Michael Tseng
Interaction Design Studio
Professor Jon Kolko
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The Value of Human Mimicry

Background

My research began with an interest in designing a system that would allow users to see the "truth". This would be achieved through allowing users to see events as they occurred in real life and not as an interpretation or second hand story. News Programs suffer from a single flaw. Although painstaking attempts are made to make their material as neutral as possible, when a human relays a thought it immediately becomes laced with that person's bias. I hypothesized that users would be enabled to make their own decisions and assumptions regarding life if they had access to unedited and unadulterated content. My original direction was focused on what I call *Fluid Communication*, which is the infrastructure that would provide the live content through means of video feeds strategically placed to cover every facet of the globe. I was interested mostly in the social and cultural implications of showing everything that was the "truth".

I began by working backwards and considered what such a system imply. If there were live feeds from every inch of the globe then that would entail an infrastructure involving millions of cameras. How would a user access these cameras or find the feeds that were most pertinent to their needs? I considered this problem in a different context. How does a television provider like Direct TV help its subscribers find "the right channel"? Users I observed found the Direct TV solution less than useful. Many users only watched HBO or MTV - two channels out of the 500 that were available. I imagine that had they been granted a sort of omnipotence over TV schedules, they would watch a wider range of content.

In the end I decided to drop the idea of *Fluid Communication* and focus on the problem that I now called "10,000 channels". My direction begins with a problem that emerged in the latter part of the 90's.

Introduction

With the creation of *personal video records* (PVR) the television broadcast industry is beginning to feel a strain on its business model that may lead to its eventual obliteration. Broadcasting companies create shows and content that draws an audience, they then sell advertisement spots during breaks in the show. These advertisements in turn fund the content and generate revenues for the broadcasting channel. Everyone makes money and the participants are satisfied; this system has worked up until now.

PVRs such as Tivo allow users to schedule and record up to 140 hours of television content[1]. Additionally, Tivo grants them the ability to skip over commercials altogether. In 2004 it was reported that 10% of all commercials were skipped due to PVRs.[2] With this figure on the rise advertisers are quickly losing confidence in the effectiveness of advertisement spots. It is projected that by 2006 broadcasting channels will see a $7 billion loss in potential revenues[3].

Advertisers have begun to flock to what are known as *the Big 6* television channels – ABC, NBC, CBS, UPN, WB, and FOX.[4] These channels still boast shows that generate the audience base that makes advertisement spots profitable. This migration in effect has allowed *the Big 6* to sell their advertisement spots at a premium while taking away funding from the lesser known stations.

In order for a corporation to survive it must adapt its business model to the ever-changing conditions that are altered by industry and consumers. When presented with this particular

[1] The Tivo Homepage. Tivo Inc. June 23, 2004
http://www.tivo.com/1.0.asp
[2] Josh Bernoff. Digital Video Recorders Take Flight. April 16, 2004. Forrester Research. June 23, 2004
http://www.forrester.com/Research/Document/Excerpt/0,7211,34264,00.html
[3] Josh Bernoff. Digital Video Recorders Take Flight. April 16, 2004. Forrester Research. June 23, 2004
http://www.forrester.com/Research/Document/Excerpt/0,7211,34264,00.html
[4] Wired Magazine

problem the solution has often been to integrate the advertisements into the shows and content - product placement. The automotive company Ford recently convinced contestants on the show American Idol to sing songs such as “Mustang Sally” and “Fun Fun Fun (Till Her Daddy Takes the T-Bird Away)”.[5] Albeit subliminal, these advertisements are just as potent as their advertisement spot counterparts. The role of advertisement has never been to force users to consume but instead to raise awareness.

The only part of the Television Broadcast Industry that is, for the most, part unaffected by PVRs are the service providers. The United States cable television industry exceeded its previous year's earnings by making more than $60 Billion.[6] Both satellite and cable based television systems have approximately 20 million subscribers each with cable projected to acquire a 17 million-user advantage over satellite as they upgrade their systems and lower their subscription fees.[7] Although this part of the market shows signs of growth, it is in their best interest to offer more channels and options to attract more subscribers. Less revenue for the smaller broadcasting channels mean less channels in total.

