Cinderella 2000: An Audio Comic Book

Cinderella 2000 (1998) is an audio comic book that presents a modern version of the Cinderella fairy tale. In this version, players use the *Triangles* to reveal a feminist subtext behind the typical Cinderella story. At first Cinderella appears to be a sweet, hardworking and exploited girl. But exploration with *Triangles* reveals that she is a shallow young woman who has become obsessed with her own personal beauty and is using it to avoid her responsibilities, schooling, and chores. Her stepmother is at first, stereotypically, presented as a tyrant, but further exploration reveals her as just another working mom, trying hard to hold it all together. Other characters in the story include the stepsisters and the house in which they all live.

By arranging the comic book-like images of *Cinderella 2000,* players trigger audio samples stored on a desktop computer, and create a medley of sound effects, narration and dialogue between the characters. Using audio for the output of the *Triangles* avoided the split-focus experienced with *Galapagos* because players could both look at the *Triangles* and hear immediate reactions to any connection of *Triangles* that they might make. In this audio application, players were comfortable with the physical separation of the *Triangles* from the sound source.

One constant issue that came up in discussions about the *Triangles* was the fact that there were no dynamic displays on the *Triangles* themselves. This application was designed to demonstrate how to visually tell an

Figure 8.16 Cinderella 2000's triangular comic pieces. Drawings, story and software by Maggie Orth.

Figure 8.17 Linear comic strip sketches, by Maggie Orth.

interactive and dynamic story with a progression of static images. For reference material, I turned the world of narrative painting, hieroglyphics and comic books.[1] After all, these traditions have been telling stories through a progression static images, for hundreds of years. Specifically, the images used in *Cinderella 2000* rely on the techniques and visual language of comics, including framing, action close-ups, text bubbles and scene setting devices.

In *Cinderella 2000*, *Triangles* can have different degrees of resolution within the computer. For instance, some *Triangles* are ***Whole*** *Triangles* and some are ***Three-sided*** *Triangles*. When using a ***Whole*** *Triangles* it does not matter what side is connected; for instance, the software simply sees the Sweeping Cinderella *Triangle* as Sweeping Cinderella, no matter what side she is connected on. When using a ***Three-sided*** *Triangle*, the specific side that is connected makes a difference. For instance the *Text Bubble Triangle* has a different text box on each side. Depending on which text box is attached, the characters say different things. Cinderella 2000 also has three types of *Triangles*: ***Character*** *Triangles*, ***Event*** *Triangles*, and ***Information*** *Triangles, or Text Bubble Triangles*. Each type of *Triangle* has a different function in the telling of the story.

Character Triangles

Typically, each ***Character*** *Triangle* was a ***Whole*** *Triangle* that had both a general background sound,

