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Experiencing discovery: Designing for visual delight

Sandy Knight

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EXPERIENCING Discovery
Designing for Visual Delight

Rochester Institute of Technology

A thesis submitted to
the faculty of the
College of Imaging Arts and Sciences
in candidacy for the degree of Master of Fine Arts

Sandy Knight
May 15, 2002
EXPERIENCING Discovery
Designing for Visual Delight

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Gratitude

I am thankful for the encouragement given to me by my husband, Andy Buck, for feeding my dreams, heart, and stomach.

To my committee members: a special thank you. To Professor Deborah Beardslee for her support and sensitivity. To Professor Bruce Ian Meader for his inspiring pursuit of clarity. To Dr. Tina Lent for her wit, guidance, and insights.

And finally, to one who understands discovery within the smallest blade of grass, thank you to my grandfather, Joseph U. Bean.
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In graphic design, the importance of clear communication has been well-documented. This thesis is an exploration of communication in graphic design from a different perspective: the designer’s potential to stimulate an experience or reaction of “a-ha” or “oh, now I see” for an audience, receiver, or end user. This paper defines this “a-ha” experience as discovery.

The objective of this thesis is to identify the visual strategies that reinforce the experience of discovery within graphic design. The theory of discovery in design emerged from the premise that to be truly alive is to notice with great detail the world around us. Through the process of sensing and decoding our surroundings, we become deeply attuned, aware, and sensually stimulated.

The act of sensing and decoding our surroundings reaches back in history to early human development, when a reliance on the keen recognition of potential danger was a matter of life or death. This attentive work to absorb and understand our surroundings is inherent in our being, yet not often stimulated in modern times. The act of sensing and decoding our surroundings with heightened perception is defined in this thesis as active participation.

An underlying theory of this thesis project is that active participation can provoke an experience of discovery. Active participation can be a physical involvement such as opening an artifact, or a heightened, non-physical cerebral involvement such as analytical or critical thinking. In either event, the viewer is required to participate in order to experience the satisfaction of comprehension. An example of active participation is the viewing of an optical illusion: before grasping the meaning, the viewer must actively engage, explore, and decode the image. Through engaging, exploring and decoding, there is significant potential for the imagination and intellect of the viewer to be stimulated. Within this thesis documentation, the strategies to recreate this experience are identified and tested.

The goal of discovery in design is to make visible the complex process often taken for granted: that of deciphering the world around us.
Definition of Terms

The list below defines the important concepts used within this documentation.

**Active participation**
Active participation is the direct involvement of a viewer to comprehend the meaning of a graphic design solution. Active participation can be a heightened physical participation of opening or handling an artifact, or a heightened non-physical cerebral participation, such as analytical or critical thinking. In either event, the viewer is required to participate to understand the intention.

**Emergent meaning**
A design solution may contain embedded meaning within visual or conceptual layering that, upon analysis and deduction, can become tangible and consciously understood.

**Decode**
This term describes the process of examining a graphic design solution to excavate meaning and understanding. The word *decode* suggests that within this examination, there is the desire and potential to “unearth” meaning through analysis and deduction.

**Discovery**
A moment of gratifying emotion that occurs as the meaning of a layered graphic design solution is decoded and then understood.

**Purposeful pause**
Intentionally delaying comprehension.

**Visual strategies**
Specific visual devices, such as abstraction and illusion, to be incorporated into the graphic design solution to stimulate curiosity and close investigation.
Project Definition

The word *discovery* has multiple levels of meaning, and represents subtle variations of experience.

For example, discovery can be . . .

- the happy accident
- a sudden idea
- a new connection
- serendipity
- an epiphany
- finding one’s way
- uncovering the hidden
- detecting or spotting
- learning something new

*Discovery in design* can include all of the above. For the purpose of this project, *discovery* is defined as an emotion of enjoyment that occurs through decoding visual connections within a graphic design solution. If the graphic design solution is successful, the decoding will produce a reward: comprehension of the intended communication, and closure. An additional reward is *heightened sensory and intellectual stimulation* that occurs through the decoding process.

“A graphic designer is someone who can translate the world and what happens in it into signs and pictures, who can make visible what is not visible.”

**OTL AICHER**
The designer predetermines the conditions for discovery based on an exploration of the visual image, the intended communication, and the intended audience. Comprehension of meaning within a graphic design solution can be instantaneous, or, as is suggested in this project, can be momentarily delayed to spark an experience of discovery. There are other less favorable outcomes as well: the intended communication is misinterpreted, or missed altogether. These less favorable results indicate that the designer must focus very clearly on the choice of visual options that will ultimately provide a reward of communication; the solution that leads to missed or misinterpreted comprehension must be reconsidered and redesigned.

The hypothesis of this thesis is that, by the use of visual strategies, it is possible for a designer to incorporate an “a-ha” experience into a graphic design solution. The value is in inciting our senses and provoking participation. It may defy logic, but people find pleasure in the experience of delayed gratification—a suspenseful Alfred Hitchcock movie, for instance, is one example of the enjoyment of wondering and decoding a plot line—closure is desired, but only after the fun and suspense of attempting to figure it out on our own.

The goals of delight and discovery could contribute to any design solution. This theory builds on changing expectations of design produced by the increasing prevalence of newer technology such as interactive web sites. An example is a web page that provides instant choice through links to many, many interactive decisions. As exposure to interactive media grows, audiences are more prone to anticipate choice and interactivity. Discovery in design is one way a graphic designer can hope to produce a printed solution that will captivate an audience accustomed to moving images, and split-second mental processing.

"Who ever said pleasure wasn’t functional?"
CHARLES EAMES
Precedents

Precedent One  Bradbury Thompson

The graphic designer Bradbury Thompson is renowned for visually delightful and provocative work. The spirit of his designs exemplify discovery in design through visual elements that delay comprehension.

An example of this is "Recreation" designed by Thompson for Westvaco Printing. A letter "U" turned upside-down becomes the wicket in a graphic representation of a croquet ground. The sequential path of a croquet ball (from starting wicket to final wicket), is represented by a zig-zagging line of text. The design demonstrates the use of visual strategies such as visual metaphor and allusion (referencing something else). These visual strategies assist in provoking curiosity.

On inspection, it is discovered in the text that the flipped "U" references the "U" of unladylike: a new flipped state of being which women happily embraced while partaking in the pastime of sport. Thompson's work depicts a designer's ability to prompt visual discovery in design.
Precedents continued

**Precedent Two**  Paul Rand

In *Design Form and Chaos*, Paul Rand wrote that “design is both a verb and a noun, it is the beginning as well as the end, the process and the product of imagination. Like a huge onion with multiple layers, the more it is peeled, the more it reveals.” (Rand, 3) Viewer involvement (design as a verb) is an important aspect of this thesis project.

An example of viewer involvement and decoding is found in Paul Rand’s AIGA poster, below. When the poster is first viewed, full comprehension is obstructed. Though some of the letters can be discerned, realization of the “I” (in AIGA) is dependent on decoding the visual pun: the “I” is represented as the “eye” in an abstracted smiling face. The discovery (in finding the word AIGA) occurs through understanding the visual connections. This example demonstrates the importance of audience consideration: total comprehension is dependent on an awareness of AIGA by the audience, namely, design professionals.

![AIGA poster](image)

This AIGA poster requires viewer interaction and decoding for comprehension. See Appendix B for larger image.
**Precedents continued**

**Precedent Three** Visual illusions

Visual illusions comprise a great amount of significance within this project. The enjoyment or “a-ha” experience that occurs when decoding a visual illusion is a major conceptual precedent.