Television is a mass communication system that gives users access to “live” information at the click of a button. There are approximately 2.1 televisions per household.[8] A study comparing television to all other forms of media shows that TV remains as the number one source of entertainment, with viewers averaging 1,701 hours per year of viewing time.[9] With a concentration of sources, news that is pertinent to the nation can be distributed via television

[5] Frank Rose. “The Fast-Forward, On-Demand, Network-Smashing Future of Television.” Wired Magazine. October 2003: 159 - 161
[6] US Cable Television Infrastructure. June 23, 2004. ABI Research. June 23, 2004 http://www.abiresearch.com/reports/CATV.html
[7] Josh Bernoff. Digital Cable Overtakes Satellite. February 18, 2004. Forrester Research. June 23, 2004 http://www.forrester.com/Research/Document/Excerpt/0,7211,32332,00.html
[8] Unite States Profile: Media. March 11, 2003. Nationmaster. June 23, 2004 http://www.nationmaster.com/country/us/Media
[9] Television is the Top Choice for Entertainment. July 2003. Veronis Suhler Stevenson. June 23, 2004 http://www.veronissuhler.com/publications/index.html

faster than any other system. TV is perceived to be the most exciting, persuasive, authoritative, and influential source by users above magazines, books, the Internet, and newspapers.[10]

Aside from PVRs another problem is emerging that relates to the service providers. As more channels are offered it becomes increasingly more difficult for a user to find the content that best suits their needs. A sample taken in August 2003 found that, although users had 183 channels, they only watched 19 of them.[11] Direct TV, a satellite television provider, currently offers nearly 1000 channels. With so many available choices a user can find at least one channel that is specifically tailored to them.

Opportunity

This interaction problem can be likened to that of the *needle in the haystack*. When a user is offered 10,000 plus channels, how do they find the one or two channels that are most entertaining to them? I hypothesize that a system designed to handle 10,000 individual channels can be scaled to a million and beyond. Furthermore, there is an opportunity to learn new ways of searching and retrieving live information while delivering a new means for small and large broadcasting corporations to adapt to the changing conditions of the industry. Directing users to their own niche channels would also allow advertisement to be more tuned towards the viewer - producing more advertising revenue for less investment.

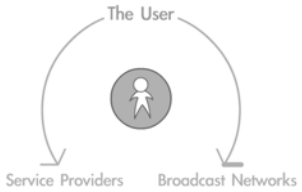
The problem with the current television content guide system is that, much like looking up at the night sky fails to show the uniqueness of each star, the guide system fails to raise awareness of the uniqueness of each channel. When a user is offered 10,000 plus channels, how do they find the one or two channels that are most entertaining to them? This is an issue that is often times overlooked when a system is designed with only a small quantity of data points taken into

[10] Custom Survey. 2003. Nieldsen Media Research. June 23, 2004 http://www.nielsenmedia.com
[11] National People Meter Sample, August 25-31, 2003. Nielsen Media Research. June 23 2004 http://www.nielsenmedia.com

consideration – it becomes an issue of scalability. The broadcasting industry is seeing this occur as the number of channels quickly approaches 1,000.

Process

The research began with a single goal – to find ways to get users to view content of interest, which in turn increases revenues for the service providers and broadcast networks through increased viewing and exposure (see figure 1). This goal implies a focus on channels instead of content. It is the most logical choice to target the system designed to direct users to content instead of relying on content to generate awareness. The question, of course, was how to accomplish the goal. This was the principal motivator for my research.