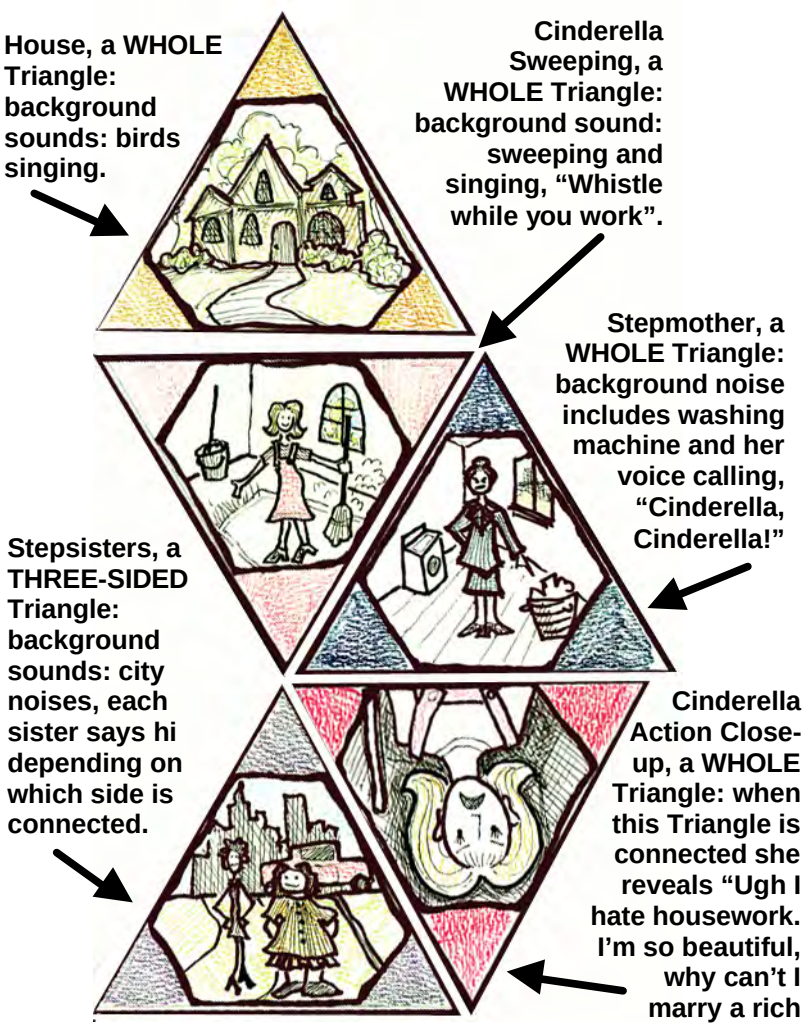

Figure 8.18 Character Triangles.

[1] McCloud, Scott, Understanding Comics, Kitchen Sink Press, (1994).

which was always played while it was connected (letting the player know it was attached), and specific sounds that it made in relation to specific connections. For instance, when the House was connected, a whistling, bird-like sound played. When Sweeping Cinderella was connected the sound of a broom could be heard in the background. In addition to these background sounds, there were sounds and dialogue for specific connections. If the stepmother was connected before Cinderella, she would call for Cinderella over and over: “Cinderella, Cinderella”. When Cinderella was then connected, the stepmother would say, Cinderella, there you are. I want you to do this laundry!”

Text Bubble or **Information** Triangles

The ***Information*** *Triangle* is a ***Three-sided*** *Triangle* that allowed characters to convey hidden or secret information, revealing the subtext of the story. The three text bubbles on this *Triangle* said: “Once upon a time”, “Let me introduce myself”, and “Day Dreams”. If the “Once upon a time” side of the ***Text Bubble*** *Triangle* was connected to a character, you would hear the some sort of history told from that character’s point of view. If the “Let me introduce myself” side of the ***Text Bubble*** *Triangle* was attached, you would hear the character introduce themselves “publicly”, conveying information they would *want* you to know. The “Day Dreams” side revealed each character’s deepest and darkest secrets, what they truly wished for and hoped for, and what they might not want you to know. In this way, the ***Text Bubble*** *Triangle* was an

Information or Text Bubble Triangle Each Character Triangle had a different reaction when connected to each side.

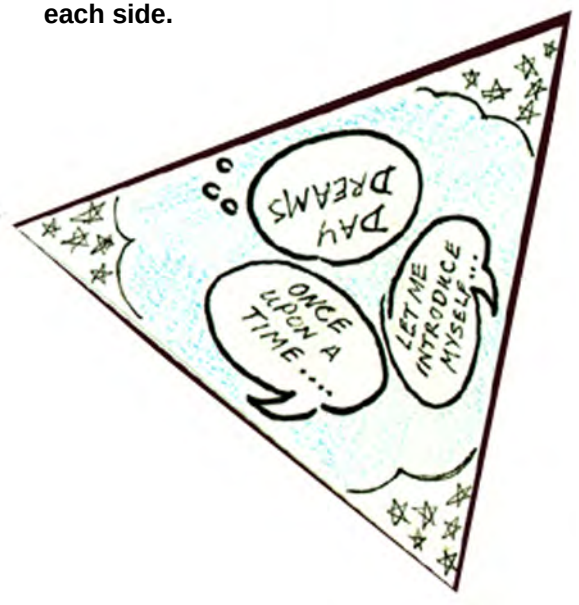

Figure 8.19 Text Bubble or Information Triangle.

interesting mechanism for exploring point of view in the story.

Event Triangles

Event *Triangles* were used to symbolize specific events in the story, for example the arrival of the invitation to the ball. Once an ***Event*** *Triangle* was connected, the behavior of the characters in the story would advance. This enabled connections between characters to have different behaviors at different points in the story. For instance, once the invitation for the ball arrived, the characters stopped their introductory behavior and began to prepare for the ball. Each character now had a whole new set of character-to-character interactions and of course daydreams and introductions to make, etc. ***Event*** *Triangles* were very important because they gave players room for exploration in the initial phase. If each connection of a *Triangle* had been time related, or automatically advanced the story, it would have been possible for a player to miss a lot of information about characters. ***Event*** *Triangles* allowed the connections to always mean the same thing in the first round of the story, leaving players were free to explore the characters and their secret thoughts before advancing the story.

