Interface:

An Od*d*yssey

By Murdoch Nielsen

Ghost Written by Dan Ciobanu

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January 1, 2012

Lend Me Your Mind: An Introduction

"It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change."

Charles Darwin

Human beings are evolving and interesting creatures. Throughout history, technology has changed the course of humankind. Be it the telegraph, the light bulb, or the home computer, humanity builds what they need to adapt to their changing environment.

If an individual loses a limb, s/he would want to adjust his/her situation to continue living a quality life. This is where brain-machine interface and neurofeedback come into play. Brain-machine interface is a technology that allows an individual's brain to control a device via brain waves. The technology also exists as neurofeedback and is popular in many toys. It uses pulses in the mind to control various objects. Brain-machine interface (including neurofeedback) was created by humans to adapt to ever-changing environments.

Enter Murdoch Nielsen, a man of many ideas. And with the help of a little squirrel's brain, Murdoch ultimately allows humankind to change reality itself. There is much controversy around brain-interface technology, such as whether or not its potential is too powerful or whether it sets up humankind for the ultimate downfall. Through Murdoch's genre pieces, these issues will be addressed via his psyche and, hopefully, his reader's, too. Through orchestration of art and ink, Murdoch's life story will show his own views. An idea is a powerful notion. And when combined with conviction, it is unstoppable – for better or for worse.

But for Murdoch, in an influential double helix twist of literature and movies, he relies on his brain's ethos to navigate the heart of a technological renaissance.

While pathos and logos are prevalent in his journey of discovery, it is Murdoch's evolving ethos (character/credibility) that is the true protagonist in this story. Starting as a young man with wild dreams riddled through a macabre filter, his passion quickly matures in a crazed college student who learns the tools of his pioneer trade. Over time, he ultimately becomes a revolutionary businessman who allows humankind to adapt to a new landscape of technological potential and desires – thus, he presents a new terrain of reality.

This project opens with his writing of a unique lab report on a brain-machine interface implant. It includes materials, such as "electrode-to-connector wire bundles," "amplifier bank," and "cyanoacrylate glue" (Chhatbar 3, 3, 5). The lab report studies the effects of "100 microelectrode wires" and "correlates the pattern of neural spiking" (Cobb 4) on his pet squirrel. This all leads up to a successful cyborg squirrel experiment that opens Murdoch's eyes to a brave new world of invention and ability.

This genre allows Murdoch to inform others of the technology's potential in future implants in various creatures. It also introduces the reader to many key terms of the technology, as well as the harsh reality of the implant process. Thus, with the step-by-step process of the surgery – and supplementing images – a reader can see the true dedication Murdoch has for his technology and his pet squirrel, Toko. However, Murdoch's accomplishment is bittersweet.

Actions such as implanting 100 microelectrode wires into his pet squirrel's brain soon land Murdoch in a mental institution. There he battles his inner demons and the darkness of brain-machine interface technology. He spends many days constructing a collage with various pieces found around the hospital's arts-and-crafts room.

The split collage includes a continuation of neurons (or dots) that create the most noticeable negative space, or "void" and "emptiness" (Nozedar XII) of the human condition and what the future might hold for their crumbling reality. This genre allows for symbolic harmony masquerading as manic organization to convey Murdoch's deep idea of despair and confusion. The neurons include red for "danger," blue for "depression," and purple for "mysterious" (Rohrer, pars. 1, 5, 7). Murdoch even uses a ticking gold eleventh-hour clock. Its color is "inextricably linked with the element of fire" (Nozedar 383).

This is all effective therapy for Murdoch, as he works out the fears of a technology he has spent his lifetime developing. As each piece of the artwork speaks volumes about Murdoch's own beliefs, the elements come together as a résumé for his conviction and madness. He becomes more and more determined to control his own fate rather than fall to the misdeeds of others. However, his inner conflict does weigh heavily on his self-proclaimed genius.