(figure 1)

I looked for the types of things that shared the same basic format as *Search and Retrieve*. I spoke with Jack Tseng, a computer scientist known for his graphics processor architecture, about the Personal Computer (PC) to find relationships if any between computer scheduling and television. At the most basic level computers are built on an infrastructure, designed by the Hungarian mathematician John Von Neumann in the late 1940s, called *Stored - Program Concept*[12]. When a user executes an operation, the scheduler *program* goes to the corresponding address, retrieves the data, decodes it, and executes the task. Millions of these operations occur every second, creating the lush graphics you see on your computer monitor. The scheduling isn't nearly as straightforward as it may seem. Modern computers employ what is called Random Access Memory (RAM). This is memory that is used specifically to store operations and processes that

[12] John Von Neumann Architecture Stored – Program Concept Control. Brevard's User Group. July 19, 2004 http://bugclub.org/beginners/history/VonNeumann.html

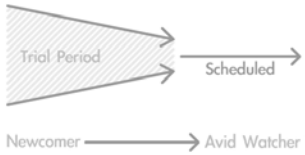
the scheduler decides will need to be used again in the immediate future. Placing processes in the RAM allow operations to be executed more quickly as they are more localized. You can liken the use of RAM to the *recall* button on remotes that allow users to jump between two channels of interest. An issue associated with this system is that a certain amount of predictive ability is needed for it to be efficient. Computers handle this with *Caching*. When data is retrieved the scheduler simultaneously *Caches* as much other pertinent data as possible, so when the next set of operations is requested the data is immediately available. For example, a user may say "kitchen" and, immediately, the computer will prepare all of the items in the kitchen so that when the user asks for a knife it is readily available.

In relation to a television guide system, the most "pertinent" content may be instantly available for viewing or trial. "Instantly" is the key word, as any lag time will cause the system to become perceived as obtrusive and inefficient and ultimately cause a loss of the user's attention.


(figure 2)

Alex, the avid television watcher shown in figure 2, has a basic television regimen: News in the morning, Jeopardy and Wheel of Fortune from 7-8pm, Modern Marvels on Wednesday, and Court TV takes up the rest of the time. Consider that there are only four channels viewed, during his scheduled television watching time, out of the 300 plus channels he is paying for. When Alex first moved into the apartment he didn't watch much television but as he spent more "quality time" with his roommate he found himself sitting in front of the television more often. It began with watching the things his roommate wanted to watch, and he then found himself surfing through the *On Demand* channels. *On Demand* is a system that allows users to watch reruns of a

variety of shows whenever they want. He used this service as a sort of trial system - weeding out the shows he wasn't interested in and catching up on the ones he thought were intriguing. It didn't take long for him to slip into a schedule (figure 3).



(figure 3)

The trial period that Alex went through is constructive, as it allows one to survey a good amount of the content that exists. However, once that period is over it becomes the reciprocal as the user settles into a comfortable schedule – a kind of habit.

Alex described ways in which new shows are added to his scheduled viewing. One way is that a friend will suggest a show that they find interesting. He doesn't usually go out of his way to watch the show but instead will watch it the next time it is available and if he remembers. Another way is through commercials and various other advertisements, yet this alone does not sell him on the show. He says he will go online to http://tv.yahoo.com/ and read user reviews on the show before trying to watch it the next time it comes on. Note the relationship between the value of a friend's opinion and that of other users who have things to say about a particular show. A sort of *awareness then confirmation* takes place - the user is not simply satisfied by the words of advertisements. In the first scenario the "friend" can be compared to an assistant, or agent. The job of an assistant is to take in information, make logical connections, and then generate informed decisions. Knowing Alex's general interests, the friend can suggest something that he/she feels would be entertaining. On a less personal level the reviews of the users on the webpage http://tv.yahoo.com/ are posed as opinions that Alex can judge, make logical connections from, and based upon those connections , generate a decision.

The *Digital Cable Interface* that Alex used was very informative. Each color in this system indicates something different, and the channels are generally grouped with like programming. With 300 options the user can easily skip over blocks of channels that are obviously not of interest to them. Alex assumes that these channels are not of interest because he tried them at an earlier time and found them to be unexciting. He even goes on to say, "There are some things I'm just not interested in."

In the case of movies, Alex says that he rarely picks a movie if he hasn't seen it before. One break down in this system that I observed is that only the titles are displayed and so the decision is based purely on the title of the movie. In situations where a title does peak his interest, he will visit http://www.imdb.com and look up information on the movie. Once again, this is back to the same pattern as http://tv.yahoo.com where the user looks at the reviews, makes logical connections, and then decides whether to watch the content or not.