In an optical illusion entitled *The Kiss and Its Consequences*, two faces merge into one face within a composition. The singular face forms the “result” of the kiss, or, a baby. The illusion engages the eye and the mind simultaneously.

1910, carte de visite, UK. This illusion engages both curiosity and the intellect.
Precedents continued

Precedent Four  Tactile design
Tactile design delays comprehension through the need for physical interaction. An additional layer of communication is provided through this sensory experience. Designer Steven Guarnica remarked: “when it’s appropriate, tactile design puts speed bumps into the process, slows people down, and handling the piece becomes an end in itself.” (Street, 10)

Designers that incorporate tactile experiences into their design solutions strive to engage the audience. An example is provided by designer Stefan Sagmeister. Sagmeister designed the stationary set, below, to surprise the eye. The set includes multiple layers of transparent or die-cut vertical and horizontal bars that, when overlapped, form letters. This exemple demonstrates the role of physical interaction for comprehension and discovery.

The name, Anni Kuan, is formed when layers of transparent paper are overlapped. The image above shows the abstracted lines alone, and the name that is discovered when the physical overlap occurs.
Precedents continued

Precedent Five  Artist's books

Much time was spent examining and enjoying the artists' books in the Cary Library at the Rochester Institute of Technology. Archivist Kari Horiwitz was instrumental in suggesting and retrieving various pop-up books from the vast collection.

While studying many different books, the process of interaction was noted. Some of the books required the movement of paper parts to expose imagery beneath, while others required contemplation to expose conceptual connections within the imagery.

Pop-up books in general use interaction to stimulate discovery. In artists' books, a new surprise awaits on every page. An example is an illustrated book by Keith Smith entitled A Bee Sees. This book is rich with text and imagery that requires viewer involvement for connections to be formed, and demonstrates that visual decoding and connecting can be enjoyable.

Three pages from the artist's book by Keith Smith, A Bee Sees.
Research and Analysis

Connective, free-association paths were mapped out by use of a mind map. The goal of the mind map was to generate additional conceptual dimensions of discovery to incorporate into the research.

Enlightened, confused, unexpected, and surprised were important key words. The entry surprise led to an exploration of ways in which people can be surprised, such as through interaction with a gumball machine, fortune cookie, palm reader. These interactive experiences were noted and further explored as physical strategies of viewer experience to be simulated within the graphic design solution.
The objective of the research was to gather understanding and support for the process of visual perceiving and decoding.

Key questions of focus:
• How does research on visual perception support or refute the goals of delaying comprehension in the application of this thesis?
• What are the design processes and strategies that might result in the experience of discovery in design?

Visual Perception
An important aspect of this project is visual perception, or seeking to understand and decode our surroundings through our eyes. Carolyn Bloomer in *Principles of Visual Perception* (1990) wrote on the continual need for each of us to make visual sense of the world.

“When you have successfully resolved the problem of meaning, you experience closure. The term closure was originally applied by Gestalt psychologists to the phenomenon of identifying a discontinuous figure as a continuous or unitary image. It is now commonly applied to the more general experience of identifying and classifying a stimulus (I see!) in such a way that the observer feels free to move on to something else. Depending on the importance of the stimulus, closure is usually accompanied by feelings of relief. When closure is too difficult, people are likely to feel frustrated and, if possible, may attempt to reject the stimulus. When closure is easy, the stimulus attracts but does not hold their attention.” (Bloomer, 18)
“Advertising is designed to provide instant, uncomplicated closure. . . . Despite their need for closure, people often flirt with postponing it. Multimillion-dollar businesses exploit the public’s perennial willingness to delay closure, as with crossword puzzles, jigsaw puzzles, cryptograms, mystery stories, and suspense movies. In all these situations, however, people feel secure in anticipating that they will eventually arrive at closure: the puzzle has a solution, the writer or filmmaker will eventually clear up the mystery, and the joke’s punch line will (or had better) be worth waiting for. As long as closure is promised and yet is not at hand, the audience’s attention is captured.” (Bloomer, 18)

A designer might choose to delay closure to produce an experience similar to the satisfaction found in solving a crossword puzzle. We experience the world through a complex process of seeking a visual solution, yet we also enjoy the delay in gratification (as noted by Carolyn Bloomer). This thesis project seeks to elicit a deeper communication by providing an opportunity for decoding. A useful definition of visual perception at a complex level is described as the “mediating process that fuses simple sensation with high-level cognition so that your experience of meaning will be unified and coherent.” (Bloomer, 32)
Optical Illusions

Theories on the enjoyment of optical illusions provide support for visual delight that emerges from the process of decoding with the eye. Illusions provide a model of visual engagement that leads to a visual "a-ha!" experience. In *Illusion in Nature and Art*, Roland Penrose states that "my praise of illusion is given not because of its ability to create amusements, but also because it can sustain a power which is of inestimable value in our search for knowledge, our lasting enjoyment of life and our search for the fragile key to reality." (Gregory, 246). Visual delight is a layered process that occurs through seeing and decoding an illusion. Perception and the intellect work together for closure. Through this deep level of thinking and decoding, the depth of communication can be greater.

Other primary sources provided background research, such as *The Playful Eye: An Album of Visual Delight*, by Rothenstein and Gooding, and *Art and Illusion*, edited by Gregory and Gombrich. Briefly, the research supports this thesis project by defining the needs of visual closure, and the enjoyment of this process. According to Mel Gooding:

"The eye seeks meaning. At every moment of intelligent apprehension the mind organizes configurations of information out of the infinitude of visual facts that present themselves to the eye. We are programmed to make sense of the world, to construct coherence . . . . But the eye also likes to play, finding in the welter of visual impressions resemblances between quite different things. . . . It discovers meanings that defy the rational understanding, but which satisfy a deep human need for things to be seen as belonging to a pattern, and for there to be signs which indicate hidden affinities, unsuspected relations and associations. The eye seeks these signs, and the mind interprets them."

(Gooding, 4)
Research and Analysis continued

Research on visual perception and optical illusions supports the overall concept of discovery in graphic design. But how can discovery in graphic design be implemented within the design process? This question culminated into a select list of visual design strategies.

Visual design strategies were compiled and edited, and paired with examples selected from graphic design history. These visual strategies and examples are shown beginning on the following page.

Visual Strategies and sources:

- **Abstraction** from designer Paul Rand (precedents, page 9)

- **Allusion** from *Illusion in Nature and Art* (Gregory, Gombrich, 1973)

- **Association** from *Inside/Outside* (Greer, 1993)

- **Illusion** from *Illusion in Nature and Art* (Gregory, Gombrich, 1973)

- **Incomplete Image** from *Inside/Outside* (Greer, 1993)

- **Layering** from found examples

- **Pattern** from *Illusion in Nature and Art* (Gregory, Gombrich, 1973)

- **Progression** from conversations with Professor Deborah Beardslee

- **Visual Switch** from found examples
Research and Analysis continued

Visual Strategies of Discovery

**Abstraction**
interpreted form

**Allusion**
referencing different form

**Association**
forced juxtaposition

**Illusion**
visual play

See Appendix E for larger images and source citations.
Research and Analysis continued

Visual Strategies of Discovery continued

Incomplete Image
missing form

Layering
overlapping form

Pattern
familiar form new

Progression
surprise through stages

Visual Switch
object substitution
**Physical Strategies of Discovery**

Discovery can allude to many different experiences: the “a-ha” moment, the sudden eureka, the land-ho! The question leading this phase of research was: what experiences of discovery can be stimulated through interaction? Further, what activities require active participation and contain a delay in reward? Such activities could be considered as models for interaction to be incorporated into a graphic design solution.