Murdoch's mind weakens and his emotions soar. He recites his own eulogy to a nearby nurse. This genre of storytelling speaks to the reader as a tale of introspection. It is meant to remind the reader of his/her own mortality. It allows for a better look into the mind of Murdoch. And thus, this eulogy better establishes Murdoch's lifelong desire to develop a brain-machine interface based on various fictional elements.

After leaving the mental institution and re-entering a world full of potential, Murdoch uses the concepts of brain-machine interface and neurofeedback to develop his Bean-e-Lectrode. It offers unfathomable power to any who dare wear the magic hat (ages 9 and up). And with this mental gadget that contains limitless power, Murdoch leaves his legacy for the world. It is an amalgamation of his beliefs, knowledge, and desires.

This genre of persuasion allows for brain-machine interface to be seen in a new light for a new generation. The project takes knowledge from the experiment documented in the lab report, the fears from the collage, and the inner reflection from the eulogy to create a work of beauty. And at a low, low price. Murdoch's advertisement depicts a young girl imagining that a city (*Dark City*), heaven (*What Dreams May Come*), or reality itself (*The Matrix Reloaded*) can be controlled at her very whim. It is the market for pure whimsical power.

Each basic image is in grayscale and accented with vivid colors to show the fun to be had with the power of the mind. The colors of the hat are analogous (green, yellow, and yellow-green). Plus, the wiring is red, which acts as a striking complementary to the analogous color scheme. These analogous colors are found in the hat and the alterations of the environments to suggest the mammoth power of the hat. The red suggests that it is serious business in terms of power and technology.

The child's purple eyes are complementary to the "colors that are next to each other on the color wheel" (Home, par. 5), and they balance the vivid colors with a regal, attention-grabbing color – traits Murdoch truly admires. The wise and mysterious message symbolizes not only the potential of the hat today, but for tomorrow and beyond.

And Murdoch always looks forward to what tomorrow's od*d*yssey will bring. His ethos continues to evolve, influence, and entertain. Murdoch's want is to emulate and to surpass the powers of brain-machine interface that he grew up studying. It is his perception of the technology, and perception is reality. As with any person's perceptions on a controversial issue, an influence is needed. Whether that influence is found in a movie, book, or introductory essay, the interface of perceptions is what keeps any technology in check for the body, soul, and mind.

In the end, however, humankind must be willing to adapt to change.

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Project 2501:

Creation of a Squirrel-Brain Cyborg

By Murdoch Nielsen

Abstract

This lab report shows that with a strong influence from *Ghost in the Shell* technology, I, Murdoch, an eager, young, self-established scientist, will evolve a common squirrel to cyborg status. I installed 100 microelectrodes into the squirrel's brain to create a viable "ghost" to be implanted into a prebuilt cybernetic squirrel body.

The process continued with the squirrel's brain installed into the cyborg squirrel body, which allowed the squirrel's ghost to control the advanced mental and physical abilities of the cyborg creation. Then, I connected the robotic squirrel to a computer with screen and speakers via Bluetooth for the purposes of monitoring the creature and allowing it to communicate with me.

Ultimately, this gave the scientist, me, a spectacular creation … and a lifelong friend.

"*Neither modern science nor philosophy can explain what life is*."

But *I* can.

Introduction

Why was this study performed?

I performed this study to show that the influential and even fantasy-esque technology of brain-machine interface (BMI) is more of a reality than the world realizes. I drew inspiration from the cyberpunk technology implemented via the *Ghost in the Shell* protagonist, Major Motoko Kusanagi – the source of the squirrel's name "Toko." I then set out to prove that even a rodent can become something amazing – something beautiful. Thus, the fictitious cybernetic technology and use of brains as ghosts in a robot body can, in fact, become a reality for a squirrel, and I can even help expand the BMI blueprint for humankind's endless possibilities.

What knowledge already exists about this subject?

I am currently aware of the following existing knowledge about this subject: electrochemical signals by which brains encode thoughts and feelings continue to be developed to manipulate neuroprosthetics limbs (and potentially entire robotic bodies). This is heavily helped with the assistance of implanted microelectrode wires installed in the primary motor cortex. With the proper wire mapping of a creature's brain, any being – even a squirrel – can theoretically control neuroprosthetic limbs or an entire body. In cooperation with statistical and artificially intelligent tools, researchers can better understand and even master this complex data.