Narrative Conclusions

The implementation of *Galapagos* and *Cinderella 2000* made it clear that creating unique content for the astonishing number of configurations possible with the *Triangles* was a daunting task. *Galapagos* and *Cinderella 2000* applications used no more than seven *Triangles*. Because the possible number of unique

Event Triangles advance the story. Once an Event Triangle is attached, each character takes on a new set of behaviors and reactions.

Figure 8.20 Event Triangle.

combinations of *Triangles* is factorial, the seven *Triangles* in *Cinderella 2000* were capable of creating millions of unique combinations. Unlike music, storytelling could not dynamically create new content for every possible combination of *Triangles*. To avoid the daunting task of hard-coding a unique response for every possible combination of *Triangles*, the images on the *Triangles* were designed to either limit the number of 'appropriate' connections that could be made, or reduce each *Triangle* to a ***Whole*** *Triangle* rather than a ***Three-sided*** one. In *Galapagos,* the halved characters suggested which connections would be appropriate: one half of the frog should connect to the other. If a frog was connected to an egg nothing happened. Still, interaction issues arose around what would happen if 'incorrect' connections were made. Connecting half of a turtle to half of a bird might seem reasonable in a fantasy story about mythical animals. In *Cinderella 2000*, only a few of the *Triangles* are ***Three-sided***, reducing the possible number of combinations. For instance the *Triangle* with the Cinderella character meant the same thing no matter how she was attached. But creating a new piece of dialogue for every connection in this story was daunting, and some connections just repeated old information.

The next two applications use other means to create the huge amount of content required for numerous *Triangles*. One application relies on the web to create content, through a web search engine. The other application lets audience members record their own messages into unique combinations of *Triangles*.

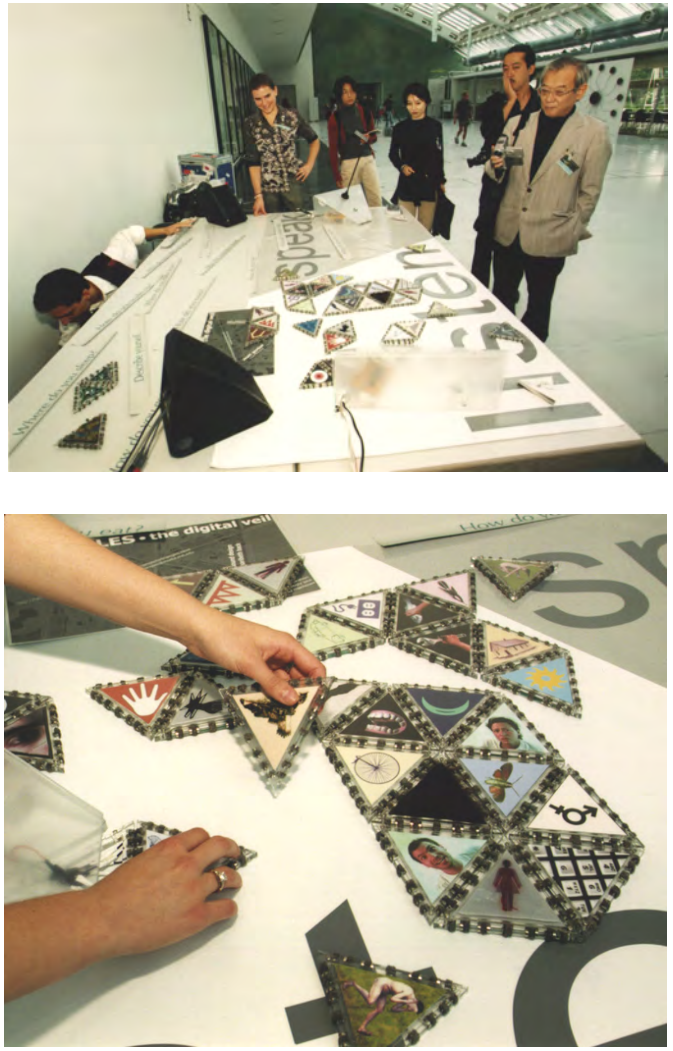

Figure 8.21 *Digital Veil* at Ars Electronica, 1997.