A handful of surprise experiences were selected from the initial research mind map (page 14) and the sequence and pacing of interaction that occurred was examined.

**The physical experiences explored:**

- Opening a fortune cookie
- Getting a gumball from a gumball machine
- Cracking open a pinata
- Cranking a jack-in-the-box
- Opening a present

The goal was to develop a systematic approach for considering sequence and interaction that could result in the discovery experience. The research is detailed on the following page.
### Research and Analysis continued

<table>
<thead>
<tr>
<th><strong>Opening a Fortune Cookie</strong></th>
<th><strong>Breaking Open a Piñata</strong></th>
<th><strong>Getting a Gumball</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>select cookie, or allow others to choose, and have the last one</td>
<td>pinata is hung from a branch, basketball hoop, or ceiling</td>
<td>you see the gumball machine</td>
</tr>
<tr>
<td>hold the plastic wrapper between the fingers</td>
<td>people form a line for a chance to swing</td>
<td>you look inside the clear globe</td>
</tr>
<tr>
<td>pull apart the packaging</td>
<td>you are blindfolded and handed a long stick</td>
<td>notice the cost</td>
</tr>
<tr>
<td>the plastic opens with a pop</td>
<td>then, spun in a circle</td>
<td>mentally select a hoped-for prize or color of gumball</td>
</tr>
<tr>
<td>take out the cookie</td>
<td>you are gently pushed forward</td>
<td>you search for the change in your pocket and count out the correct coins</td>
</tr>
<tr>
<td>break open the cookie</td>
<td>you take a big swing</td>
<td>you insert a coin inside the slot</td>
</tr>
<tr>
<td>see the slip of paper within</td>
<td>if contact with the pinata is made, those in line might yell</td>
<td>turn the crank wheel clockwise</td>
</tr>
<tr>
<td>pull out the slip of paper</td>
<td>two more swings are allowed</td>
<td>hear the metal gears clanking</td>
</tr>
<tr>
<td>the fortune may become caught within the folds of the cookie</td>
<td>next person in line is blindfolded</td>
<td>the coin is taken</td>
</tr>
<tr>
<td>hold the small rectangular paper up to your eyes to see</td>
<td>they take the stick, are spun and lead a few steps forward, and allowed three swings</td>
<td>the dial catches</td>
</tr>
<tr>
<td>read your fortune, silently and then perhaps aloud</td>
<td>the process continues until the pinata is cracked opened and the candy inside spills out</td>
<td>you put another coin in the slot</td>
</tr>
<tr>
<td>nibble on the cookie while pondering the fortune</td>
<td>everyone runs forward for the candy</td>
<td>you cup hand under the retrieval shoot before turning the wheel</td>
</tr>
<tr>
<td>eat all or only part of the cookie</td>
<td></td>
<td>turn the crank, the coin is taken</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Cranking a Jack in the Box</strong></th>
<th><strong>Opening a Present</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>hold the box on the table with one hand</td>
<td>you are handed a boxed object</td>
</tr>
<tr>
<td>reach for the crank with the other hand</td>
<td>it is covered with brightly colored paper</td>
</tr>
<tr>
<td>turn the crank</td>
<td>the contents are hidden</td>
</tr>
<tr>
<td>hear the music begin</td>
<td>you wonder what is inside</td>
</tr>
<tr>
<td>turn the crank more quickly and make the music speed up</td>
<td>beginning at one end, you untape the packaging</td>
</tr>
<tr>
<td>the crank has some resistance</td>
<td>you rip the paper</td>
</tr>
<tr>
<td>the music continues</td>
<td>you open the box to see the contents</td>
</tr>
<tr>
<td>there is a sudden pop</td>
<td></td>
</tr>
<tr>
<td>a trap door springs open to release what is inside</td>
<td>interest</td>
</tr>
<tr>
<td>a puppet pops up on a spring</td>
<td>obstruction</td>
</tr>
<tr>
<td>you may have shrieked or laughed, or probably both</td>
<td>resistance</td>
</tr>
<tr>
<td>you quickly close the door to play again</td>
<td>reveal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Opening a Present</strong></th>
<th><strong>Getting a Gumball</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>you are handed a boxed object</td>
<td>you see the gumball machine</td>
</tr>
<tr>
<td>it is covered with brightly</td>
<td>you look inside the clear globe</td>
</tr>
<tr>
<td>colored paper</td>
<td>notice the cost</td>
</tr>
<tr>
<td>the contents are hidden</td>
<td>mentally select a hoped-for prize or color of gumball</td>
</tr>
<tr>
<td>you wonder what is inside</td>
<td>you search for the change in your pocket and count out the correct coins</td>
</tr>
<tr>
<td>beginning at one end, you</td>
<td>you insert a coin inside the slot</td>
</tr>
<tr>
<td>untape the packaging</td>
<td>turn the crank wheel clockwise</td>
</tr>
<tr>
<td>you rip the paper</td>
<td>hear the metal gears clanking</td>
</tr>
<tr>
<td>you open the box to see the</td>
<td>the coin is taken</td>
</tr>
<tr>
<td>contents</td>
<td>the dial catches</td>
</tr>
<tr>
<td></td>
<td>you put another coin in the slot</td>
</tr>
<tr>
<td></td>
<td>you cup hand under the retrieval shoot before turning the wheel</td>
</tr>
</tbody>
</table>

Often, an experience of discovery is connected to a moment of surprise, in which the unexpected happens, or the expected is suddenly revealed. The five lists above were generated to identify and describe physical interactions which parallel a sequential experience of discovery.
Physical Discovery Strategies continued

From an evaluation of the activity sequences on the previous page, similar key concepts emerged. For example, in each activity there was a moment of resistance or obstruction, before revealing and rewarding, for instance, the color of the gumball that pops out, or the fortune inside the fortune cookie. This withholding (or hiding) of information, stimulates curiosity and participation. Consideration was given to the pacing and timing of the withholding and “delivery” of the reward, as well.

Once the interaction sequences of each activity were analyzed, a distilled list of specific interaction goals was developed. These interaction goals (below) became the concepts to incorporate into a graphic design solution with the goal of instilling the experience of discovery.

<table>
<thead>
<tr>
<th>Physical Activity</th>
<th>Interaction goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening a Fortune Cookie</td>
<td>Hidden message is exposed</td>
</tr>
<tr>
<td>Breaking Open a Piñata</td>
<td>Repeated effort to reveal</td>
</tr>
<tr>
<td>Getting a Gumball</td>
<td>Expectation and reward</td>
</tr>
<tr>
<td>Cranking a Jack in the Box</td>
<td>Repeated effort to reveal</td>
</tr>
<tr>
<td>Opening a Present</td>
<td>Hidden content is exposed</td>
</tr>
</tbody>
</table>

Following the identification of the interaction goals, possible design formats to achieve these goals were considered. For example, how is it possible to achieve the goal of “hidden message is exposed” within a design solution? Ideation of formats are shown on the following page.

The goal of active participation or interaction is to stimulate an experience of discovery within design. To be tested within this thesis project is the combination of physical strategies and visual strategies to contribute to the viewer’s likelihood of experiencing discovery.
Research and Analysis continued

Designing Interaction

Below is the investigation on how interaction could be applied in a graphic design solution. Each interaction goal from the previous page was considered, and a set of possibilities was brainstormed.

This concluded the research on physical strategies of discovery within this thesis project. These possibilities were considered in the design application that follows.
Synthesis

Physical Discovery Strategies continued

To synthesize the research on visual design strategies and physical interaction strategies, a communication model a depiction of the interaction between the designer and viewer. The communication model employed was adapted from the original model by Shannon and Weaver, with further influence from Geoffrey Broadbent.