(figure 4)

From the television user, my focus switched to the *Indie Rock Scene* (figure 4), which is a subculture of young adults who base their styles and trends around all things *cultured* and *unconventional*. Their mantra at its heart is that *the Mainstream* is bad and the *Independent* and less known are good. Although there are countless other subcultures that follow this belief, this one is unique in its obsession for seeking out the most niche content in music. The entire infrastructure of the Indie Rock community makes an efficient network for raising awareness of the music by obscure garage bands seamlessly overnight between towns, states, and even

countries. Surprisingly, the support for this mass communication and awareness system comes simply by word of mouth and the Internet[13].

It was found that common dialogue for swapping music was as simple as, “Have you heard this...?” or “If you like that then you'll like this as well.” Note the relation once again to an “assistant”. Amazon.com (http::/www.amazon.com/) has capitalized on this with their collaborative filtering recommendations list. Using what you are looking to buy as the criteria the webpage states, “Customers who shopped for **item name** also shopped for:” (figure 5). At this point the webpage displays three more products. The user in this case stated that the three products displayed were definitely items that they were also interested in purchasing. Note how the *recommendation* acts as the assistant. The success of Amazon.com can be attributed to its ability to raise awareness to products as well as its ease of usability, organization, and ultimately its efficiency with ordering and processing of purchased items.

(Figure 5)

Another web-based interaction with similar characteristics is Ebay.com. One of the most interesting things about this site is that it sells items through the use of a search engine. Users who wish to buy items simply enter a keyword in the search queue and the site finds all of the items with that word in its title. Additionally, the user can put more words in to get more focused results. However, the difference between this and other search engines is that the content is completely designed by the seller, who, in most cases, is someone with no marketing or

[13] The Ultimate Punk Music Store. Interpunk.com. August 20, 2004. http://www.interpunk.com/localmap.cfm?

information architecture background. The user who is selling an item must make decisions that drastically effect how well the product sells.

(figure 6)

Like any market, there are items that are in high demand and those in low demand. The key to successfully selling your product is through the raising of awareness. Ideally a large number of people will be aware that your product is for sale and will cause a bid war, in turn creating a higher price and in the long run sparking greater demand for that item. When a product is of low demand one way to raise awareness is by adding additional extraneous words that correspond with products in high demand.

While watching a user scouring through the Ebay.com site, it was observed that he would do a search for the item; then, instead of reading the titles of the individual items, he would just skim through the images rapidly. It would appear that the user could process the visual information more quickly than reading the title and then considering what it implied. With images, what you see is what you get (figure 6).

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

(figure 7)

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TIFF (Uncompressed) decompressor
are needed to see this picture.

(figure 8)

Yet another segment of research involved contextual research into the use of ITUNES (figure 7) by Apple and its sister product IPOD (figure8). ITUNES is a program that is used to manage and play audio files. IPOD is a portable MP3 player that allows users to carry thousands of songs on their person with ease. The parallels between these two products are fascinating in how IPOD handles the same tasks as ITUNES but on a much smaller scale. I interviewed two users to see how they organized their music libraries. As hard drive space in computers far exceeds the requirements of many users, the capability for users to store extraneous data rises. MP3 music collections per user are easily exceeding the thousand songs mark. Both users that I interviewed had IPODs that they used on a regular basis. One user, named Chris (figure 9), had an IPOD that could only hold 1,000 songs. Seeing that his computer had well over a thousand songs, this created a dilemma. Not only did he have to choose what he wanted to listen to at the moment, he also had to manage the songs on the IPOD to ensure that he had the type of music he was interested in at the time.

