's it like to loose part
34 visual streams

Section: Seeing Color
35 colored rooms
36* seeing yellow
37 disagreeing about color
38 exploring light and color
39 subjective colors
40 seeing color **R**
41 color contrast
42 sun painting
43 aurora
44 well of lights (art)

Section: Seeing Gallery
45 vitrine, single sculpture
46 Judith Scott makes things **R**
48 vitrine, single sculpture
49 Comment Area: what are you seeing?
50 vitrine, 8 sculptures
51 Judith Scott working… video
53 vitrine, single sculpture
55 read more about artist…
58 vitrine
59 Metamorphosis video
60 comment book: what are these objects?
61 wall vitrine, single sculpture
62 about CGACenter… **R**
63 demonstration station

Section: Seeing Motion
64 following motion
65 irresistible motion
66 silage beach (art)
67 What's Special..Motion? **R**
95 Bobbleheads
68 Traffic illusion (art)
69 Professor Pulfrich's Universe
70 disconnected dots
71 adapting to motion
72 zoetropes (2 art + 1)
73* motion detection
74 "Remote"(eye zoetrope art)
75 disappearing act (computer)
76 fading disk
77 illusions: Ouchie pattern
78 illusions: shifting circles
79 illusions: blinking grid
80 illusions: still motion
81 illusions: smiles & scowls
82 illusions: shades of gray
96 illusions: intro **R**

Section: Seeing Depth
83 how do we see depth? **R**
97 depth theater
84 "Home 2001" (art)
85 stereo vision
86 perspective drawing
87 stereo viewers
88 the distorted room
89 size & distance
90 distorted room explainer

R = text panel
***** = interview/observation study exhibit elements

Equipment List

- Stopwatch
- Clipboard
- Data sheet
- Pencil
- Highlighter

After several revisions, the final data sheets were very clear. It really helped that some of the names of the exhibits had been indicated, and that the actual shape of many of the exhibits corresponded to the same shape on the data sheet. The collection process got much easier with each successive visitor as I became more familiarized with Seeing.

Data collector Amanda M.

Tracking and Timing Study Methods

Visitors were selected randomly as they approached the entrance of *Seeing*. Subjects were casual adults with at least one other adult or a child, or a child with an adult. (The selection of subjects as dyads was intended to mimic the demographics of the interview samples.) Data collectors stayed at least six feet away from the people they were observing to avoid detection.

Visitors were observed one at a time, from entry to exit. Total time spent in the area was recorded with a stopwatch. The path taken through the collection was marked with a continuous line; "X" marked each spot where the visitor stopped for at least 2-3 seconds. If a visitor stayed at one place for an extended period of time, that is, more than three minutes, it was noted on their data sheet.

Demographics of each subject were noted: gender; adult or child; number of people in the subject's social group; social group type (adults only, adults and children).

Behaviors recorded during each subject's visit were: read labels (R); read out loud (ROL); sat down to look at an exhibit (S); looked at an exhibit from behind another visitor "over the shoulder" (LOS); called someone over to look (CO); and spoke a language other than English (ESL).

Time spent watching the 10-minute video in the Judy Scott gallery was noted.

Time of day, date, and summary data (total time, number of stops visitor made) were noted at the top of each data sheet. A space for the data collector's comments was included.

After completing each tracking, and before starting another, the data collector highlighted the Xs on the data sheet to make it easy for the data-entry person to see which elements had been stopped at in this unusually dense and complicated layout.

For more details on tracking methods, see *Paying Attention: Visitors and Museum Exhibitions*, by Serrell, 1998.

Minimum Data Requirements

The original tracking sample consisted of 120 visitors. Ten subjects' data were dropped. For the purpose of this study, if a visitor did not stop or did not spend more than a minute, he or she didn't qualify as having visited *Seeing*.

Besides the minimum of one stop and/or one minute, several other original samples were dropped because the data collector noted unusual circumstances:

#6 *The group walked straight to #72, met w/other group members and left immediately.*

#44 *Went straight to #63, played with magnifier and left immediately. Looked like a kid bringing her parent to show her a cool device with which she was already familiar.*

#87 *Left after one stop. I overheard that they had to go to bathroom*

These and similar comments led us to conclude that these people were not typical casual, free-choice visitors in *Seeing*.

The final sample was N=110.

Demographics of the Tracking Sample

The slight predominance of female subjects is probably due to the fact that 75% of the data collection was done on weekdays.

The minimum group size was two people (either two adults or an adult with a child). No “singletons” were tracked. This selection factor was used so that the tracking data would reflect the same kinds of social groups as the cued interviews sampled.

Figure 3. Demographics of the tracking sample

(N=120, the whole original sample of randomly selected subjects)

Category	Raw Number	Percentage
•male subj.	49	41%
•female subj.	71	59%
•adult subj.	103	86%
•child subj.	17	14%
•group of 2	67	56%
•group of 3	30	25%
•group of 4	16	13%
•group of 5(+)	7	06%
•adult group	56	47%
•group w/kids	64	53%

Evaluator's note re: tracking and timing and diligent visitors

I keep wanting to compare this collection to an exhibition, because that is my usual frame of reference for other museum evaluations using tracking and timing. I have found that exhibitions of this size—with 8,500 square feet and 93 elements—are unlikely to have a high percentage of diligent visitors. There are too many things to do and see to expect half of the visitors to engage with the exhibits in a thorough manner, that is, visit most of the elements. Typically, after about 20 minutes, regardless of the size of the space, most visitors are ready to move on to another area or take a break. I suspect this generalization holds true for the *Seeing* collection as well.

Findings from Tracking and Timing

•Time
Total time spent by a visitor in *Seeing* ranged from one minute to 81 minutes.
Average time = 20 minutes
Median time = 16 minutes

•Stops
The number of times a visitor stopped at an exhibit ranged from one to 54.
Average number of stops = 18
Median stops = 15
Eighteen stops represented 19% of the total number of elements (93) in *Seeing*.

•Sweep rate
The sweep rate index (square feet of exhibition divided by average time spent), or SRI, is an indication of how fast visitors moved through the area.

Twenty minutes in 8,500 square feet equals a sweep rate of 425.

The average sweep rate for large exhibitions is 400 (Serrell 1998), which makes *Seeing* about average in terms of the SRI. A very low sweep rate indicates that visitors stopped often and spent extended times at each stop.

•Diligent visitors
Four visitors stopped at more than half of the elements, which equals approximately 4% diligent visitors (%DV).
The average %DV for large exhibitions is 23, which puts *Seeing* well below average. A high percentage of diligent visitors indicates that people were exceptionally engaged with the entire exhibition.

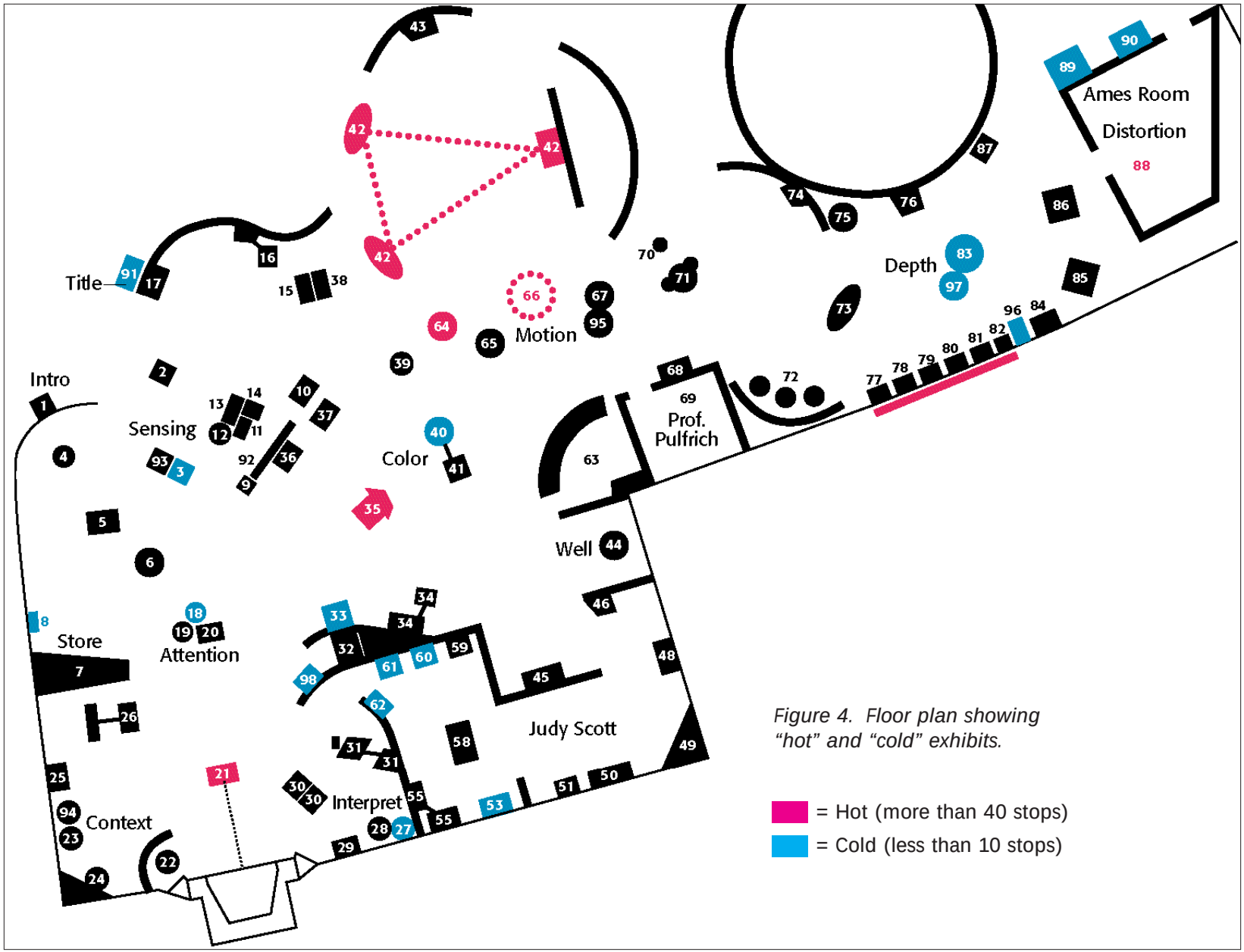


Figure 4. Floor plan showing "hot" and "cold" exhibits.