The Communication model
Simplified version below. For the detailed model and description, refer to Appendix F.

message → designing visual form → transmission → message shared → received → message interpreted

During the exploration of how a message can be visually shaped, the designer can build in visual strategies for discovery.

The visual strategies selected are:
- abstraction
- allusion
- association
- illusion
- incomplete image
- layering
- pattern
- progression
- visual switch

During the exploration of how a viewer can interact with a message, the designer can build in physical strategies for discovery.

The interaction strategies selected are:
- hiding
- withholding
- obstructing
- delivering
- rewarding
- communicating
Preliminary Evaluation

Committee Feedback
Initial feedback was provided by committee members. Their comments, below, provided important considerations to guide the remainder of the project.

Professor Deborah Beardslee

"The concept of making the familiar strange, or making the familiar contribute to a heightened experience, may be meaningful to consider. If the fortune cookie, gum ball machine, etc. are to be used as kernels or models of interaction, it will be important to explore and describe the interaction, and pull out the important key words or concepts to utilize. What differences or connections are there? What is similar, and what is unique to each model? How can these models help structure or shape a process for the designer."

Professor Bruce Ian Meader

"It appears to be an issue of self-revelation, or emergent meaning. What role does ambiguity play? In my work as an information designer, I seek to make everything crystal clear, and to provide those experiences of discovery by connecting aspects or similarities. Some people will understand this, others might not. But as designers, the commonality is the desire to create an experience that is unique and special, an elevated experience, to display the narrative. An example that comes to mind is the Holocaust museum in DC. The temperature becomes cooler, it is dark, the design works to engage all the senses in the experience.

“In terms of visual philosophy: you could look up the work of Catherine McCoy from Cranbrook. One of the main goals seemed to be to create challenge, but it is often overly challenging, ambiguous and layered. You may want to develop a set of discreet frameworks from which to test content. For example, James Burke’s book, The Pin-Ball Effect. Frameworks could provide various processes to test out to see which methods do what, are some superior.”

PRELIMINARY EVALUATION EXPERIENCING DISCOVERY
Preliminary Evaluation continued

Committee Feedback continued

Professor Tina Lent

"It will be an important part of the process to define the word discovery as you are using it, and even to look into the possibility that discovery might not be the right word. The project will be shaped through your definition. For example, do we discover or do we decipher? Think of other words connected to this concept, for example, surprise, chance collusion, decipher, decode, multivalent. It seems as though what you're speaking to is a combined process of revealing and withholding. One aspect of discovery is finding that which has been disguised or left unrevealed. How can this show a process? How can this be evaluated? Is it possible to fail by creating interest but no discovery, and, creating confusion but no discovery?"

The preliminary project evaluation raised the question of defining discovery in graphic design, and also defining what is not discovery is graphic design.

With the goal of discovery, the definition of an unsuccessful use of the visual strategies and physical strategies would be one that leads to no reward. To avoid this, the designer must build in many ways of communication within the design solution.
Ideation

Format and Content Ideation

The goal of this thesis is the intentional incorporation of visual delight in a graphic design, leading to an experience of discovery, or the "a-ha" experience. How can this be tested within a graphic design solution?

Content considerations for the application of this thesis study were distilled from an exploration of the mundane or "overlooked" object. How could the experience of discovery bring a new insight or experience of a very familiar object? To evaluate the experience of discovery, a commonplace element provides neutral content.

<table>
<thead>
<tr>
<th>Format?</th>
<th>Content?</th>
</tr>
</thead>
<tbody>
<tr>
<td>exhibition</td>
<td>the paperclip</td>
</tr>
<tr>
<td>urban signage</td>
<td>the potato chip</td>
</tr>
<tr>
<td>book</td>
<td>slugs</td>
</tr>
<tr>
<td>billboard</td>
<td>the screwdriver</td>
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<td></td>
<td>tofu</td>
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<td></td>
<td>tea strainers</td>
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<td></td>
<td>the spring</td>
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<tr>
<td></td>
<td>the potato bug</td>
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<tr>
<td></td>
<td>spinning tops</td>
</tr>
<tr>
<td></td>
<td>tea bags</td>
</tr>
<tr>
<td></td>
<td>the pencil</td>
</tr>
<tr>
<td></td>
<td>the staircase</td>
</tr>
<tr>
<td></td>
<td>chick peas</td>
</tr>
<tr>
<td></td>
<td>the silo</td>
</tr>
<tr>
<td></td>
<td>the ironing board</td>
</tr>
<tr>
<td></td>
<td>skeleton key</td>
</tr>
<tr>
<td></td>
<td>the hammer</td>
</tr>
<tr>
<td></td>
<td>the artichoke</td>
</tr>
<tr>
<td></td>
<td>smiling</td>
</tr>
<tr>
<td></td>
<td>the ink pen</td>
</tr>
<tr>
<td></td>
<td>the comb</td>
</tr>
<tr>
<td></td>
<td>the noodle</td>
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<td></td>
<td>the stapler</td>
</tr>
<tr>
<td></td>
<td>note paper</td>
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<td></td>
<td>the poppy</td>
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<td></td>
<td>the daffodil</td>
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<td></td>
<td>nylon stocking</td>
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<td>shoe soles</td>
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<tr>
<td></td>
<td>compost</td>
</tr>
<tr>
<td></td>
<td>letterforms</td>
</tr>
</tbody>
</table>

The book format was selected since its evaluation potential seemed the greatest. The content, the pencil, was selected because of its extreme commonality.
**Ideation continued**

The basic communication goals for the design application (a book on the subject of the pencil) were mapped out as follows:

**Intended objectives**
- To convey the history of the pencil
- To test potential for a discovery experience
- To incorporate the visual strategies
- To incorporate the physical interaction strategies
- To merge the visual design strategies with interaction strategies
- To test the concept of discovery in design

**Format**
- A printed, non-traditional, interactive book

**Content**

**Scope**
The length of the book must be long enough to contain at least one example of each visual strategy, and provide a sequential experience to reinforce the goal of discovery. An approximate length of 10 to 20 pages was considered adequate to contain the content and test the visual strategies.

**Audience**
- Adult audience
- College educated

From these communication parameters, the first stage of development was to determine concept sequencing within the book, image ideation, and how to implement the goal of including the visual methods such as abstraction, illusion, etc.
The development of the Pencil book began with notes and sketches showing how visual strategies could be incorporated and to what effect. Content, sequencing, and pacing of visual strategies were additionally noted, along with goals for physical interaction.

A continuation of sketches appears on the following page.
Ideation continued

Initial ideation sketches continued

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The main tool used in ideation was pencil. Pencils are made with a lead core surrounded by a wood or clay tube. The core consists of graphite, a natural form of carbon, which is a poor conductor of electricity. This graphite core is combined with clay or wood to create a writing tool.

The use of pencils dates back to ancient civilizations. The Egyptians used a form of lead, called native lead, which was used to write on papyrus. The Greeks and Romans used lead pencils, but they were not as refined as modern pencils.

In the 19th century, the graphite core was enclosed in a wooden or metal tube to create the modern pencil. This design allowed for better control and accuracy in writing.

Pencils come in different hardness levels, determined by the amount of graphite in the core. A higher number indicates a softer pencil, while a lower number indicates a harder pencil.

The development of the pencil has been significant in the advancement of other writing technologies.

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IDEATION EXPERIENCING DISCOVERY
Ideation continued

Layout and sequencing ideation
The first prototype included several samples of visual strategies. The purpose was to test if, for example, incorporating association or forced juxtaposition, could stimulate the “a-ha” or discovery experience. The content of the book was planned and organized and a grid structure emerged based on the proportions of the pencil.