(figure 9)

As he interacted with his IPOD he started from the top of the list and worked his way down, quickly skimming through the titles of Artists. He said out loud that he went through the list thinking, “I don't want to listen to that... nor this... or this.” Interestingly enough, the outstanding characteristic for what he ultimately selected was that the song had the first positive, “this sounds good,” response. As for selecting what music was loaded on the IPOD, Chris described how he will *add/remove* albums weekly and some times purge the entire library and start fresh with new music when he gets bored with the entire collection. Selection of the music to listen to at a particular moment is based completely on *mood*, while selection of the songs to be loaded on the IPOD is generally cyclical. As one album gets overplayed it is removed but after a while it is

reloaded, as its replacement grows boring. A feature of note on the IPOD and in ITUNES is the use of *play lists*. These *play lists* grant users the ability to put together mixes of songs that might suit a certain mood. For instance, when Chris is in a jaunty sort of mood he might put on the “party mix.”

(figure 10)

The second user interviewed was Josh (figure 10). Josh was asked to write down all of the music he listened to over a period of two days. Each song was accompanied by a description of why he selected it. All of his selections were based on mood. For instance, when he left in the morning for his ride to work he played the music by a band he thought was “somber” because he, “was just in a somber kind of mood and wanted something relaxing.” I asked him to go through a list of emotions and name the bands that came to mind with each. I found that he could easily name at least two or three bands per mood.

IPOD allows users to sort their lists by Artist, Album, Song Title, Genre, and Composer. Both Chris and Josh sorted predominantly by Artist name. Once the user selects the Artist he/she then selects the album and finally the individual song. This hierarchal system makes the selection of a thousand individuals songs seem more like a hundred. Considering the size of their music libraries, neither user actually listened to every available song. This made for an interesting question. If at the moment they have found something that suits its purpose, does it really matter if there is a more entertaining choice?

My last segment of research involved visits to establishments that handled large volumes of the same type of item like books, movies, or cards. Home Run Video, is a local video rental store. I

spoke with the owner, asking how they handle the 17,000 plus videos they have in stock. I also wished to see how they recommend films to customers who don't know what they want to rent, but just know they want to rent something. Video stores are unique because users are drawn in with the specific intention of renting something, and, most of the time, they don't leave empty handed.

The way the store handled the videos was much like the computer architecture mentioned previously. The latest, “most popular”, choices are placed near the checkout counter so they can be fetched immediately upon request – like RAM. The older videos are placed in a room upstairs. Another difference between new releases and older releases is that the newer movies have a box on the shelf allowing users to find them more easily. The older movies are placed in a book for referencing since, in most cases, customers will be looking for a particular film and just need to confirm that the store has it.

Similar to the example of Chris and his music library, the owner of the video store must purchase movies for rental that he feels will be of interest to customers. He makes his selection based on “Trade Magazines” that discuss the various new releases that will be coming out soon. Generally, he says, “Based on the 18-25 year old demographic, in the region, the most popular films are the most recent ones.” When helping a customer select a film, the first question he asks is, “Who is the film for?” This question establishes an age range for films that corresponds to rating and content. The next question is “What is their personal taste?” This question focuses more on the type of genre of a film. Once again, this begins a process of acquisition of data that eventually leads to a decision.


(figure 11)

A similar experience I researched was that of Carlton Cards, which is a store that sells cards for any occasion. I observed and discussed customer assistance with an employee named Krista. Krista (figure 11), who has worked at Carton Cards for several years, said her system for finding a particular card for a customer begins with “sizing them up”. The dialogue commonly begins with the user stating, “I'm looking for a card for...” She begins by listening to their speech and notes their vernacular. She claims that from this, she can judge the type of card they want. With such a variety of cards to choose from she then begins a process of suggestion. The customers review the recommendations, weeding out the ones that are not of interest until one or two remains. The cards are laid out in the store by occasion with a broad header at the top of each section and a break down into more specific characteristics per card when you look at each section. This is another form of breaking large amounts of data points, in this case thousands of cards, into a more manageable and perceivable grouping.