The Least and Most Popular Elements

During the tracking study, every element drew at least one visitor stop. The sole element for which one stop (out of 110 visitors) was recorded was the introductory banner—something that doesn't really warrant a stop.

Seventeen elements attracted fewer than 10 visitors. Several of these were the section introduction panels.

See Figure 4 of the floor plan with the "hot" and "cold" spots highlighted.

See Figure 5 for the least to most popular exhibits.

See Figure 6 for a list of the elements and the number of people who stopped at them.

The most popular elements—ones that attracted more than 40 visitors—were:

•Change Blindness #21
Developed especially for *Seeing*, and embodying one of the main goals (to have visitors develop skills at noticing), this exhibit attracted the attention of the greatest number of visitors. It appealed to a broad audience and was exceptionally engaging.

•Distorted Room #88
This was the largest exhibit in *Seeing*, a pre-existing and very popular element that was probably familiar to many repeat visitors.

•Sun Painting #42 and Silage Beach #66 were also old, familiar exhibits on the floor. Sun Painting probably got part of its popularity from the fact that it had three parts, increasing visitors' likelihood of seeing it. Silage Beach is eye-catching with its twirling, brightly colored strips.

•Following Motion #64 was a new exhibit that appealed to a broad audience, was easy to use and was located near #66.

•Colored Rooms #35 was an intriguing-looking "doll house" that invited inspection at kid-height.

•Illusions, as a group, **#77—82** are discussed on page 43.

Figure 5. Elements in Seeing*—Number of visitors who stopped at each*

Least Popular Elements—

Less than 10 stops

Element #	#visitors who stopped
83	9
97	9
27	8
3	7
18	7
90	7
89	7
53	6
60	6
98	6
33	6
62	6
61	6
8	4
96	3
40	3
91	1

Between 10 and 15 stops

Element #	#visitors who stopped
49	15
45	15
22	15
93	15
28	15
59	15
10	14
38	14
87	14
23	14
55	12
9	11
58	11
48	11
70	11
92	10
67	10

Between 16 and 20 stops

Element #	#visitors who stopped
46	20
76	20
12	19
75	18
50	18
1	17
11	17
74	17
13	17
41	17
4	16
32	16
29	16
94	16

21 to 30 stops

Element #	#visitors who stopped
19	30
31	30
36	29
65	29
30	28
79	28
78	28
44	28
71	28
15	28
25	27
73	26
68	26
16	26
5	26
39	25
85	25
24	25
82	25
17	25
43	24
7	23
20	22
63	21
14	21
51	21
86	21

31 to 40 stops

Element #	#visitors who stopped
69	40
95	40
JSG	38
72	38
6	38
81	37
34	35
84	35
26	34
77	33
2	32
80	31
37	31

Most Popular Elements

More than 40 stops

Element #	#visitors who stopped
21	51
88	50
35	47
64	47
77-82	47
42	44
66	43

Figure 6. Elements and Stops

Section: Light and the Eye

Element	*Total stops*
91 Title	01
1 Intro panel	17
2 the eye (models)	32
3 sensing light **R**	07
93 hand and eye	15
4 image in the eye	16
5 mask with eyes (art)	26
6 focusing eye	38
7 storefront, Optica Mod	23
8 parabola optica	04
9 adapting to color	11
92 big screen tracker	10
10 blood vessels	14
11 blood cells	17
12 pupil	19
13 blind spot	17
14 macula	21
15 light shapes	28
16 eye tracker **R**	26
17 seeing details…	25

Section: Seeing and Attention

18 seeing and atten **R**	07
19 disappearer	30
20 color conflicts	22
21 change blindness	51
22 count the bounces	15

Section: Seeing in Context

23 seeing in context **R**	14
94 pear	16
24 (re) framing photos	25
25 shadow colors	27
26 bright black (moon)	34

Section: Interpreting Images

27 interpreting images **R**	08
28 what do you see in	15
29 inkblot projections (art)	16
30 what are they saying	28
31 the watch, the thief,	30
32 not fade (computer)	16
98 panel Joel **R**	06
33 what's it like to loose	06
34 visual streams	35

Section: Seeing Color

35 colored rooms	47
36 seeing yellow	29
37 disagreeing about color	31
38 exploring light and color	14
39 subjective colors	25
40 seeing color **R**	03
41 color contrast	17
42 sun painting	44
43 aurora	24
44 well of lights (art)	28

Section: Seeing Gallery

45 vitrine, single sculpture	15
46 Judith Scott makes **R**	20
48 vitrine, single sculpture	11
49 Comment Area	15
50 vitrine, 8 sculptures	18
51 Judith Scott working vid.	21
53 vitrine, single sculpture	06
55 read more about artist…	12
58 vitrine	11
59 Metamorphosis 10 min.	15
60 comment book	06
61 wall mounted vitrine	06
62 about Creative Growth **R**	06
63 demonstration station	21

Section: Seeing Motion

64 following motion	47
65 irresistible motion	29
66 silage beach (art)	43
67 About Motion? R	10
95 Bobbleheads	40
68 Traffic illusion (art)	26
69 Professor Pulfrich	40
70. disconnected dots	11
71. adapting to motion	28
72. zoetropes (2 art + 1)	38
73. motion detection	26
74. "Remote"(art)	17
75. disappearing (computer)	18
76. fading disk	20
77. illusions: Ouchie pattern	33
78. illusions: shifting circles	28
79. illusions: blinking grid	28
80. illusions: still motion	31
81. illusions: smiles & scowls	37
82. illusions: shades of gray	25
96. illusions: intro **R**	03

Section: Seeing Depth

83 how do we see depth? **R**	09
97 depth theater	09
84 "Home 2001" (art)	35
85 stereo vision	25
86 perspective drawing	21
87 stereo viewers	14
88. the distorted room	50
89 size & distance	07
90 distorted room explainer	07

Figure 7. Element #21 Change Blindness with screen, console, and bench.

Element #21, “Change Blindness,” was the most stopped-at element in the collection during the tracking study. It was intriguing because you had to watch very closely, and even then, you missed seeing some of the changes. There was a bench to sit on. It was easy to watch with other people. The screen was large and attracted people’s attention from a distance away. For example, tracker’s comment: V49—*Man with girlfriend noticed #21 while standing near #5.*

See Figure 7. Photo of Change Blindness

Evaluator's note re: the popularity of the Distorted Room

I speculate that Distorted Room's location way in the back of the hall may have been responsible for drawing repeat visitors deeper into *Seeing* than if it had not been there. That is, repeat visitors were searching for the Distorted Room—to revisit a favorite exhibit. What I find notable is that as many people stopped as often as they did on their way to the room. Few people made a beeline to get there.

The fact that it is a large exhibit also partially accounts for its popularity. Large exhibits with whole-body activities are often very popular. By placing it in context with other depth-perception exhibits, it probably gained more conceptual effectiveness.

Behaviors Observed

•Read labels (R)
29% (32 of 110) were readers.
Readers spent more time:
29 of the 32 readers spent 20 minutes or more.
Average time for readers was 34 minutes.

•Read out loud (ROL)
Reading out loud was observed only six times.

•Sat down to look at an exhibit (S)
25% (28 of 110) were sitters.

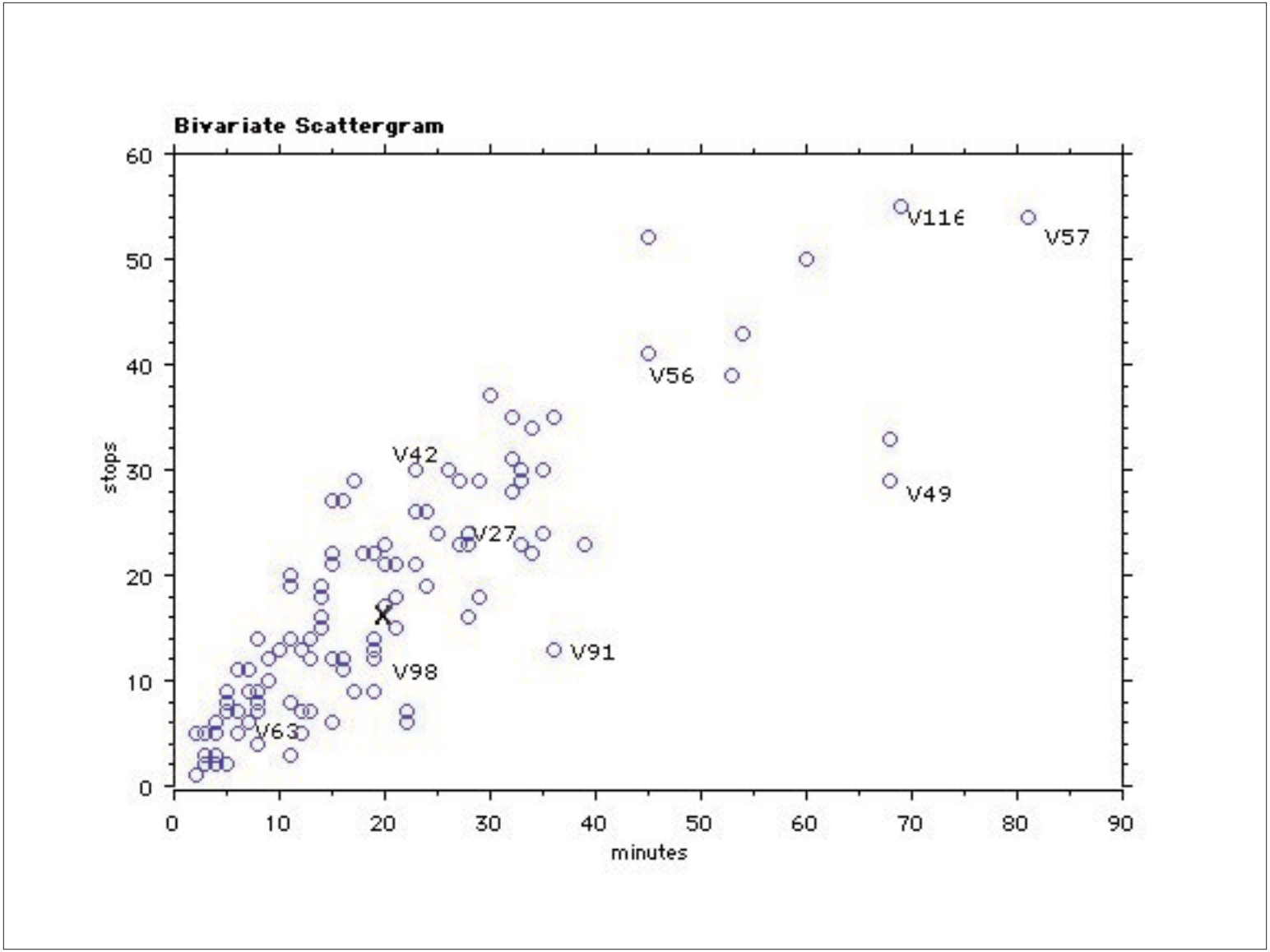
•"Over the shoulder" (LOS)
30% of the visitors looked at an exhibit while standing behind another visitor (in their group).