With each subsequent layout, further imagery and visual strategies were incorporated, and new physical interaction methods were tried and tested. The following questions focused the process.

Key design question:
• How can the design spark interest and curiosity, encourage study, provoke interaction, and supply a reward—in this order?

Initial sequencing and design questions:
• What themes throughout can unify the content and the experience?
• What remains constant throughout the book?
• What changes throughout the book?

Sequencing considerations:
• Color throughout to change from bright to dull (childhood palette to adult palette.)
• Pencil mark quality to reflect moving forward in a sequence of time by beginning with child’s mark-making and transitioning to adult mark-making. For example, from child’s doodle to engineers drafting mark.

Initial prototypes appear on the following pages.
Ideation continued

Testing

**Step 1** Testing one visual strategy, abstraction, paired with content.

The abstracted tail image references the text— that the word “pencil” evolved from penicillus, or little tail.

The visual reference is not understood until the text is read and connected with the image. The delay in comprehension is intended to produce an “a-ha” discovery moment.

**Step 2** Testing a different visual strategy, association (forced juxtaposition) paired with the same content from step 1.

This association can work on various levels. The long, pointed, repeated shape, when seen in proximity to the dog, becomes viewed as a fence, an example of the desire for visual closure.

The long, pointed, repeated shape also references as a pencil, to be juxtaposed to the tail of the dog. This comparison is intended to generate curiosity on the pencil’s development from early brushes of animal hairs.
March 15th 2002 marked the opening of the thesis exhibition at the RIT Bevier Gallery.

While the work on this thesis was in progress, the exhibition panels provided an opportunity to communicate the thinking and inspiration behind this project to the Rochester community.

The exhibition opening was a valuable time to discuss and receive feedback on the progress of this project. In the image above, the author discusses the project with Professor Michael Ryall, from the University of Rochester Simon School of Business, and Richard Scott Newman, from the RIT School for American Crafts.

The feedback from the show was very positive. A large number of people thoroughly read and examined the exhibition panels, and shared their comments.
Dissemination—Bevier Gallery Thesis Exhibition continued

It was important that the display panels communicate the ideas of the project, and reflect them through the design of the panels.

- An example of emergent meaning occurs through the large silver block in the first panel: on close inspection, the shapes reveal themselves as letterforms that spell out the word Discovery.

The visual illusions in the first panel provide the enjoyable experience of discovery.

- And, an “upside-down” visual illusion can be physically spun to reveal the “new” image; in this way, viewer interaction was encouraged. See Appendix D for a better view of this illusion.
The goal of increased interaction was further emphasized through the use of flip books that provided more detailed information.

“The real voyage of discovery consists not of seeking new landscapes, but in having new eyes.”

MARCEL PROUST
A prototype of the application (the Pencil book) was included in the thesis exhibition. Above, a visitor to the gallery looks though the book.

The book was displayed standing upright so that a "peek" into the content and imagery might arouse curiosity.

The development of the Pencil book continued during and beyond the thesis exhibition.
Missing Page
Missing Page
Application—Notes on the use of visual strategies

The next development was the further incorporation of the visual strategies and the inclusion of the physical strategy. The notes from the completed initial layout, are below. Additionally, feedback from committee members is documented.

Incomplete image

The line continues into the open spread where it is suddenly seen that it represents a pencil line.

Association

Juxtaposition occurs through the same horizontal alignment of pencil to pencil brush. The pencil brush points up to a cropped image of a cave painting from Lascaux, indicating a connection between tool and the mark that is made by it.

Feedback

To produce a stronger parallel relationship between brush and pencil, the circle forms need to become more visually similar.
**Application continued**

**Application — Notes on the use of visual strategies continued**

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**Abstraction**
The tail, here, is abstracted. The comprehension does not occur until the text is read. The animal is cropped, making use of the "incomplete image" visual strategy.

**Association**
The image of the dog (showing the name of the tail or "brush") is revealed when the flap is opened. The dog's tail is then connected with the large abstract tail.

**Pattern**
The image of a cave painting image from the previous page is manipulated to result in a surprising new view.

**Feedback**
This spread is too ambiguous, and does not make a connection with content. Therefore, it does not stimulate the heightened discovery or "a-ha" potential.
Application — Notes on the use of visual strategies continued

**Visual switch**
A pencil is the hand of a clock. The clock form visually connects to the geodesic dome sketch through the use of ovals.

**Allusion**
The image of a geodesic dome sketch by Buckminster Fuller was chosen to indicate engineering and discovery, to call attention to the difficulty and circular manner in which the pencil came to be.

**Progression**
The dark round shape (seen also on the clock) is transformed into a musical note, extending from a musician's pencil sketch. Additionally, the text references the discovery of a ball of lead for writing.

**Feedback**
The page flap that folds down from the bottom, suggests a common drop-down menu on a web site. It might not lead to as strong a surprise as the flap that opens from the side.
Application continued

Application—Notes on the use of visual strategies continued

**Progression**
The black circle becomes a pencil in a sequence that mirrors the text content.

**Incomplete image**
The cropped drawing is revealed when the page is flipped open.

**Abstraction**
An abstracted image of a porte-crayon, a claw-like grip for graphite. The dark bar along the bottom of the page references the shape of a piece of graphite and also the knife needed to sharpen it.

**Feedback**
Overall, at this stage, the visual and conceptual connections desired need to be strengthened.

More relationships should occur through the employment of proximity, similarity, and sequencing. More visual strategies need to be used throughout.
Many revisions were made before the final solution was implemented. With each new version, more visual connections were incorporated to increase the likelihood of an “a-ha” or discovery experience. After seven weeks of work, the final solution was completed. Beginning on the next page, the final page spreads are shown. The actual application is included at the end of this documentation.

Below: many versions of the application during various stages of progress.
Final Application

The cover page is intentionally ambiguous. The objective is to produce a moment of surprise as the turned page reveals the subject of the book, and a rich shock of color.
Final Application continued

In the late twentieth century, when there are billions produced each year and sold for pennies, it is easy to forget how marvelous and dear an object the pencil once was.

The pencil line continues from the cover to the first page. Then, the hand and pencil that "made" the mark can be seen. The pencil line becomes a trail that leads to the title of the book.

In example at top, the right hand page flap is closed. The bottom example shows the layout with the page flap opened. When the flap is turned, the viewer can see the connection between the pencil and the pencil brush beneath. These elements are visually related through proximity and shape.

The page flaps were incorporated as interaction strategies to reinforce the potential for a discovery connection.
Final Application continued

Well into modern times, the act of writing was occasioned by much preparation and inconvenience.

The next spread above incorporates two page flaps. The top image shows the flaps closed, the bottom shows them open.

This spread depicts the visual strategy of abstraction. As the two page flaps are opened, the animal's tail is revealed but the animal's head is no longer visible, playing with the concept of hiding and revealing. The shape of the animal's head is very similar to the shape of the metal stylus in an association and forced juxtaposition.

Abstraction combined with interaction emphasizes the decoding process in this spread.
Above, the content describes a time when quill pens were the optimal writing implement. The communication goal was to visually express frustration that ensues from spilling and smearing the ink from pens. The left-hand flap opens to reveal an association between the man's horrified expression in the DaVinci sketch and the spilled ink blot.

On the right-hand side, the hand of a clock is "switched" with a pencil. This visual switch suggests that, by moving the pencil/clock hand, the history of the pencil moves forward in time, as the story continues.
Final Application continued

Imagine being confronted with a box full of marble-size balls that are all painted mat black. Imagine that the balls are indistinguishable to the eye, but that each is made of a different material.