The Digital Veil, Ars Electronica, 1997[*]

The Digital Veil is an artistic audioscape that lets players create their own content for specific combinations of *Triangles*. The piece consists thirty-five *Triangles* laid out on a table. The *Triangles* are covered with photographs, illustrations, graphic symbols or physical textures. The images and textures are designed to be evocative and meaningful and to help people link together symbols of places, tools and vehicles that might tell a story, or answer a question. Each image has a background sound associated with it[2], so as soon as it is connected it makes a sound. Also located on the table are an *input station* and *output station* (two small boxes with exposed triangle-edge connectors), where the *Triangles* can be plugged in. The input station has a light-up button and a microphone on it. At the input station a series of questions cover the table, motivating the player to make a response by forming a group of images. When the player connects a group of *Triangles* to the input station, the button lights up, and the user can push it, speak into the microphone and recording his or her message. The player's voice is then sampled and linked with the specific arrangement of *Triangles* they created. In this way, participants can 'assign meaning' to their configurations, creating illustrated phrases and small narratives that hold personal significance.

At the output station, participants can create large configurations of *Triangles*, building a visual and tactile texture on the table in front of them. As they do so,

Figure 8.22 Selected images form the *Digital Veil.* Images by Maggie Orth. Fur and material covered *Triangles* not shown.

[*] In collaboration with Matt Gorbet and Mary Beth Back.
[2] Sound design by Mary Beth Back.

each individual *Triangle* that they add, triggers a pre-programmed audio sample, building an aural texture to accompany the configuration. If the player arranges any of the tiles to form one of the 'phrases' that had been recorded by a previous participant, that audio recording is also played back. In this way, the piece grows and changes over the course of its presentation, keeping a memory of the meanings and associations that players have created. One of my favorite combinations was of "a woman, water (image not shown), and the telephone". The player associated this group with Laurie Anderson's famous line, "Hello, its your mother."

While this piece did solve the problem of creating content for the innumerable combinations of *Triangles* possible, it had a number of limitations. People often had nothing to say, even with the list of questions we provided. The huge audio texture was also often difficult to associate with a specific shape or arrangement of *Triangles*. Moreover, with thirty-five *Triangles*, it was highly unlikely that people would accidentally find the combinations that other players had recorded into. (We had to discard side information early on, and only work with whole *Triangle* information. Eventually, we also went from having people pick three *Triangles* to just two.) Surprisingly, the *Triangles* became a great place to hide secret messages. People would record a message and then tell their friends what *Triangles* to put together to hear the message.

Figure 8.23 Design of tabletop graphics for *Digital Veil.* Graphics by Maggie Orth.

Working Notes on Images, Sounds and Associations

Male Expression	Word reaction: Yippie, Mumble Sound effect: Notes: This is like a close up where people express things, reactions, words, etc. However, using a verbal response may the frame the meaning or emotion too much.
Female Expression	Word Reaction: Sound Effects: Notes: Sadness concern, upset are her emotions. Obviously we have a male/female thing here, which is continued in the next few triangles. I would like to explore this binary division, by giving symbols that people may to associate with that are obviously opposites. However, in this case it may that a man might associate with Tara's emotion, more than Ben's. Maybe we could have Ben sound like a woman and Tara like a man. I don't want to limit these two pictures with something to literal.
Painted Woman	Words: Falling, spinning, turning, to rest. Sound effects: Bite an apple, crunch- crunch, a body falling in heap. Notes: I put all the people images together so you could compare them. Obviously there is a scale change and a vocabulary change. The close ups are kind of like close ups in a comic book, where you focus on a character and they speak or tell you a secret or reveal something While these figures are more archetypal. To me these are a little about our desire for paradise, for a utopia, for a time before.
Painted Man	Words: falling, looking, searching, thinking, dreaming, disorder, Sound effects: sound of person falling, wail, keening, yelling timber, tree falling, lumbering sounds, laying railroad tracks, axe. Notes: Obviously we have a male female thing here, but that might not be the focus. See the notes for painted woman but think masculinity or difference in pose
Lenticular Male Symbol/Tech Image	Words: Male, Man, Masculine, Scan, Heat, Sound effects: sound of a scanner, and MRI machine, an Ultrasound, like a hollow submarine sound, sounds from inside the body, blood flowing. Notes: Again, a male female thing here, but that might not be the focus.
Lenticular Female Symbol and Tech Image	Words: Female, Woman, Feminine, white, heat, penetrate Sound effects: sound of a scanner, and MRI machine, an Ultrasound, like a hollow submarine sound, sounds from inside the body, blood flowing. Notes: Remember, the symbol emphasizes difference, and the Tech/heat image emphasizes similarity. Sounds might do the same.
Androgyny	Words: Male, Female, Neuter, No simple opposites here.... Sound Effects: People having sex? Notes: Ambiguity, no clear sex role.
Eye Blinks, Lenticular	Words: Perception, vision, sight seeing, dust, Short time, finite, Sound Effects: something startling, something fast and tinkly... Notes: This is the eye symbol, but animated, moving, awareness, knowing,
Castle	Words: Castle, fort, dream house, journey, trek, servitude, aspiration, desire, construction, protection, defense, isolation, royalty Sound effects: Dumb Renaissance music, armor clang, (these may be too literal) Bricks being laid Some and mortar being laid, the echo in a well or basement or hollow space Notes: Ed liked music for this Triangle. i think if we use music it should be very rarely. This will give it a tremendous power in the piece. I think I would like this to be more abstract. This is about dreams places, hopes for something higher for protection, for a place in this world that is fantastic and uplifted, but also about a nostalgia for a past world for fantasy spaces.
House	Words: Shelter, home, day-to-day, daily life, roof. Sound Effects: Vacuum, Wind, tornadoes, door slam, lots of clammering feet running to a door slam. Notes: This is just your daily abode, not a fantasy space.