•Called someone over to look (CO)
16% of the visitors demonstrated this behavior in their group.

•Spoke a language other than English (ESL).
Five of the visitors in the tracking sample were not speaking English.

The data on reading out loud and ESL were subject to error due to the sometimes crowded or noisy conditions in the space.

Figure 8. Distribution of visitors total time and total stops. Each dot is one visitor. (N=110) See text for discussion of V numbers.



Time and Stops

Visitors who stayed the longest—more than 40 minutes— showed a trend to visit the most areas, make the most stops, read labels and sit down more often.

See Figure 8. Bivariate scattergram of time and stops.

Each dot represents one visitor, showing the total number of minutes he/she spent and the total number of exhibits stopped at. X is the average time spent and average number of stops made.

- Visitors V57 and V116 spent the most time and made the most stops.
- Visitors V27 and V42 are examples of visitors who covered most of the areas of the collection.
- Visitors V49 and V56 were more typical of higher than average time but missed exhibits in several of the eight sections.
- Visitors V98 and V63 were among those who spent less than 20 minutes, made fewer than 20 stops and often did not sample exhibit elements from all areas of the collection.
- Visitor V91 spent comparatively more time overall but with fewer stops, suggesting that more time than usual was spent at some stops.

Details of these nine visitors are shown on the following pages.

Figure 9A.


Seeing—Exploratorium
Observer's initials

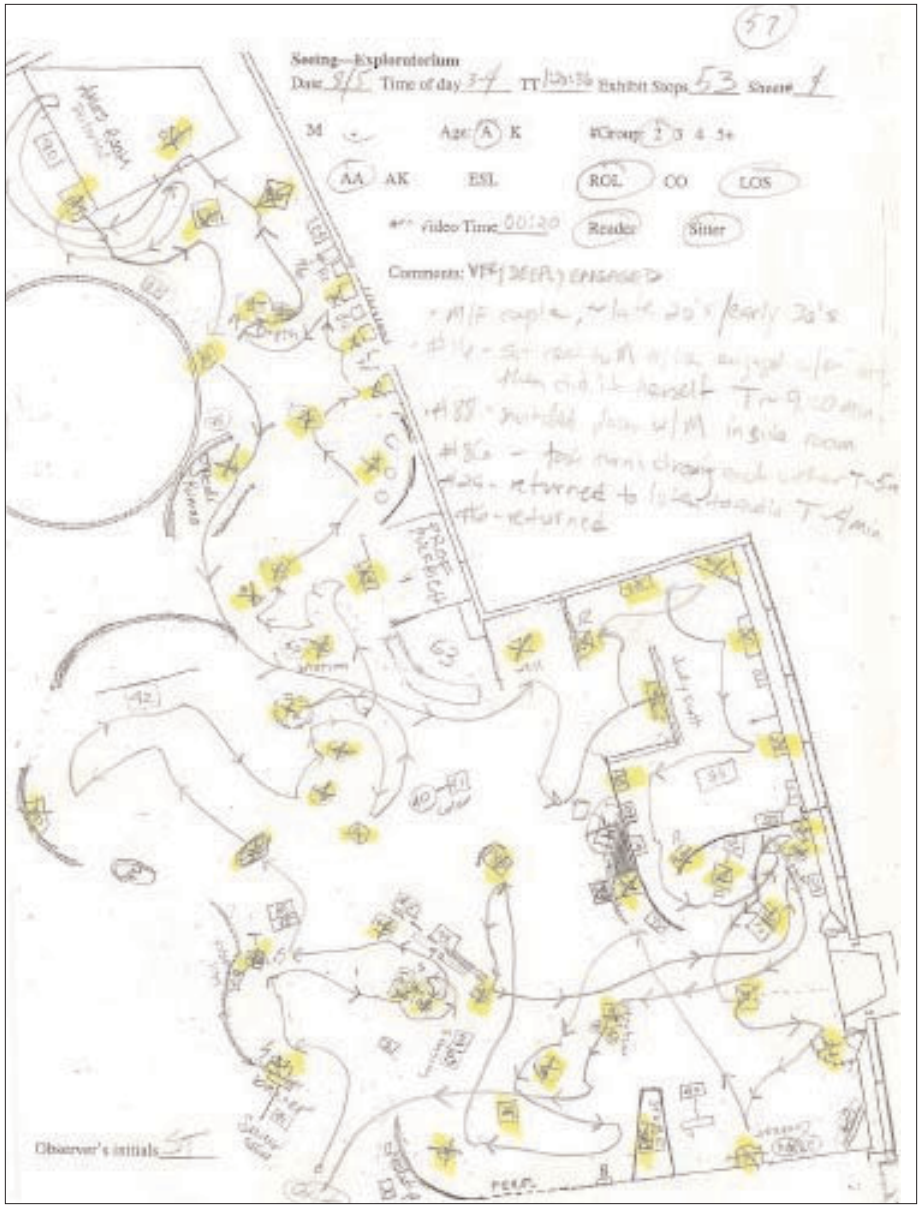

Seeing—Exploratorium
Observer's initials

Figure 9A.

•**Visitor V57** spent the most time, 81 minutes and made 53 stops.

female, adult with another adult
reader, sitter
thorough penetration in all areas of collection, including Judy Scott
stopped at all six of the most popular elements: 21, 35, 64, 88, 42, and 66

•**Visitor V116** made the most stops (54) and spent 69 minutes.
adult triad, readers, sitters
thorough use of all areas, except Judy Scott
spent time at demonstration area

These are examples of diligent visitors. They stayed relatively long times and they stopped at more than half of the exhibit elements in the collection.

Evaluators note re: thorough use

It is easy to get the impression from data sheets V116 and V57 that "they looked at everything." But in fact, they actually skipped 40 elements in the collection. Will these visitors come back again to see some or all the ones they missed on a prior visit? I doubt it because it is common for visitors to report in post-visit interviews that they saw and read everything, even though tracking data showed otherwise.

If many visitors feel like they've seen everything all already, then it is probably more likely that on a repeat visit they would return to the ones they liked best. As noted before (under "minimum data requirements"), we saw a few subjects who came in, went to see one thing only, then left. Many exhibit developers imagine, however, that visitors systematically return to the same exhibition over and over to investigate exhibit elements they missed before.

Figure 9B.