This spread combines visual and conceptual allusions.

The conceptual allusion occurs through the realization that the humble pencil was, in fact, a difficult and challenging invention, symbolized by the marks of inventor Buckminster Fuller. The conceptual connection of invention is re-emphasized when the page flap is opened to reveal an early pencil sketch by inventor Alexander Graham Bell.

Through intellectual connections, the experience of discovery is stimulated.
The circular yellow line can be interpreted in multiple ways. The circular line makes reference both to the motion of a clock, as seen on page 48, and to the circular pencil marks of Buckminster Fuller, from page 49. The thin line is yellow (the common pencil color) to force a connection with the yellow text which reads, “how does a lump of lead that draws a creditable line evolve into a modern pencil?”

When the page flap on the right-hand side is opened, the lump of lead comes into view. The forced juxtaposition that occurs through the comparison of the hand on the right (blackened, cramped, and tense) to the hand on the left (clean and poised with a comfortable pencil) makes it apparent that the pencil is an important invention.
Final Application continued

By having rods of graphite enclosed in pieces of pine or cedar, with the help of some glue, the graphite could be held firmly within the casing and exposed as the wood was whittled away with a knife.

The process used pure graphite cut into thin sheets, inserted into a groove cut into a length of wood. As pure graphite became rare, alternative production methods had to be developed. In the 18th century, Nicolas-Jacques Conté developed a process of mixing powdered graphite with a binder's clay and wax, and packing the wet paste into long rectangular molds. When the rods were dry, they were colored from the molds, packed in a ceramic box, and fired in a high temperature. By the middle decades of the 19th century, it was to be widely employed and remains the basis for pencil lead-making today.

The left-hand layout is simple and clean, reflecting the simple, clean invention of the pencil. The layout itself alludes to the content.

On the right-hand page, an abstracted hand "holds" abstracted pencils. The hand is purposefully shaped to also resemble a shirt pocket. When the page flap is opened, the process of making pencils is revealed.
The pencil and eraser remained separate and distinct items into the nineteenth century.

In 1872 the Eagle Pencil Company patented a pencil with an integral eraser inserted in one end of the cedar shaft.

Visual play brings heightened attention to the story of the right-hand page spread. The text describes a patent to fix pencil marks by covering paper with milk. When the right-hand page flap is opened, a pencil is playfully disguised as a cat (eager for a sip of the milk fixer) to help bring heightened attention to the historic story.
The typewriter, it was feared, was driving out writing with one's one hand. And, half a century later, it was the computer that was going to be the end of the pencil, but that too is not likely to come to be. Ultimately the pencil will triumph.

The final spread—a last hooray tooting the success of the invention and use of the pencil. When the flap is opened, the sentence is completed, and the book ends.
Retrospective Evaluation

Were the goals of the Pencil book successfully realized? To determine this, a questionnaire was distributed. The target audience was educated adults. The questions were developed to determine if the experience of reading and investigating the Pencil book led to heightened enjoyment and stimulation.

The author was hoping, in particular, to discover if the visual strategies assisted or hindered a heightened experience, and if the strategy of additional page flaps assisted or hindered a heightened experience. With the goal being to instill “a-ha” moments, and an experience of discovery, did the application succeed?

The response was very positive, and provided many suggestions for improvements. The distributed questionnaire appears on the following page. A summary of the responses follows. For copies of the completed questionnaires, see Appendix G.
Retrospective Evaluation continued

After reading the Pencil book please answer the following questions.

1. Did you read all of the Pencil book?  yes  no

2. How would you describe your experience of reading the Pencil book?
   pleasurable  rewarded  enjoyable  interested  displeasurable  unrewarded  tedious  disinterested

3. Did you like | dislike the experience of lifting the flaps? Why?

4. Did you like | dislike the range of imagery? Why?

5. Did you like | dislike the content of the book in this format? Why?

6. Did you like | dislike the use of color in the book? Why?

7. What did you like the most about this book?

8. What did you like the least about this book?

9. In the Pencil book, visual approaches such as abstraction and illusion, are intended to produce an “a-ha” or discovery experience. While reading, did you pause to understand the connections between the design and the written text?  yes  no  not sure

Please use the space below to add further comments or suggestions. Thank you!
Retrospective Evaluation continued

Evaluation Summary
6 responses were collected (see Appendix G). The results are as follows:

Overall experience

| pleasurable | · · · · · | displeasurable |
| rewarded    | · · · · · | unrewarded    |
| enjoyable   | · · · · · | tedious       |
| interested  | · · · · · | disinterested |

Flaps
Everyone agreed that the experience of lifting the flaps assisted with making visual connections, though one person did comment that the flap mechanically interfered with turning the other pages. Comments regarding the use of the flaps included, “They add an interactive quality and an element of surprise.” Also that the flap “created a physical interaction in addition to my eye on the page” and “I didn’t know what to expect.”

Range of imagery
The range of imagery used received a positive review. Comments included, “it was fun to look at” and “I enjoyed relating shape and color.” Also that the range of imagery “enhanced the content.”

Content and format
The response was positive to the content and format. One person commented that they liked “learning the history” and another that the format “created an extra layer of interest in the ideas beyond the written word.”

Color
Everyone liked the use of color. One wrote that it was “thoughtfully chosen” and another wrote that “it adds to the book without being a distraction.”


Retrospective Evaluation continued

What did you like the most?
Many of the responses made reference to the combination of visuals and text. One person stated that “I enjoyed the humor in the context of the text and the way that humor and information was presented—the text and art mirrored and supported each other—an organic package between words and visuals.” Another person remarked that their favorite aspect was “the variety of images along with the color.”

What did you like the least?
Commenting on the challenges within the book, one person said, “I didn’t get every instance of interplay between text and art—for example, the soldier watching the red blob flying toward a city, and the musical score.” Another said that “the back cover misses an opportunity to utilize the element of surprise and fun that is done well throughout the rest of the book.” Another person wished that the book was longer.

Did you pause to understand the connections?
Everyone answered yes to this question. One person remarked that “I often found myself flipping back to other pages relating the next page to the previous text or images.” Another answered yes, but commented that “I didn’t understand all of [the connections].”

Retrospective Evaluation Summary
The response to the Pencil book was very positive overall. It did prove that the reward of connections that occurs through visual decoding can be a process that brings intellectual satisfaction, and an experience of discovery.
This section marks an opportunity to reflect on changes that would have benefited this thesis project.

**Research and Precedents**
The precedents selected were all graphic design professionals. In retrospect, much could have been learned from outside fields, for example, film techniques to withhold and deliver information, or educational games. Additionally, the application (book) may have improved from research into new physical materials to assist with the tactile experience of discovery that may occur through, for example, textures or transparent layers.

**Bevier Gallery Thesis Exhibition Panels**
More presentation panels to systematically divide the information, would have made the communication clearer and stronger.

**Bevier Gallery Thesis Exhibition Evaluation**
In retrospect, the thesis exhibition was a missed opportunity to receive initial written opinions, criticism, and general responses on the progress of the project.

**Evaluation**
The evaluation phase happened too late into the final weeks to generate a large number of responses. Had time allowed, the evaluation portion of this thesis project would have been expanded to reach a larger number of people.

**Application**
In the application, the Pencil book, the page flaps all fold open from the edge of the page. It would be beneficial to see how more variation in the direction and placement of page flaps could assist in the goal of discovery.
Conclusion

This thesis project focused on the graphic designer's ability to stimulate an "a-ha" or discovery response. To achieve this, specific strategies that a designer can incorporate were identified. The underlying hypothesis is that if a viewer is engaged with heightened perception and active participation with a graphic design solution, the communication is enriched, stronger, more memorable and enjoyable.