Synthesis

In relation to the main goal, “how do you make 10,000 channels feel more like 27 or even 5?” this question leads me to an analogy. Watching television should be more like visiting and exploring the mall. First, there has to be something that entices a user to visit the mall. This may be some sort of advertisement, the recommendation of a friend, or a certain goal to acquire an item. Once the user is in the mall, way-finding systems are put in place to get them to their goal quickly, if there is a goal. In some cases, the user might not have a goal at all. They may decide to simply window-shop until they find something compelling enough to draw them inside the store. In the

store, there are countless options for them, and this is where it becomes the job of individual owners and employees to successfully sell their goods.

With the research and evaluation portion completed I stated the criteria for my final design:

> Considering the breadth of the research conducted, I would like to direct my focus to a type of assistance system that, based on user interaction, considers and generates recommendations. The system would ideally be unobtrusive – the user decides when to request new information. This system wouldn't force users to watch new shows, but instead, would pave the way for them to easily find new content when they want. The innovation may not be in creating a completely new system, but instead, in using the various ways people already interact – *search and retrieval* and *awareness and confirmation*. With these two relationships in mind a new interaction language can be introduced that makes the entire viewing experience seamless and integrated into the televised content itself. By understanding the frictions of the existing system I plan to alleviate the need for a perceived content guide through making it more intuitive and less artificial. The fundamental goal is to not allow the user to sense the true distance they have between where they are and where they want to be.

(figure 12)

I began considering concepts that could fulfill my criteria. My first solution was a "choose your own path" type layout (figure 12). The process of finding a new channel begins with the user's decision that the current content is no longer entertaining. The user presses the "explore" button on their remote, bringing up a selection of thirteen shows currently playing that are like the one

on screen. In this example the shows all have some relation to nature. The options that come up may be related to the criteria of nature in a variety of ways: some may be documentaries, travel shows, hunting and fishing, even as loosely related as a sitcom that takes place in a natural environment. After viewing all of their options the user makes a selection. In this manner the guide system allows the user to build a non -linear path to the content of their choice while still remaining within the sphere of logical relationships.

I felt urged to push away from this initial concept towards something more innovative. The structure for my final design was founded in two key resources: an investigation into how user's gain understanding of information structures and *context + focus visualization*.

When users access information, I noted two unique ways that users acquire an understanding of all of the content. In the case with television, users who have access to less than a hundred channels click either the "channel up" or "channel down" button repeatedly to cycle through all of the content. In doing this the user can access and visualize all of his/her choices - one channel at a time (figure 13). Current content guide systems that handle in excess of five hundred channels have done little to update the system to handle the increase in magnitude.

(figure 13)

The other method I found was a search protocol like Google.com, which enables users to find a single data point in a range of millions. Users place a parameter in the search queue and all of the pertaining material is returned. In most cases the users I studied would go from generalized characteristics to more specific. As the parameters became more specific fewer data points would be returned and the users would have choices that were more tuned towards what they had in

mind. In this system users begin by viewing all of the possible choices then providing more definition (figure 14).

(figure 14)

I examined *Context + Focus Visualization*[14], when information is visualized in a method that allows the user to grasp the sum of the whole while still focusing on a specific data point or grouping of data. In the example below, although the entire chessboard is visible there are only a few white pieces that are in focus - allowing the user to concentrate on their positions and potential moves (figure 15). *Context + Focus* visualization is a key component of my final design.

(figure 15)

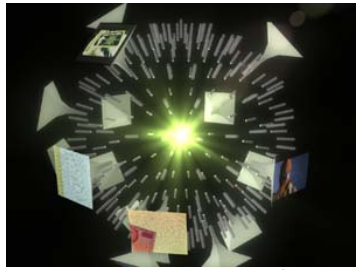
Finalization

My final interface design literally took on a life of its' own. The interface at first glance resembles a Dandelion (figure 17). With *context + focus visualization* in mind I rearranged the channels of television into a sphere. This allows users to have a visual understanding of the entire television system. Each dash shape represents an individual channel with the ability to expand to form a screen where streaming content plays (figure 18). If only one channel were on screen it would appear to be a single cube. As the number of channels increases so does the complexity of the

[14] Niki Sahling. Focus – plus – Context Techniques in 3D information Visualization. VRVIS. July 2003. Veronis Suhler Stevenson. August 20, 2004. http://www.vrvis.at/vis/resources/DA-NSahling/node13.html

structure eventually becoming a sphere. Much like the search protocol this system can be scaled to any number of channels and still remain as effective as if it were handling less than a hundred.