Seeing—Exploratorium
Observer's initials

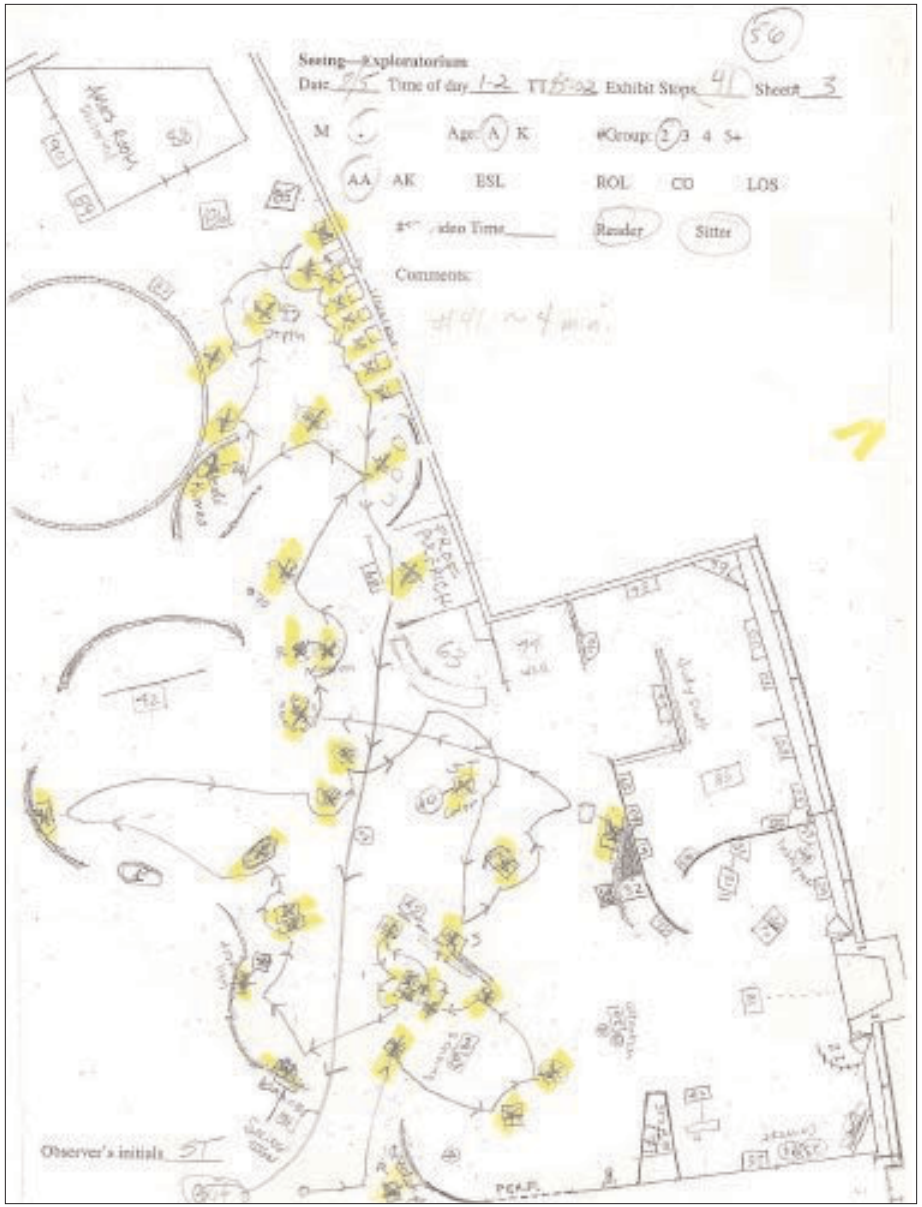

Seeing—Exploratorium
Observer's initials

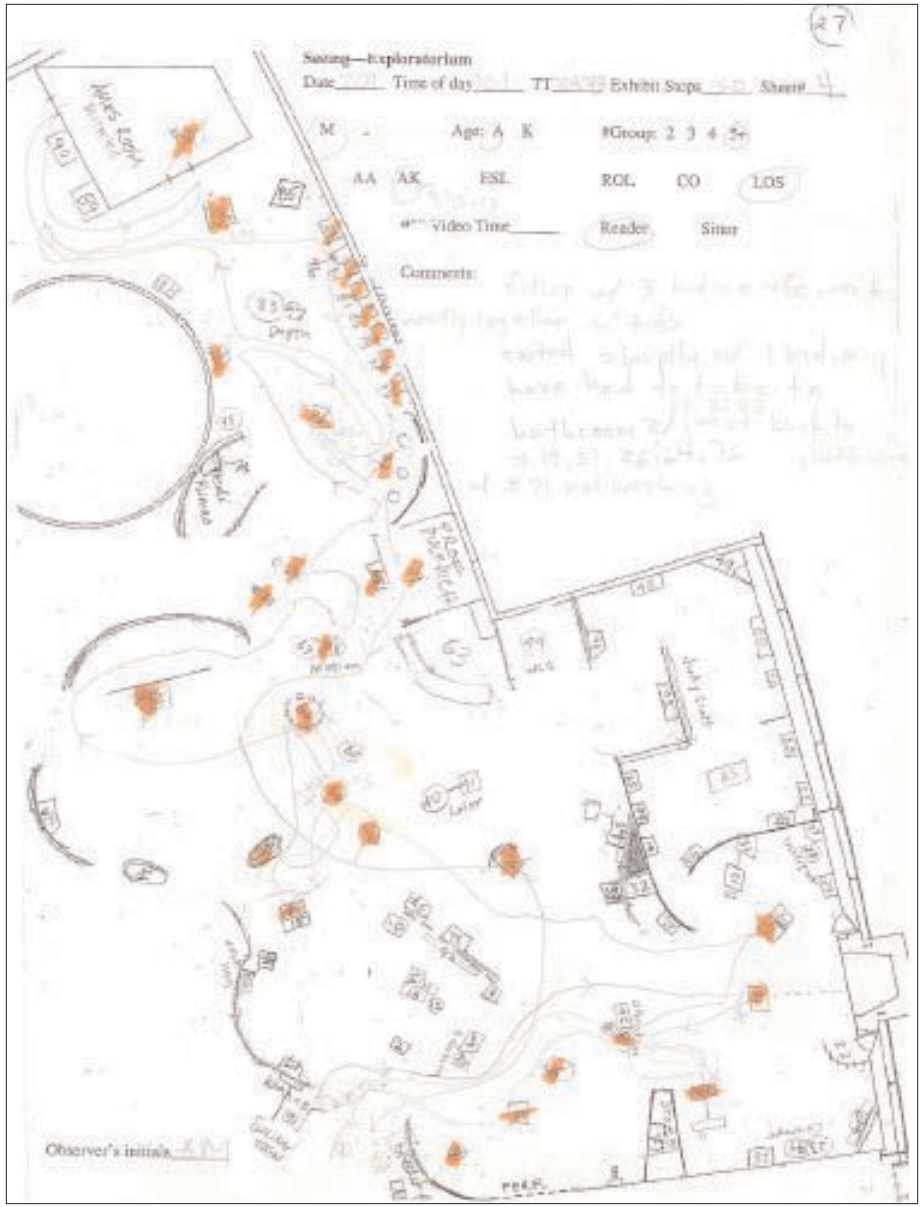
Figure 9B.

- **Visitor V49** spent 68 minutes, but made only 28 stops.
  male, adult with another adult
  reader, sitter
  fairly thorough penetration, but few stops in Color, peek but no stops in Judy, no Context
  stopped at 3 of the 6 high points—elements 21, 35, 88

- **Visitor V56** spent 45 minutes and made 41 stops.
  female with another adult
  read, sat down
  lots of stops, but missed sections on Attention, Context, and Interpretation

These two visitors show examples of different levels of engagement in terms of the number of stops and the sampling of exhibits in the different sections. V49 made a more thorough sweep of the whole space, but stopped less often than V56 who covered four well but missed the other four of the eight sections.

Figure 9C


Seeing—Exploratorium
Observer's initials

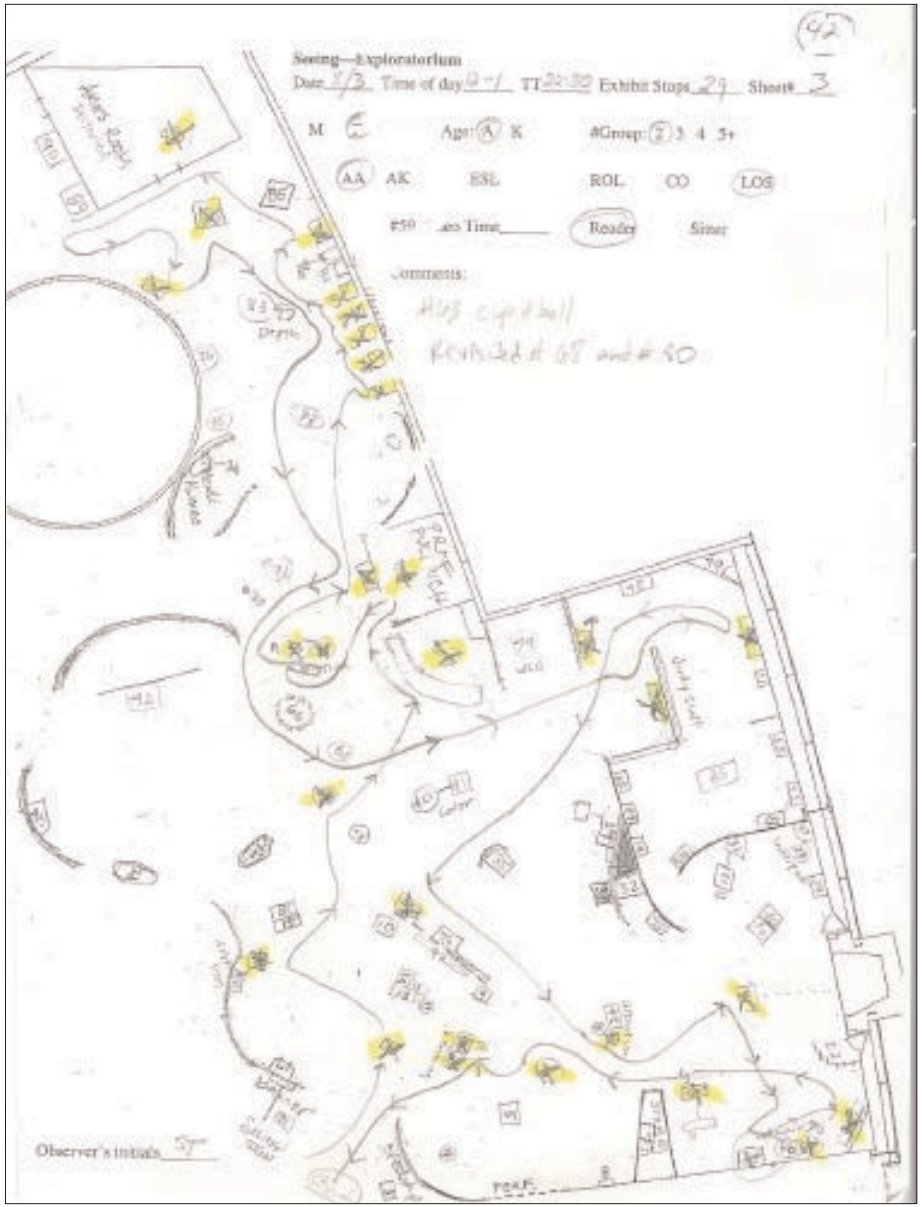

Seeing—Exploratorium
Observer's initials

Figure 9C.