What use is discovery in design? Stimulating an "a-ha" or discovery response in a viewer through graphic design can have profound implications in the marketplace. Attracting and sustaining the attention of a viewer accustomed to (or potentially even numbed by) an overload of visual stimuli is a design challenge. The goal of this thesis was to captivate the attention of an audience, and sustain visual interest and intellectual curiosity, to produce an experience of discovery.

The identification and synthesis of visual and physical strategies (see page 19) to produce an experience of discovery provides a graphic designer with new tools to consider when giving form to content. The designer's ability to prompt an "a-ha" or discovery response in a viewer requires that the designer stimulate three experiential components: expectation, surprise, and reward.

Through this thesis, it was learned that the potential for an enriched response of expectation, surprise, and reward can be increased through the incorporation of certain visual and physical strategies (see page 45). In stimulating an "a-ha" or discovery experience, the author found that combining and layering visual strategies reinforces successful communication (the reward of engaged looking). For example, when the visual strategy of abstraction is paired with an incomplete image a stronger experience of discovery is formed (see page 47).
In the development and design of the application, the Pencil book, heightened viewer response was achieved through the incorporation of page flaps that could be opened to hide and reveal text and imagery. The author found that, because the page flaps open to reveal a direct connection with the imagery underneath, the visual strategies could operate more effectively, and overall communication was strengthened. Even through the simple act of “peeking” under a page, the viewer was reminded to take an active role in exploration and investigation, which contributed to a heightened experience of discovery.

The research in this project suggests that we are programmed to form and desire visual connections (a visual link between seeing and understanding). In other words, we anticipate and crave the reward of communication that occurs through active visual participation. This author believes that there is a profound need for form and content within graphic design that leads to heightened and thought-provoking participation.

This thesis process provided the author with an awareness of new tools for the design process in order to shape a more potent, memorable experience through a graphic design solution. Ultimately, the potential of design to contribute to an enriched experience and heightened viewer response is an arena for continued study beyond this thesis.
Bibliographic Sources


   (Kentucky: The University Press of Kentucky, 1976).

Greer, Malcolm. *Inside/Outside: From the Basics to the Practice of Design.*


Heller, Steven, and Gail Anderson. *Graphic Wit: The Art of Humor In Design.*


Smith, Keith. The Structure of the Visual Book. (New York:  
   The Sigma Foundation, 1984).


   (San Francisco: Cronicle Books, 1999).

Appendix A

Women abandoned Victorian drawing rooms from door to door with new outdoor ideas. Promoted "Recreation" to create a solid foundation between mass and participants. Bus tours to the ends of the earth took off.

Bradbury Thompson's "Recreation."
Appendix B

AIGA poster by designer Paul Rand.
Appendix C

A rebus puzzle. Discovery is employed through the solving of a visual puzzle in which words are replaced by symbols, letters, or images.

First line: The sailor plows the seas in defense of his king and country. c. 1870, popular print, UK.
Appendix D

An upside-down device displays the necessity of interaction for reaction (turn the page upside down!)

1893, Peter Newell, Topsy-Turvies, US.
Appendix E

Abstraction interpreted form

1 "The Dylan Poster" 1967, Milton Glaser
2 "The Man with The Golden Arm" film still 1955, Saul Bass
3 "Keep it Under Your Stetson" poster design, E. McKnight Kauffer
Appendix E continued

Allusion referencing different form

1. “Those who destroy forests don’t kill only trees” 2000, Araújo
Appendix E continued

Association forced juxtaposition

1 Potlatch Papers Promotional postcard, 1999
2 AIGA conference announcement
Appendix E continued

**Illusion** visual play

1. "Romeo and Juliet" poster 1994, Sommese Design
2. Type house brochure illustrating distortion 1971, Colin Forbes
Appendix E continued

Incomplete Image missing form

2 Anni Kuan stationary 1998, Stefan Sagmeister
Appendix E continued

**Pattern** making familiar form new

1 National Post spread 2000, Leanne Shapton, Art Director
2 Herman Miller advertising graphics 1946, George Nelson
Appendix E continued

Progression  surprise through stages

1 “Vietnam, A Book of Changes” cover 1997, Anthony McCall Associates
2 “The Greening of Design” AIGA call-for-entry card 1997, Duffy Design
Appendix E continued

**Visual switch** object substitution

1. Target store magazine ad series, 2001
2. Volkswagen ad series, 1999
**Appendix F**

**Expanded Communication Model**

This model was expanded from the original, provided by Geoffrey Broadbent.

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**Communication Model**

Graphic adaptation based on a model from Geoffrey Broadbent 
Original: Shannon/Weaver, 1949.

---

**Idea**

You have an idea! You want to share it. The idea is shaped visually through the design process.

At this stage, many goals are established, including communication goals, intended objectives, scope, audience, purpose, and appropriateness.

After the goals are determined, the designer explores visual treatment.

The designer may decide that it is appropriate to activate the audience experience by encouraging heightened participation.

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**Physical form**

The designer translates the idea into words, images, or symbols.

As in any translation process, there exists a thin veil between the pure idea and the representation of the idea, let's call it the semantic veil.

**Physical Strategies**

At this stage, the designer may incorporate the physical strategies outlined in this thesis.

---

**Transmission Channel**

The designer takes the form to the audience through appropriate media: printed publication, television, CD-ROM, billboard, web site, etc.

During this process, there is potential for interference of mechanical in nature. One possibility is that the visual treatments may be interpreted in a way by the designer diffuse the primary objective of the communication.

If confusion or many communication objectives occur, the designer must re-think the visual approach. In clarification, the concept of discovery in this thesis: there should be no total ambiguity should be avoided.

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**Idea is shared**

Audience receives the idea and decodes the meaning.

As the meaning of communication is decoded, there can be a variety of experiences. The receiver might instantly understand the intended message, the receiver might misinterpret the intended message, the receiver doesn't get any message.

When composing the design, the designer must foresee the possibilities of interpretation during this stage.

This thesis suggests that the designer is able to stimulate a heightened response of the viewer by provoking engagement and interaction. If the viewer can be stimulated during this stage to wonder and decode the design, there is a greater chance for a more profound communication to occur.
Appendix G

Evaluation Questionnaires
After reading The Pencil Book please answer the following questions.

**1. Did you read all of the Pencil Book?**
- [ ] Yes
- [ ] No

**2. How would you describe your experience of reading the Pencil Book?**
- [ ] Pleasurable
- [ ] Displeasurable
- [ ] Rewarded
- [ ] Unrewarded
- [ ] Enjoyable
- [ ] Unrewardable
- [ ] Interested
- [ ] Disinterested

**3. Did you like or dislike the experience of lifting the flaps?**
- [ ] Like
- [ ] Dislike

**4. Did you like or dislike the range of imagery?**
- [ ] Like
- [ ] Dislike

**5. Did you like or dislike the content of the book in this format?**
- [ ] Like
- [ ] Dislike

**6. Did you like or dislike the use of color in the book?**
- [ ] Like
- [ ] Dislike

**7. What did you like the most about this book?**
- [ ] Enjoyed the humor in the content of the text and the way that humor and information was presented also in the graphic art package (the text and art worked independently of each other - an organic package between words and visuals).

**8. What did you like the least about this book?**
- [ ] Did not understand every instance of interpretive text and art - eg. the soldier watching a red blob flying toward a city, rumored to be...