(figure 17)



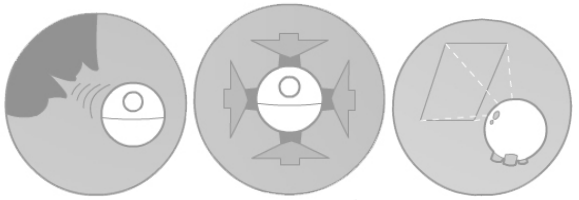
(figure 18)

Two types of interaction occur between users and interface. First, the localized interaction between user and television allow the user to access the channels and content that most interest them. Second, the more global interaction is between the user and other users - creating a network of share information like “most watched program”. All conditions within the system are affected by what users select.

Reflecting on the two types of naturally occurring interactions that I had developed from the research (*awareness + confirmation* and *search + retrieval)*, I have identified a reoccurring factor. In both situations the user used some type of agent that bridged the gap between themselves and the material they were seeking. In some cases it was another user in others a search engine. This realization illustrated a need for a device that was the intermediary between the user and the interface. From the start of the project the goal was to create a way for users to have a kind of television content omnipotence. That goal was plainly not feasible, the next best option was to create an agent or assistant that could have an all-knowing grasp of the entire system.

(figure 19)

Triba is a system that allowed users to access the interface I designed. They interact with Triba in three unique ways. First, by speaking to the device, users may have an intuitive conversation (figure 20). This conversation is the same kind that a user would have with another person. Triba breaks the user's speech down into manageable chunks. For example a user may say, “I want to watch a show with action.” Triba parses the information to the key points, “I, want, show, with action.” Based on this criterion the device brings up the available options that pertain to their request. In this case “Action” may bring up so much content that the user is overwhelmed. This is a natural reaction that encourages the user to become more specific with their request to bring up less choices and ultimately the content that fits their needs. The second way that users use Triba is through gesture (figure 21). By rotating Triba there is a 1:1 relationship to the spherical interface on screen. This allows users to navigate around the sphere to better see the content that has appeared on screen. If the user decides they wish to “channel surf” through all of the content they can by rotating Triba causing the channels to expand and show what is playing. The most central channel on the screen becomes the largest. The third way users interact with Triba is by showing her images (figure 22). A user can hold an image of a television show up to Triba's eye and the device will either bring the user to the content or schedule the show for a later time. All of these interactions are intended to be intuitive and seamless. In creating a system that is easy to use, the user will use it more often.



(figure 20) (figure 21) (figure 22)

Everything about the design of Triba had to be intuitive including the presence that she projected. Triba has a simple aesthetic that allows users to perceive her as being “precious” and “cute”. This perception allows users to more easily slip into a type of friendship that makes the interactions between user and device more fluid. Since users must draw on Triba to find their content a certain amount of trust has to be placed on Triba to find the material that the user is looking for. The device has to appear aware in every way. Triba has the ability to right herself. If the user places Triba on her top she immediately rotates back to the neutral position and then extends her legs. This simple action of “landing” on her own gives the users the perception that she can take care of herself. A device that needs to be nurtured would not be professed to be fit to handle the user. Yet another feature that makes Triba appear aware is her large eye that was designed to appear to be able to take in a massive amount of information. I found through my usability research that contrary to the stigma that the eye may be used to spy on users, the cute aesthetic of Triba provides the users with the impression that such a “cute device could never be used for malicious intent.”