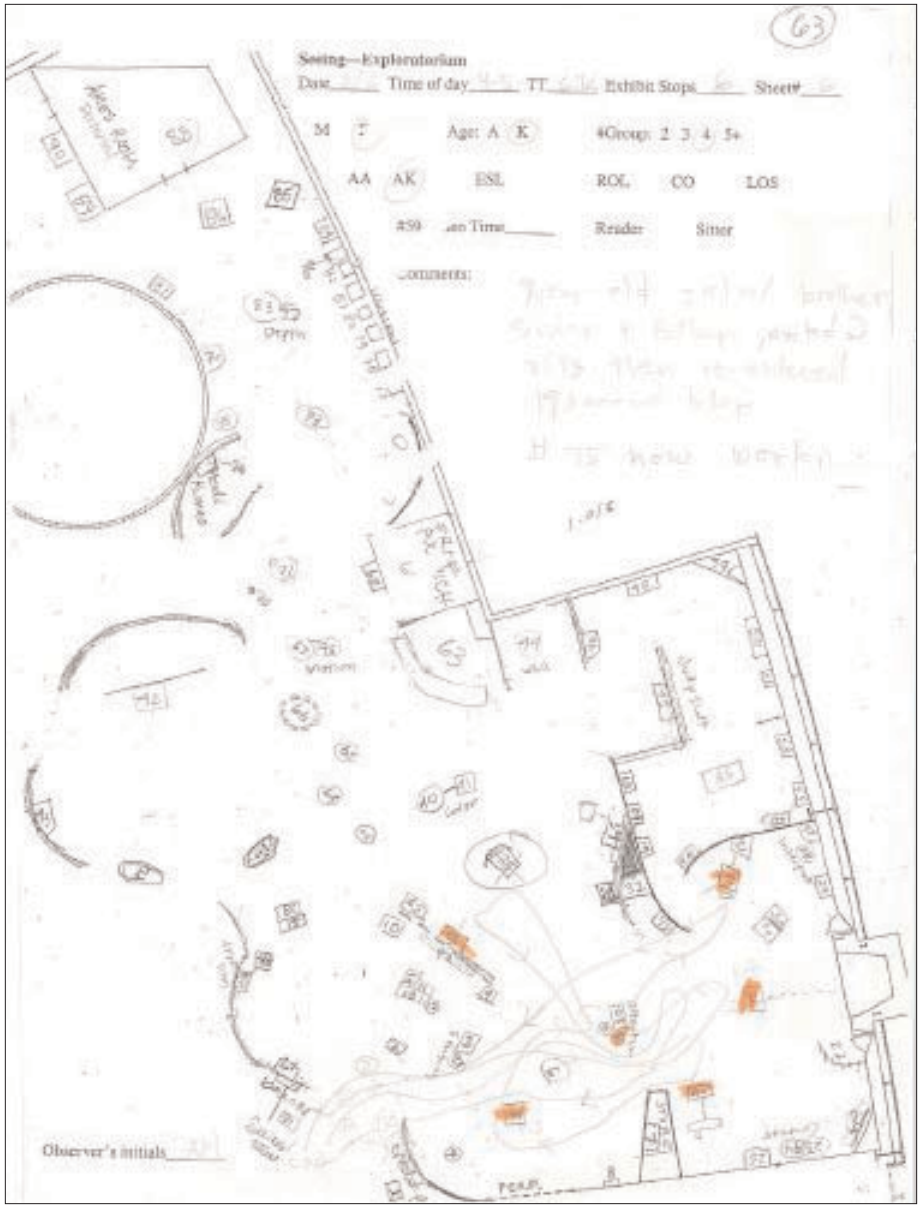
- **Visitor V27** spent 35 minutes and made 30 stops.
  male, adult with kids
  reader
  thorough penetration
  stopped at all six of the most popular elements: #21, 35, 42, 64, 66, and 88

- **Visitor V42** stayed 23 minutes, made 29 stops.
  female, with another adult
  reader
  saw elements in all areas, including Judy Scott

These visitors spent more than the average time of 20 minutes. They visited less than half of the elements in the collection, but their visits still appeared fairly thorough, as V42 made stops in all areas of the collection and V27 only skipped Judy Scott.

Figure 9D


Seeing—Exploratorium
Observer's initials


Seeing—Exploratorium
Observer's initials

Many of the visitors who spent less than 20 minutes made fewer than 20 stops and often did not sample exhibit elements from all areas of the collection. These people would be less likely to have an overall or comprehensive impression of what *Seeing* was about.

Figure 9D.

- **Visitor V98** spent 18 min. and made 13 stops
  male, adult with kid and adult
  spent 5 minutes at element 21
  not thorough penetration; only Sensing, Color and Attention areas
- **Visitor V63** spent 6 min., making 6 stops
  female, child with adult and other children (family)
  mostly only in Attention area

Figure 9E

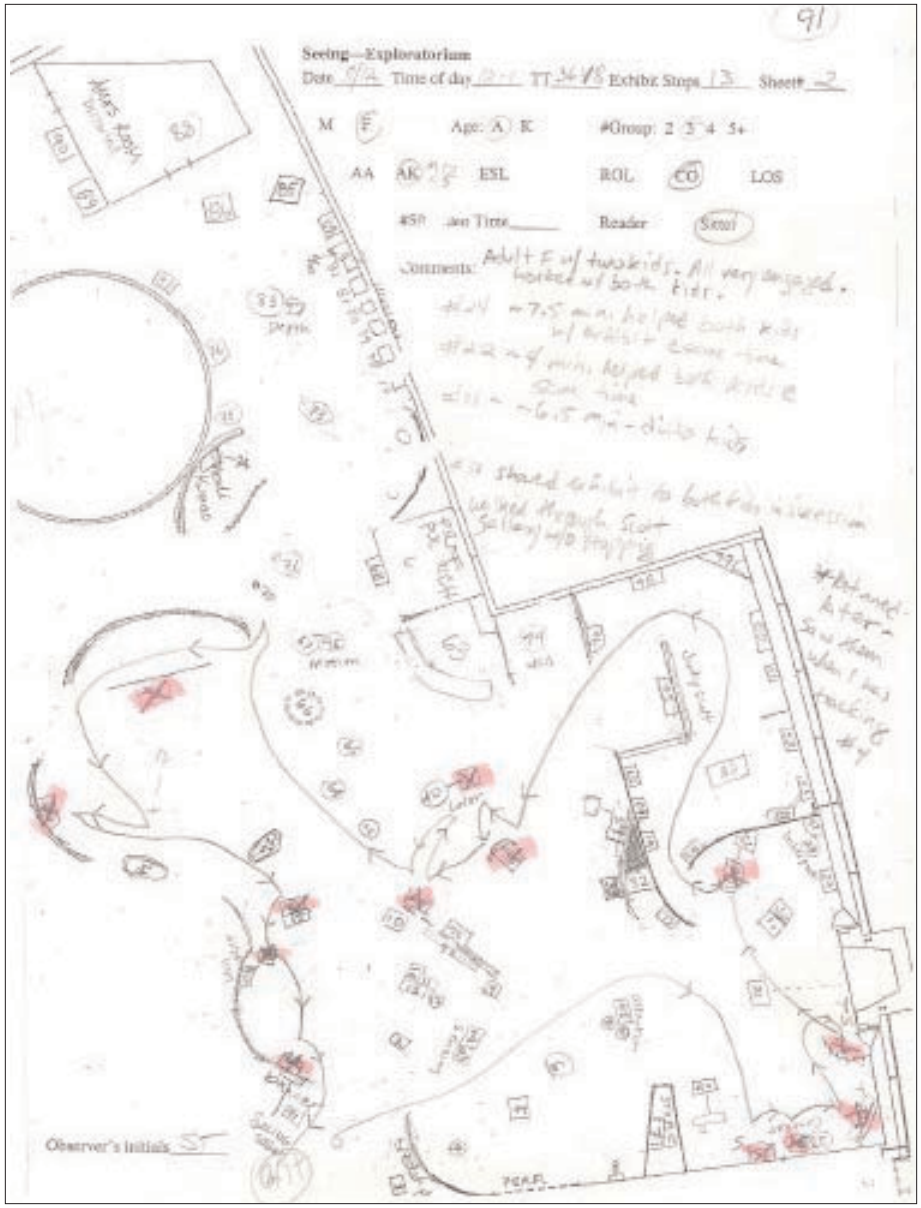

91
Seeing—Exploratorium
Date 6/4 Time of day 2:11 TT 34'8 Exhibz Stops 13 Sheet# 2
M F Age: A K #Group: 2 3 4 5+
AA AK ESL ROL CO LOS
#5P Jan Time Reader Soul
Comments: Adult F w/ two kids. All very engaged.
Observer's Initials

Figure 9E.

One subject did spend an unusual amount of time at four exhibits (#22, 24, 31 and 37). This female adult (V91) worked with two children, ages 10 and 5. She called them over, sat with them, and helped them use the interactives, spending up to 7.5 minutes at #24. She also spent more typical times at nine other elements.

V91's atypical behavior is obvious on the scattergram, refer back to Figure 8, where the point of the graph for her total time and stops is out by itself.