Figure 8.24 Working notes on images, sounds and associations for the pieces in the *Digital Veil.*

Plane	Words: Glide, coast, sail, fly, flight, leaving, rising, sailing, gliding, soaring. Sound Effects: Flapping engine? Not sure on this one. Notes: A Fantastic plane for one person to fly away.
Rocket	Words: Escape, new world, voyage, blast, trip, dream, journey, adventure. Sound Effects: Take off.... Rattle Notes: This is obviously less earth bound than plane. Could be many people, traveling to many places. I think it is a very fantastic ship and associate it with the search for the beyond. Just as there were spirits and mediums in the 19th century, today there are spaceships and aliens.
Wheel	Words: pedal, pushing, turning, spinning, locomotion, self-powered. Sound Effects: Old creaky bike, bike bell, chains, gears, bring. Notes: This is about one person traveling on the ground from place to place by his/her own power. It is about self-movement, and the work and pleasure it takes. It is a little nostalgic.
Car/Automobile	Words: Cruising, coasting, Driving, moving. Sound effects: Door, engine, engine start, horn, beep-beep, crash, vrmmmmmm.... Notes: This depends on direction of the entire work. In this case something literal might be ok if there are more abstract things elsewhere.
Hand with Tool	Words: Build, turn, transform, work, remake, manipulate. Sound effects: turning banging any hand tool noise.... Notes: This is about the manipulation of non living materials, about out ability to build and create and work.
Hand with Fish	Words: Husbandry, farming, catching, eating. Sound effects: Flapping of a fish, eating. Notes: I particularly like this triangle because I think it is about our relationship with living things and our constant use of them as resources, food and materials. It also is about our trade in them. I think of Moby Dick and how the whalers transformed whales into heating oil, buildings with their bones, peg legs, meat, clothing, just about everything you could conceive of. This is also about our domination of nature.
False Teeth	Words: Teeth, artificial, augmented, prosthetic, plastic, man-made. Sound effects: Chattering, chewing. Notes: This triangle is about man-made additions to our bodies. About things we put in our bodies that become part of ourselves. So while the tool Triangle is about extending ourselves externally with things we can choose to use, this is about permanent, internal changes that technology or the artificial can make!
Keypad	Words: Type, add, phone, call, contact, communicate, reach. Sound effects: button presses, clackity-clack. Notes: This one is supposed to be more than just a phone pad. It is an adding machine, computer, etc., any thing digital. It is about today's technology, our ability to communicate over long distances and get data, etc.
Keys	Words: Security, fear, lock, protection, privacy, control. Sound effects: Key jangle. Lock turning. Notes: The keys are a tool for control safety fear, protection and privacy. Maybe something literal is ok for these.
Lenticular Water	Words: Water, river, sea, pond lake, contemplate, blur, stare. Sound Effects: Water. Notes: This is an animated version of a standard water symbol... It should stand for all images of water.