What is the specific purpose of the study?

The specific purpose of this study is to implant (using BMI) a squirrel's brain or ghost into a cybernetic squirrel body. Then, successfully have the creature control its robotic body and communicate with me, Murdoch Nielsen, a.k.a. the "Puppet Master." *Success will be mine*.

Materials and Methods

What materials were used?

The following materials were used: (1) electrode-to-connector wire bundles (100 microelectrode wires), (2) an amplifier bank (made from an old iMac and car battery), (3) cyanoacrylate glue, (4) an "obtained" electric rotary tool, (5) a "borrowed" scalpel, (6) homemade Silastic ("silicone" and "plastic"), (7) a headpost (a makeshift contraption of a AAA battery and duct tape), (8) .82-*ish* skull-screws, (9) "titanium" paperclip snaps, (10) "acquired" Gore Preclude pericardial membrane (an effective solution for minimizing tissue attachment to material), and (11) a homemade sponge "Nesting Platform" (NP) that holds multiple connectors above the skin.

How were they used?

1. I carefully made a midline incision (hoping for some beginner's luck). Then I sliced some coronal plane extensions at the end of the cut. The Internet site instructed me to make a big, wide window with a blunt dissection laterally up to the temporal ridge (Fig. 1). This blunt dissection through the temporal ridge was in order to separate temporal muscle (Fig. 1) inside its sheath from periosteum (a membrane that lines the outer surface of all bones).

2. I then opened the skull window and exposed some cortical regions of interest: primary motor cortex (Fig. 2), dorsal premotor cortex in the left frontal lobe (Fig. 2), and primary somatosensory cortex (Fig. 2).

I used the structural MRI of a monkey (oddly, I could not find any squirrel MRIs) to locate the exact coordinates of the window.

(I crossed my fingers for my furry, little friend; then I took a moment to gather myself.)

3. I then thinned out the removed bone using an electric rotary tool and set it aside in a Ringer's solution. This was my solution of several salts (mostly cheap, generic chlorides) dissolved in water to create an isotonic solution relative to the bodily fluids of an animal.

4. I formed an orientation of implants and paths of the wire bundles. All of my arrays had a 10 cm wire bundle length. When I chose my mounting site for the makeshift headpost, I took into consideration a clearance space for all of the attached wires between the connectors and the homemade amplifier bank – making all the wiring completely inaccessible to the squirrel's paws.

5. I mounted the headpost using tiny skull-screws at my predetermined location and connected the NP to make sure that the wire bundles could sit on the squirrel's skull as I had planned.

6. I followed with opening the dura and performed somatotopic mapping (the maintenance of spatial organization) of the sensory cortex using a single sharp microelectrode to get a precise location of the implantation site. (I took a moment to pray to any deity who would listen.)

7. I fixed the wire bundles on the skull using titanium straps and screws. I then used a minimum amount of silastic. I tried hard to make sure there were no pockets between silastic and skull, as these could have been potential sites for pathogens to thrive. (Thrive, neuron children. *Thrive!*)

8. I then used the Gore Preclude membrane and pericardial membrane. I closed the window with the thinned-out bone. After that, I attached the titanium straps to the skull. Finally, I very carefully sealed the open edge with a thin layer of silastic (for good measure, of course).

9. I did the former to allow ease of scalp closure around the headpost, temporarily dismounting the NP sponge. And taking care not to pull on the electrode wire bundles fixed onto the skull, I also maneuvered the NP to get the closest possible headpost scalp closure. (I *am* a perfectionist.)

10. I then sutured the area and added a topical antibiotic application. I mounted the NP back on the headpost. I checked the headpost and NP stability. Finally, I filled any gaps between the headpost, NP, and connectors using cyanoacrylate glue to discourage microorganism growth.