Figure 10. Extended-time elements

Element	#Ext.time visitors	Longest stop (approximate time)
#16 Eye Tracker	6	9 minutes
#24 Re-framing Photos	6	8 minutes
#29 Ink Blot Projections	3	4 minutes
#31 The Watch, The Thief	3	6 1/2 minutes
#63 Demonstration Station	3	7 1/2 minutes
#86 Perspective Drawing	3	5 minutes
#21 Change Blindness	2	5 minutes
#59 Metamorphosis video	2	12 minutes
#22 Count the Bounces	1	4 minutes
#28 What do you see	1	4 minutes
#41 Color Contrast	1	4 minutes
#75 Disappearing act computer	1	>3 minutes

Extended-Time Visitors

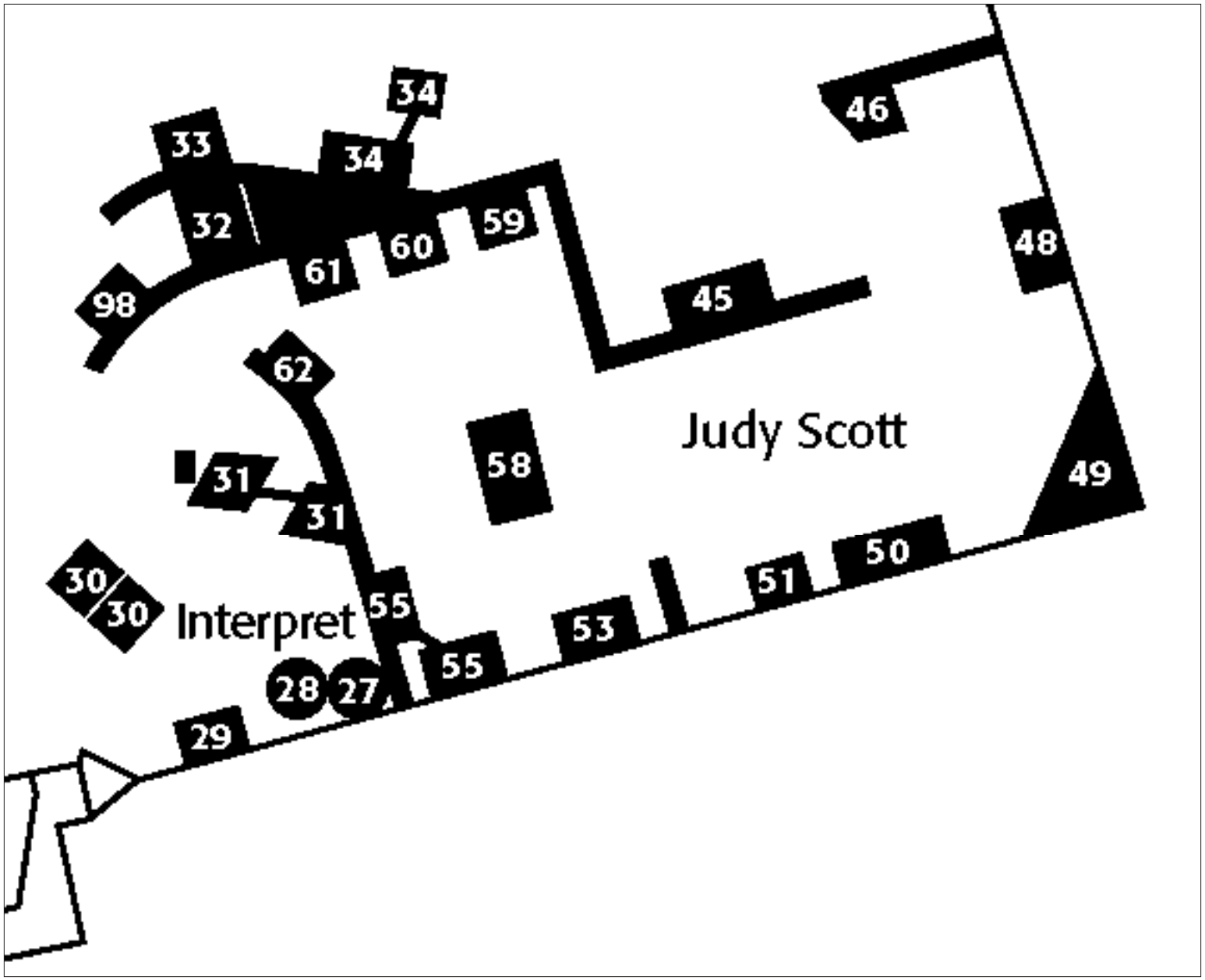
Although time at individual stops were not recorded systematically, data collectors noted when a subject was exceptionally engaged, that is, he or she spent more than three minutes at an element—an extended amount of time. Of the 110 visitors who were tracked, 24, or 22% of them, made at least one extended stop. Three of the 24 visitors each made two extended stops, and two each made three. V91, who made four long stops, was discussed on the previous page.

Another way of looking at the same data: Altogether, 110 visitors made a total of 1967 stops, and 31 (less than 2%) of the stops were longer-than-normal.

Extended-Time Elements

Out of the 93 elements, 12 of them held visitors attention for an extended time. Two of those 12 elements were responsible for half of the 24 visitors' who made longer-than-usual stops, #16 Eye Tracker and #24 Re-framing Photos. Each of those elements attracted six extended-time visitor stops. Ten other elements attracted from one to three extended time stops in the tracking sample.

See Figure 10. Elements that attracted extended times.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Judy Scott Gallery

This area was set apart from the rest of the *Seeing* exhibits with walls. A large art piece was in a vitrine (#45) at the entrance.

An introductory label was intentionally "hidden" on the opposite wall, so that most visitors would encounter the art before they encountered the label.

Two videos offered additional interpretations: An un-narrated continuous loop showed Judy Scott at work (#57), and a 10-minute narrated "Metamorphosis" video (#59) included several talking heads explaining aspects of Judy and her work.

There were two "comment book" areas. The final label (#62) described the Creative Growth Art Center.

The large string-ball artwork was unusual. The introductory label made the point that what you see is influenced by what you know—or don't know. The un-narrated video was a very powerful interpretive device because one look at Judy Scott revealed that she is "mentally handicapped"—but what does that mean, considering her art?

Figure 11. Attraction rates for elements in Judy Scott gallery
Elements in Judy Scott gallery and the number of visitors who stopped

Element #	#Visitors (out of 38)
45 art	15
46 intro label	20
48 art	11
49 comment area	15
50 art	18
51 video (no narration)	21
53 art	6
55 read more about artist	12
58 art	11
59 video (10 min., narrated)	15
60 comment book	6
61 art	6
62 exit label	6

Thirty-eight people (out of 110, or 35%) entered the Judy Scott gallery (JSG) and made at least one stop. Considering the gallery as an exhibit element unto itself, this data puts JSG as one of the more popular exhibits.

The introductory label (#46) and the video (without narration, element #51) were the most popular elements. Both elements attracted more than half of the visitors to JSG.

See Figure 11. Attraction rates for elements in Judy Scott gallery

The 13 elements attracted from six to 21 of the 38 visitors.

A few trends were discerned among JSG visitors:

• The elements in the first area got more attention than the ones in the second area.

• Most people seemed to enter the gallery as part of their tour through *Seeing*. It was the sole destination for only one visitor.

• Another trend was to enter the gallery and then make a U-turn and leave again immediately without making any stops, "ducking in," or to walk straight through without making any stops. Eleven visitors did these behaviors. These were in addition to the 38 who actually made stops.

Figure 12. Line graph of stops in JSG.

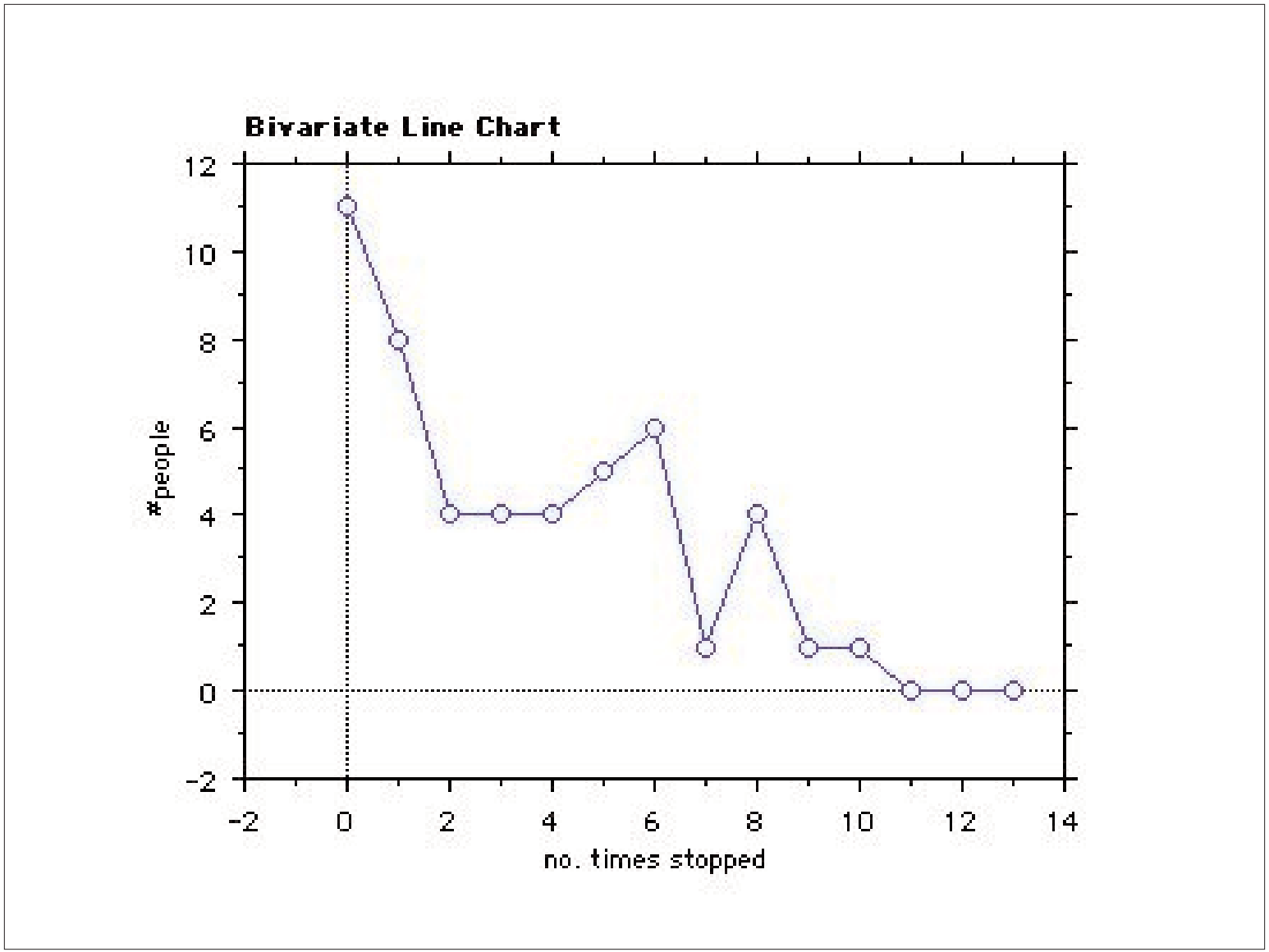


Figure 12. Line graph of stops in JSG.