I tested the system with eight users in their homes. The testing began with a short explanation of the context in which the design would be set, but no instructions were described on how to use either element of the design. The immediate comments when Triba was revealed were that the device, was “so cute” or “really cool looking”. The first few minutes generally began with awkwardness, as the user became comfortable with playing with the device. Eventually a phase of trial and error occurred. One user in particular immediately began to talk to Triba; when the options came on screen she didn't know how to navigate to the content. Triba, noticing that there

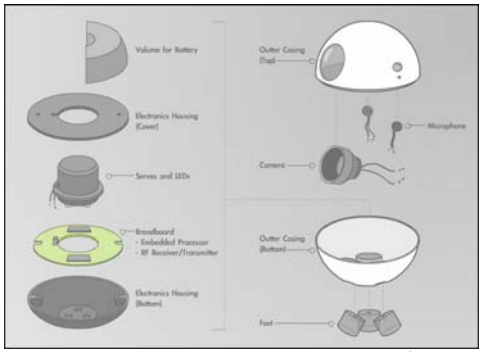
was no activity, immediately retracted her legs and fell forward. The user leaned forward to stop the device from falling and then picked it up. As she turned Triba around in her hands she soon realized the relationship and could easily understand the rest of the interaction. My usability testing of Triba lead me to an interesting finding; the hardest part for users wasn't in understanding the interface but instead was in learning to speak to Triba in the same way that one would speak with another user (figure24). Users would make comments such as, “It can do that?” or “It's that simple?” From the beginning of the tests the users each made an emotional connection with the cuteness of the device. They would cradle Triba (figure 25) and place her down lightly.

(figure 24)

(figure 25)

The significance of Triba, and the accompanying interface design, is that they provide evidence of a gap exists between user and goal that must be bridged using nothing less than intuitive interactions. As technology becomes more complex and so do the information systems that reside within them, a kind of interpreter must be created. By utilizing simple aesthetics and interactions that are commonplace amongst humans this device creates an experience that increases user efficiency. Triba takes the role of human assistant without compromising the interaction between them. We live in a world where we learn to speak the language of our devices when much to the contrary our devices should be learning how to speak our language.

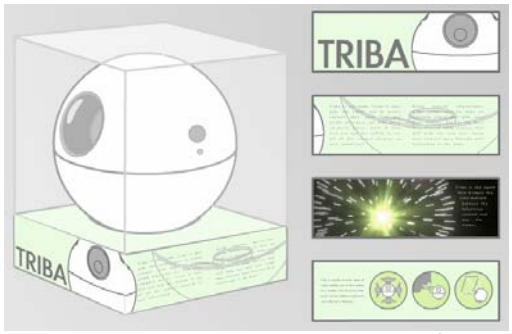
Logistics



(figure 26)

Triba utilizes technologies that are well within the standards of today's consumer electronics (figure 26). A micro gyroscope that records all of the user's gestures is common in digital cameras for stabilizing images. The “eye” is the same type of camera used in camera-phones that cellular providers give away for free when users sign up for service plans. Using an embedded processor Triba can handle most of her simple functions as well as user input. All of this information is relayed between Triba and the interface via radio frequency.

The main computational crunching brain will either be integrated into the Direct TV box or in a plug and play peripheral that comes with Triba when the user purchases the device. Disconnecting the brain from Triba allows for expansion and hardware updates. In the event that users become attached to Triba there is no need to replace the unit that they have grown accustomed to, just the brain that drives the system. Triba receives her power from a firewire cable that plugs into the port located on her back that can also be used to update her firmware if software updates are offered.



(figure 24)

The entire package will be sold at retailers like BestBuy in the television section. Ideally units would be set up for customers to demo on the big screen televisions that are already on display. Allowing users to trial the system is key in helping them keep an open-minded attitude about the new and different product. The packaging is meant to be the instruction manual, describing all of the functions of the enclosed system (figure 24). The choice of clear packaging was made, as the device is attractive on its own without the aid of beauty shots.

Conclusion

As the amount of raw data increases in the world through the progression of media and personal storage, it becomes the role of interaction design to create innovate solutions for finding and retrieving information. This design process began with the misconception that only a redesigned interface was needed to provide users with an enhanced television experience. However, to the contrary the most integral part of the system became the agent that connected the user to the content on screen. The importance of an agent highlights the need for more intelligent and aware devices to guide users through the search experience and eventually to the final goal. The most important finding is that language spoken by any device must be the same as the user, negating the need for users to learn the language of the device.