**9. In the Pencil Book, visual approaches such as abstraction and illusion, are intended to produce an “a-ha” or discovery experience. While reading, did you pause to understand the connections between the design and the written text?**
- [ ] Yes
- [ ] No
- [ ] Not sure

Please use the space below to add further comments or suggestions. Thank you!
After reading *The Pencil Book* please answer the following questions.

<table>
<thead>
<tr>
<th>Age</th>
<th>18-24</th>
<th>25-29</th>
<th>30-34</th>
<th>35-39</th>
<th>40-44</th>
<th>45-49</th>
<th>50-54</th>
<th>55-59</th>
<th>60-65</th>
<th>65-69</th>
<th>70 and over</th>
</tr>
</thead>
</table>

1. Did you read all of the Pencil Book?  
   - yes  
   - no

2. How would you describe your experience of reading the Pencil Book?  
   - pleasurable  
   - rewarded  
   - enjoyable  
   - interested  
   - displeasurable  
   - unrewarded  
   - tedious  
   - disinterested

3. Did you **like** | dislike **the experience of lifting the flaps? Why?**  
   - They add an interactive quality and an element of surprise.

4. Did you **like** | dislike **the range of imagery? Why?**  
   - An interesting mix of graphics and "real" imagery.

5. Did you **like** | dislike **the content of the book in this format? Why?**  
   - Information was presented in an interesting way.

6. Did you **like** | dislike **the use of color in the book? Why?**  
   - It adds life to the book without being a distraction.

7. What did you like the most about this book?  
   - It presented what could be considered a dry subject in an interesting and engaging way.

8. What did you like the least about this book?  
   - The back cover misses an opportunity to utilize the element of surprise and fun that is done well throughout the rest of the book.

9. In the Pencil Book, visual approaches such as abstraction and illusion, are intended to produce an "a-ha" or discovery experience. While reading, did you pause to understand the connections between the design and the written text?  
   - yes  
   - no  
   - not sure  
   - I often found myself flipping back to other pages relating the next page to the previous text or images.

Please use the space below to add further comments or suggestions. Thank you!
After reading The Pencil Book please answer the following questions.

Age
- 18-24
- 25-29
- 30-34
- 35-39
- 40-44
- 45-49
- 50-54
- 55-59
- 60-65
- 65-69
- 70 and over

1. Did you read all of the Pencil Book?  [  ] yes  [  ] no

2. How would you describe your experience of reading the Pencil Book?
   - pleasurable
   - rewarded
   - enjoyable
   - interested
   - displeasurable
   - unrewarded
   - tedious
   - disinterested

3. Did you like dislike the experience of lifting the flaps? Why?

4. Did you like dislike the range of imagery? Why?

5. Did you like dislike the content of the book in this format? Why?

6. Did you like dislike the use of color in the book? Why?

7. What did you like the most about this book?
   - The illustration of valued implements
   - The interrelation of text, color, form, the use of space ...
   - The open space was not well done with well done

8. What did you like the least about this book?
   - The mechanics of the flap
   - That it interleaved with the turning of pages.
   - The length of the book ...

9. In the Pencil Book, visual approaches such as abstraction and illusion, are intended to produce an “a-ha” or discovery experience. While reading, did you pause to understand the connections between the design and the written text?  [  ] yes  [  ] no  [  ] not sure

Please use the space below to add further comments or suggestions. Thank you!

I really enjoyed The Book, I think it would be great for kids of all ages too. The way the pages are formatted to introduce information + connect different reference materials is very well done.

The color is super!
After reading The Pencil Book please answer the following questions.

**Age**
- 18-24
- 25-29
- 30-34
- 35-39
- 40-44
- 45-49
- 50-54
- 55-59
- 60-65
- 65-69
- 70 and over

1. Did you read all of the Pencil Book?  
   - [ ] yes  
   - [x] no

2. How would you describe your experience of reading the Pencil Book?
   - [ ] pleasurable
   - [ ] rewarded
   - [ ] enjoyable
   - [ ] interested
   - [ ] displeasurable
   - [ ] unrewarded
   - [ ] tedious
   - [ ] disinterested

3. Did you [ ] like  [ ] dislike the experience of lifting the flaps? Why?  
   - I didn’t know what to expect.

4. Did you [ ] like  [ ] dislike the range of imagery? Why?  
   - Wide range - enhanced the content

5. Did you [ ] like  [ ] dislike the content of the book in this format? Why?  
   - it made it more interesting.
   - didn’t feel like “just” a pencil.

6. Did you [ ] like  [ ] dislike the use of color in the book? Why?  
   - I liked how the color added to the experience.
   - The colors were vibrant.

7. What did you like the most about this book?  
   - I liked how the design was incorporated throughout the book.
   - The images were captivating.

8. What did you like the least about this book?  
   - The time machine (real pencil)
   - I didn’t like the use of color.

9. In the Pencil Book, visual approaches such as abstraction and illusion, are intended to produce an “a-ha” or discovery experience. While reading, did you pause to understand the connections between the design and the written text?  
   - [ ] yes  
   - [ ] no  
   - [ ] not sure
   - But I did not get all of them.

Please use the space below to add further comments or suggestions. Thank you!
After reading The Pencil Book please answer the following questions.

Age

<table>
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<tr>
<th>18-24</th>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Did you read all of the Pencil Book?  yes  no

2. How would you describe your experience of reading the Pencil Book?
   - pleasurable
   - rewarded
   - enjoyable
   - interested
   - displeasurable
   - unrewarded
   - tedious
   - disinterested

3. Did you like  dislike the experience of lifting the flaps? Why?  I enjoyed the discovery.

4. Did you like  dislike the range of imagery? Why?  It was very fun to look at.

5. Did you like  dislike the content of the book in this format? Why?  It was very different and interesting.

6. Did you like  dislike the use of color in the book? Why?  The different colors used were very appealing to the eye.

7. What did you like the most about this book?  The variety of images along with the colors.

8. What did you like the least about this book?  The time machine would not move.

9. In the Pencil Book, visual approaches such as abstraction and illusion, are intended to produce an “a-ha” or discovery experience. While reading, did you pause to understand the connections between the design and the written text?  yes  no  not sure

Please use the space below to add further comments or suggestions. Thank you!
Evaluation the Pencil Book

After reading The Pencil Book please answer the following questions.

Age 18-24 25-29 30-34 35-39 40-44 45-49 50-54 55-59 60-65 65-69 70 and over

1. Did you read all of the Pencil Book? yes no most skinned a bit

2. How would you describe your experience of reading the Pencil Book?
   
   pleasurable rewarded enjoyable interested
good disinterested

displeasurable unrewarded tedious
difficult unrewarded

3. Did you like | dislike the experience of lifting the flaps? Why? b/c of the unique surprise under most
   
   The last few weren’t quite
   
   as effective as the 1st few

4. Did you like | dislike the range of imagery? Why? celebrated the mundane pencil
   
   elevated the idea, a good one
   
   with out the design, design augmented

5. Did you like | dislike the content of the book in this format? Why? 
   
   The saturated colors were more pleasing
   
   “lushes pencils” but nice rest on the
   
   color and imagery that was opaque

6. Did you like | dislike the use of color in the book? Why? 
   
   The variation in imagery & crisp situated colors
   
   good relationship between content and design elements
   
   nice type treatment

7. What did you like the most about this book? 
   
   What did you like the least about this book? I liked it so much, difficult to say.
   
   could use a little more rhythm?

8. In the Pencil Book, visual approaches such as abstraction and illusion, are intended to produce an “a-ha”
   
   or discovery experience. While reading, did you pause to understand the connections between the design
   
   and the written text? yes no not sure

Please use the space below to add further comments or suggestions. Thank you!
Appendix H

the Pencil book

In the pocket that follows is the completed application. Please handle gently.