Most people stopped at only a few of the art pieces. No one stopped at all 13 elements. The average was four stops.

The decay of attracting power indicates that most visitors experienced enough without becoming engaged with more than half of the elements. This may suggest that the JSG could have been much smaller exhibit area.

Compare this chart to the one showing visitors' use of Illusions *(see Figure 13*), where there was no decay.

Evaluator's note re: consistency and novelty in Judy Scott

Perhaps visitors thought they'd entered an area that was not part of *Seeing* because it looked so different, more contemplative, not hands-on, area. This would help explain two behaviors: the "ducking in" and the drop-off of engagement with the elements. On one hand, some visitors peeked in to check out the area, and then made the decision not to stay. Others, came in and got engaged but not in a highly sustained way. After seeing a few pieces, they moved more quickly out of the space.

As for the high percentage of visitors who read the introductory label, people may have sought an explanation for this thought-provoking element. From data at other institutions we know that visitors typically feel more compelled to seek information as to "what's this about?" in art museums than in science museums.

“Metamorphosis” video, 10-minute running time

A total of 15 people stopped to watch the long, narrated video about Judy Scott (#59).

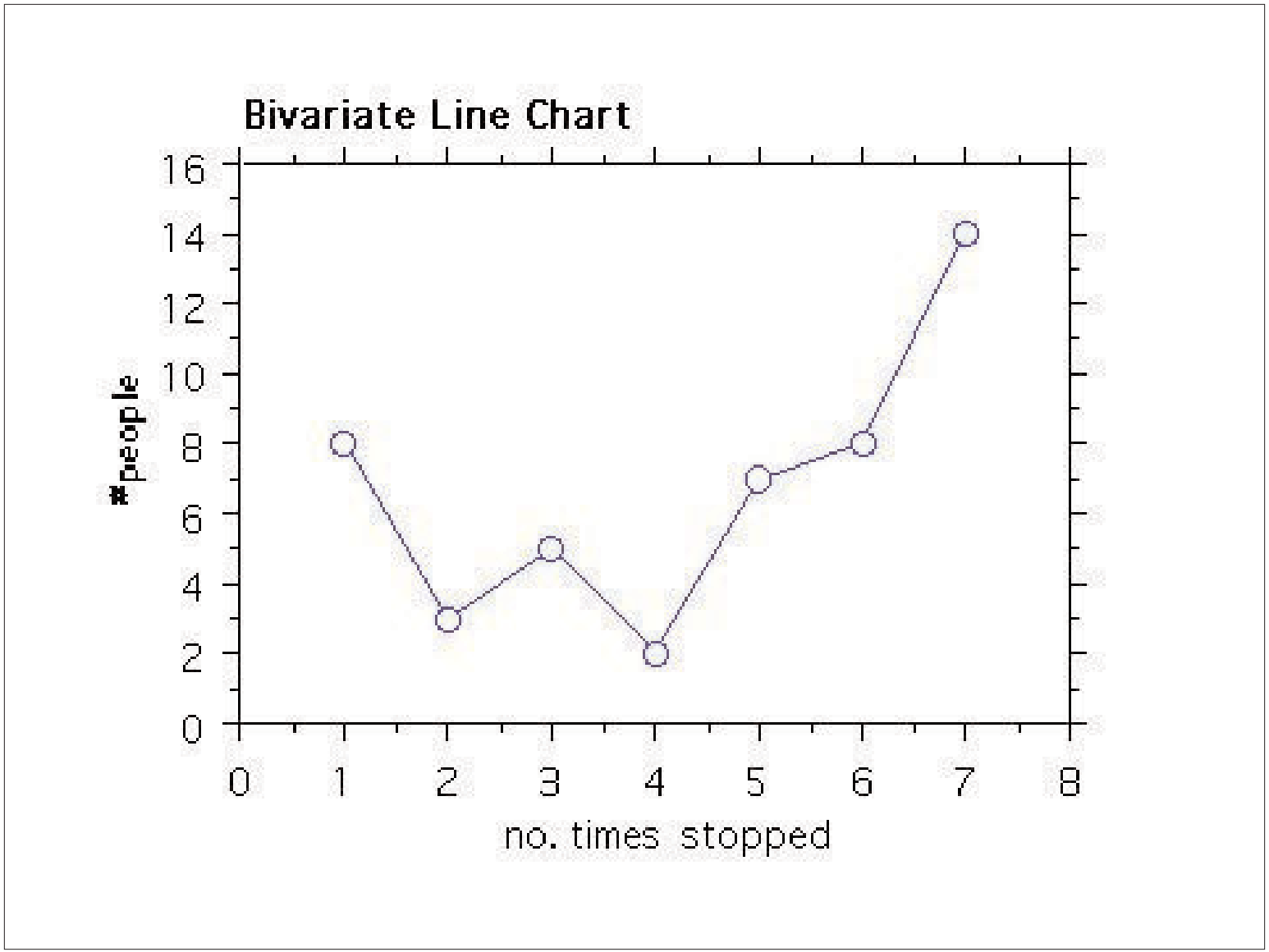
The sample size was too small to draw statistically reliable conclusions, but here is the descriptive summary:

- three people spent less than 10 seconds
- seven people watched less than a quarter of the video
- two people watched more than a third
- two people watched more than a half
- one person watched it more than once all the way through

The one person who watched the whole thing was part of a female adult dyad who went directly to Judy Scott, looked only there, and then left *Seeing* without stopping anywhere else.

According to the data presented in “Are They Watching? Visitors and Exhibition Videos” (Serrell 2002), videos typically attract about a third of the visitors and hold them for less than three minutes. Although the sample size was small for Metamorphosis, it appears that the attraction rate (39%) and average holding time (2 minutes 57 seconds) of the video was normal.

Figure 13. Illusions—the number of people who made stops at them.



Illusions

The seven graphic illusions along the north wall (elements 77, 78, 79, 80, 81, 82, and 84) were very popular. Forty-seven visitors of the 110 tracked visitors, or 43%, stopped to look at at least one graphic illusion, making this group of exhibits one of the most popular spots in *Seeing*.

Although it was not literally a hands-on interactive, the illusions were highly engaging. Eighty-three percent of the people looked at more than one; 66% (31 of 47) looked at more than three; and 30% (14 of 47) looked at all of them.

Figure 13. Illusions chart

Of the 47 visitors who stopped at least once, eight people looked at one illusion; two people looked at two illusions; five people looked at three; two looked at four; seven people looked at five; eight people looked at six, and 14 people looked at all seven illusions.

Figure 14. The text label on the wall with the Illusions (element #96) was virtually ignored. Only three people seemed to pay any attention to it. This may be because the illusions themselves were self-explanatory and each had its own caption.

Figure 15. The most popular illusion (#81) was called "smiles and scowls," probably because the subject matter was faces, which are very eye-catching.

Meshing the Tracking, Observations, and the Interview Data

This section will combine findings from the summative tracking study and the post-study interviews for the whole collection, bringing together what we saw people do with what we heard them say. Use of the space, the entry experience, awareness of the sections, the number of elements, and understanding the themes will be discussed.

Visitors who were tracked or observed were uncued. Visitors who participated in an interview had been cued, and therefore, probably spent more time and paid more attention in the exhibit than an uncued visitor would spend there. This variable needs to be kept in mind when analyzing the data, for example, the numbers of people who got the messages.

Use of the space

• The most popular elements in the *Seeing* collection are spread out across the whole 8,500 square feet, indicating that many visitors spent some time in many parts of the space. One-third of the visitors made stops in six of the eight sections. For such a large exhibition, this seems to be good coverage. By visiting multiple sections of the collection, people had the opportunity to experience different aspects of seeing. If one-third of the observed visitors saw most of the sections, we can assume with confidence that the majority of the cued interviewees did as well.

• Post-study collection interviews showed evidence that visitors had noticed different sections of the collection and understood that the exhibits were about different things, such as color, motion and illusions—although visitors' contexts were not always the same as the exhibit developers.'

• The most popular element in the collection, Change Blindness, and the popularity of the illusion elements may be largely responsible for visitors perceiving the *Seeing* collection as "not as hands-on" and "more passive," yet "you have to pay close attention with your eyes" compared to other areas in the Exploratorium.

• During the tracking data collection period, stantions were placed across the open places in the walls surrounding Seeing. This was done to mark the boundaries of the area, similar to the marks on the floor during the data collection with cued visitors in the *Seeing* collection interview study.