Moth	Words: Moth, fly, dark, stealth, invader. Sound Effects: a soft flapping, a bug zapper, If we use a bug zapper it may be about destruction Notes: This is a little about things we cannot control so easily, things that are small and capable of disturbing us, refocussing our attention
Torn	Words: Rip, tear, not, no, negative, rend. Sound Effects: Rip, break, crack. Notes: This is supposed to be our negative Triangle. This means "is not", or "is separate from", or "does not equal".
Open Hand	Words: hello, stop, greetings, give, aid, help, Sound Effects: clap, the sound of one hand clapping, punch. Notes: We wanted this symbol to be able to represent the many gestures people make with their hands.
Shelter/Arrow	Words: Shelter, direction, place, way, path, arrive. Sound Effects: roofers, walking on a path. Notes: We hope that this can function as an abstract shelter and an arrow. I think it is more likely to be a shelter. It is a little like the drawn house, but more symbolic, able to span more places and times.
Electricity	Words: Power, electric power, energy, light. Sound Effects: Electric crackle, buzz, radio noise? Notes: This is about modern power, not hand power or human power, and using external energy, light.
Moon, crescent	Words: Moon, crescent, mountain, hill, bridge. Sound Effects: Perhaps a song? Maybe a few pieces could have a piece of music attached. The symbols seem most appropriate for this. Notes: This one is much more about nature or elemnts of nature than most other images.
Sun/Saw	Words: Circular saw, gear, sun. Sound Effects: Gears, saw, grinding, kind of that slow mechanical/insect buzz that a blinding hot day can have. Notes: This is another on that is purposely ambiguous. I think i would like to try and capture that in the sound.
Tap/Plumbing	Words: Circular saw, gear, sun.Sound Effects: Gears, saw, grinding, kind of that slow mechanical/insect buzz that a blinding hot day can have. Notes: This is another one that is purposely ambiguous. I think I would like to try and capture that in the sound.
Bulls Eye	Words: Target, Bulls eye, aim, breast, eye, Oh, goal. Sound Effects: Thunk, an arrow hitting a target, OHHHH, Notes: This one is a goal, something practiced, something seen, something squinted at something examined,
Tree/Tooth	Words: Wooded Area, forest trees, mountains, Teepees, Teeth, Sharp, Danger, cut, bite, cold front, weather, clouds. Sound Effects: Nashing, Thrashing, Mountains? Notes: We particularly liked the multiple meanings in this one. We have a few images of the lanscape that are varying degrees of abstractness.
Hand through Ice, Lenticular	Words: Hazard, warning, alert, caution, drowning, help. Sound Effects: crack, very fast water, alarm, siren, warning. Notes: This symbol means caution warning, error, help, alert, falling. I don't think we want to define it too much, though the alarm like sound is appealing
Fur	Words: Animal, warmth, creature. Sound Effects: purr, growl. Notes: A fur Triangle, I don't want to limit this one because the fur is great for everything from being unshaven to a warm coat, it is very evocative of many meanings.
Miniature Landscape	Words: Park, Garden, Land, forest, fields, outdoors, space. Sound Effects: wind, rustle of leaves. Notes: I little model of a landscape built on a Triangle, very magical, with a path or river running through it.

Toy Search

This application was developed to use the web as a source of content for the *Triangles*. It was used at a Toys of Tomorrow meeting (spring, 1998), to let sponsors search the web for products or ideas that already incorporated their different interests. Every sponsor who came to the meeting received a *Triangle* with a different image on it. When a number of sponsors put their *Triangles* together, an Alta-Vista web-search was triggered. This search used the pictures on the *Triangles* as keywords. For instance, two *Triangles* with pictures of a bear and sheet music, would trigger an Alta-Vista search for “bear + music”. For this meeting the images were meant to represent the various interests of sponsors and the Media Lab. *Triangle* images included things like cell phones, dolls, chips, and satellites.

I was surprised at how many web searches made by combinations of these *Triangles* called up pornography sites. Because many pornography sites list a huge number of keywords in their cover page, at that time, a random sampling of words did not necessarily reflect the content of those words on the web. (Today we have smarter search engines.)

Figure 8.25 Selected *Toy Search* images (Maggie Orth).

Conclusion

The use of an off-board computer allowed the *Triangles* to become a tool for experimentation with many different applications. While these applications were diverse, they controlled sounds, images and stories,

ultimately they only began to suggest ways that a sort of computational clay might interact with software. One major reason for this is that it is simply still unclear what to do artistically with ALL the information that this kind of system provides. In fact, many of the *Triangles* applications did not make use of information about which side was connected to which, or about the shape of the overall system. There is still much room left for experimentation with physical system like the *Triangles*.