• Forty-five percent of the tracked subjects entered and left via the entrance. Thirty percent left by the "rear door" near the Distorted Room rather than circling back to leave via the entrance, and the other 25% used one of the openings between the curved walls.

Figure 16. Entrance to Seeing.

The entrance experience

Seeing offered a strong entry experience—the sight lines, objects and text worked together to announce the content of the exhibits enclosed by these (permeable) walls. The banner, the title, the introductory label, and the exhibits, which were visible from the entry, created a cohesive statement. In addition, the redundancy of the word "seeing" on both sides of the entry made it unambiguous that when you walked between the signs you were entering a special area. *This was all about one thing, the eye.*

See Figure 16 showing the entry to Seeing.

There was a relatively high frequency of introduction-label reading—17%, which is higher than typical—and the way the label was written allowed visitors to get the message even if they only read the first part while walking by it. The large size and strong color contrast made it highly legible.

The introductory label clearly stated the exhibit's message, which a visitor could relate to and recall: *(W)e actually read the placards on the wall, including the one that's right there at the front when you walk in…(Y)ou don't always see things the way they are, that perspective…depends on who you are, where you are, and what your attitude is…what you see is not really necessarily what's there, and that's a metaphor for higher understanding.*

Recommendation: For future exhibitions, mimic this success.

Figure 17.
Example of signage introducing Color section in Seeing.

The clusters and section identification

Did visitors notice the juxtaposition and contexts between related elements in *Seeing*? Yes. Eighty-one percent of the cued interviewees said that they noticed different sections within *Seeing*. Part of this high percentage can be attributed to their being cued to notice, but still, it's high. Should there be more context? Yes. Thirty-six percent said they would like to have more orientation to the sections. The percentage of visitors wanting more of an overview is probably higher among uncued visitors. One type of element that could be tested further to increase its effectiveness is the section signage: it's design, location, and messages.

•Section panel design

The structure and shape of the section graphics, with the title on one side of the pole and the question and text on the other side, may be too much separation. Even when titles are on the same panel as the text beneath, visitors can miss the connection if they're not right next to each other. *See Figure 17 of the Color section label*

•Section panel location

Now that we know where the "hot" exhibit elements are located, perhaps the section introductions can be moved to within easy-reading distance nearby, so while visitors are engaged or waiting in line, they can read the panel.

Walls did not separate the sections unambiguously. Motion elements reached into Color; Color elements were back-to-back with Sensing; and Interpreting elements wrapped aound a wall away from the section panel's view. *[T]he one with the red and white striped that you spun, and the room, and the black and white, they kind of seemed, where you spun and got the different colors, they seemed to build on each other. But then you jumped into the distortion room, although there were others that distort, they didn't seem to connect. And then I wasn't sure on the exhibit with the string.*

•Section panel text

More than 12 lines of text without a break makes for very dense-looking copy. Try breaking up large blocks of text into shorter chunks.

Most cued visitors could discern some sections, but some could not. Those who couldn't asked for the very help that the section panels offered: *[It would be] nice to have an explanation of what the section was actually about and what it was designed to do. It's probably easier if it has an order or something like a concept of what was in and what each section was about...*

Recommendation: Try out some of these alterations and follow up with a small-scale cued interview study.

Evaluator's thought re: clusters and free-choice

During the *Seeing* Design Workshop some people expressed concern that the clusters would be too constricting. What does that mean? No one in the unobtrusive tracking sample seemed "forced" by the context in *Seeing* to spend time in all the sections or read the section labels. In the cued interview samples, no one seemed obliged even to notice that the sections existed. Yet many people did notice the groupings, both the intented ones (e.g., Color, Motion, Depth) and ones that they made up themselves (e.g., Optical Illusions, Anatomy).

Clusters make themselves known through design and context without controlling visitors' behaviors. In my opinion, there is no danger of "too much context" here. In fact, opportunities exist to provide more chances for visitors to see patterns and make generalizations among the 93 exhibits in *Seeing*.

The number of exhibit elements and their names

When the evaluators set about the task of counting and identifying the elements in Seeing to create the floor plan data sheet, we were confounded by the complexity of the environment. The sheer number of elements was overwhelming and confusing. In addition, we often did not know what to call them.

Many elements were not obviously titled. Others had titles that were inconsistent in design and content: Some were catchy, some straightforward, some obscure, or in "in-house" language. If the data collectors can't figure out what is or isn't an element and what to call it, how can we expect visitors to make sense of the environment?

This lack of identity for many of the elements probably contributed to the fact that few visitors in the interviews referred to exhibits by name or title. Nevertheless, often they were specific enough for us to recognize which element they were talking about, for example, "the shadow one," "the model of the eye," "the one where it blinked and it changed every time."

What some exhibit developers may consider too obvious is actually far from it.

Element clarity—physical and conceptual—and meaningful titles are good. Naming can help identify, characterize and categorize experiences, aiding visitors' memories by establishing patterns and generalizations. "Disagreeing About Color" is much easier to remember and more meaningful and logical than "Silage Beach." "Change Blindness" communicates the point much better than "Neighborhoods."

Recommendations: Less is more. An exhibition with 50 or fewer elements—well-named ones—is more accessible and satisfying to more visitors.

Figure 18. Located front and center, the eye models vitrine.

Understanding the messages

• Many people thought that the exhibits were about the anatomy of the eye. This was probably influenced by the prominent placement of a case with eye models in the middle of the entrance, creating a strong visual first impression. *See Figure 18.*

• Visitors' descriptions of the sections did not always concur with the exhibit developers' intended topics. This is because visitors formed impressions of what the collection was about by using different exhibits rather than by reading the section labels, which spelled out the subtle or abstract distinctions.

• Experiences with even a few of the most popular elements, such as Change Blindness, Illusions, and Distorted Room, could convey the ideas of seeing as interpretation and the importance of paying attention.

• Most of the participants in the interview studies probably stopped at "Change Blindness," as did the majority of the visitors in the tracking study. Many of the interviewees commented specifically on their experiences with Change Blindness.

I didn't realize that I could look at something so many times and not notice there's a difference in the picture. I realized how non-observant I am, about things, some of them were really big changes. Real interesting.

• Interviews showed that many people gained new understanding of how individual people see things differently. Extended holding times at exhibits such as Eye Tracker and Re-Framing may have deepened people's appreciation for this notion.

Recommendation: Keep up the good work with making new exhibit elements and revamping old ones that are open-ended, personal, intriguing and fun.

Evaluator's note re: art pieces

The mixing of interpretive elements and art pieces can distract from exhibit continuity. "What's this for?, What's this doing here? How does this relate?" are subconscious questions in people's minds as they move through an exhibit space. The uninterpreted mask (#5) near the entrance, Well of Lights (#44), and Traffic Illusion (#68) fit the conceptual organization in theory but experiencing them feels disconnected.

Recommendation: Interpret the art in a way that communicates its different purpose. This should be made clear to visitors so they don't feel incompetent because they think they don't understand something. Give visitors a clue as to why and how something is related to the exhibit's topic.

The fewer distractions the better for the museum to communicate its messages and for visitors to construct their own meaningful experiences. In the planning and design process, when exhibit developers say, "It's fun, but it doesn't fit," that is a red flag.

Seeing Yellow and Motion Detection

Data for tracking and for two special exhibits, Seeing Yellow (#36) and Motion Detection (#73), will also be considered here. Only the post-study data will be meshed, and the exhibit Peripheral Vision, although a part of the special study, is not included because it was not on the floor during the tracking study.

Neither of these exhibits ranked as highly popular or engaging with visitors. The changes made from pre to post-study may have improved the visitors' experiences with them, but those exhibits do not seem to hold the potential for the level of attraction and engagement shown by some other exhibits in the collection.

Time spent

• In the post-studies for Seeing Yellow and Motion Detection, uncued visitors were observed to spend on average 38 seconds and 67 seconds respectively. These are well within an established range of average times for many science museum exhibits.

• Time spent at Seeing Yellow and Motion Detection was distributed in an exponential curve, with many visitors spending less time and a few visitors staying for extended times. The time data curves were not bimodal (and rarely are: See Serrell, "In Search of the Illusive Bimodal Distribution," *Visitor Studies Today*, Summer 2001, Volume IV, Issue 2, 2001).

Understanding the messages

• The relatively low time is reflected in the low percentages of visitors who understood Seeing Yellow. It was a confusing exhibit for many people (pre- and post-study). Changes made for the post-study only seemed to confuse visitors to Seeing Yellow faster and they left sooner.

• For Motion Detection, the maximum effectiveness for understanding may have been achieved in the pre-study condition, but the exhibit was clearly more engaging with post-study adjustments. It held visitors' attention longer, and more people had the critical experience.

Final Summary Statement

Seeing is a large, complex collection of loosely related exhibit elements that attract and hold visitors' attention well, but not exceptionally well. Yet, given the size and scope of the exhibits, a longer average time and more stops would not be expected. The individual interactive elements range from many that are modestly engaging, to some that are highly engaging, with a few exceptionally successful exhibits that sustained attention for almost 10 minutes.

Many of the elements successfully convey the main ideas in *Seeing*. If visitors pay enough attention, they are likely to perceive the main ideas of the exhibit collection and its layout, and they are likely to find something of special interest or personal relevance. Given that a fairly large percentage of people would like more orientation, the use of clusters (thematic sections) is not overbearing or too directive, and even stronger cues could be given to benefit the people who need or want it.

Serrell references cited:

Paying Attention: Visitors and Museum Exhibitions, American Association of Museums, 1998, 234 pages.

"In Search of the Illusive Bimodal Distribution," *Visitor Studies Today*, Summer 2001, Volume IV, Issue 2.

"Are They Watching?: Visitors and Videos in Exhibitions" *Curator*, 45/1, January 2002, pages 50-64.

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