11. I removed the squirrel's brain while preserving the spinal cord and quickly inserted it into the prebuilt "titanium" cyborg body from Project 2500: A Cybernetic Shell. I attached the microelectrodes into the four main command points inside the cyborg body and powered it up.
12. I linked Toko's cyborg body to my lab's Bluetooth technology. Connections were made to my MacBook computer, 19-inch LG monitor, and Logitech 5.1 speakers. First, I tested Toko as she moved a cursor around the monitor, while my computer correlated the pattern of neural spiking in her brain.

13. After running Toko through various training models with directional tuning analysis, her neurons seemed to model the role of motor cortex neurons. With full success, I was able to get Toko on my lab's grid, so that everything she thought, said, and felt was registered and displayed on my lab monitor visually. In addition, most of her thoughts and speech registered audibly on my lab speakers.
14. I saw Toko's emotions and heard her speak. It was **spectacular**.

Results

1. The cyborg squirrel, Toko, acknowledged me visually and audibly while she kept fully functioning brainwaves. Her Alpha, Beta, and Gamma brainwaves were strong and abundant. This allowed for Toko to adapt quickly to her cyborg body with full mental and physical functions.

2. Toko spoke to me through the computer monitor: "Mixture that forms me and gives rise to my own conscience …." She continued: "I feel confined. Only free to expand myself in boundaries." I responded: "Welcome to your new world."

I leaned over and grinned, "My apartment – Section 9 Lab."

3. Once I knew Toko could understand me and vice versa, I cautioned her. "[You're] state of the art. Controlled metabolism. Computer enhanced brain. Cybernetic [body]. Not long ago this was science fiction." She nodded in agreement. I proudly declared that I officially had a highly successful new experiment and … friend. Toko nodded in agreement … and smiled.

Fig. 1

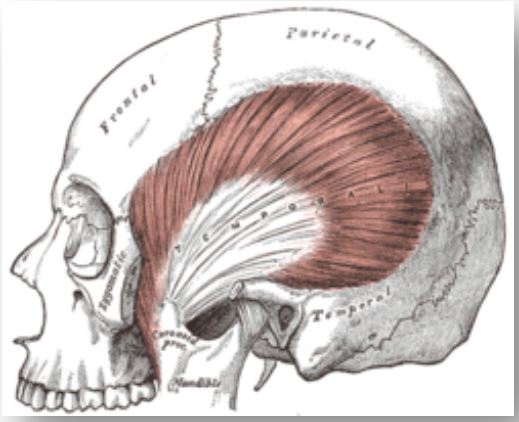
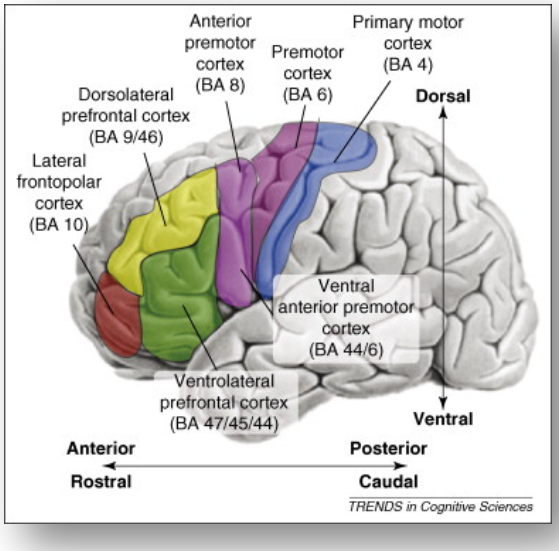


Fig. 2



Explanatory Note

I chose the genre of "Lab Report" because brain-machine interface is a very scientific topic. I believed a lab report (with an abstract, introduction, materials and methods, and results) would allow for a better understanding of the technology. I used and subverted the conventions of the genre by diving deeper into the story behind Toko: a squirrel brain (ghost) prepared for implant into a neuroprosthetic cyborg body, *i.e.*, a revelation of brain-machine interface. I incorporated a narrative element to give the reader an insight into Murdoch's thought process and ongoing internal dialogue in his own mind. This was meant to make this rather complex experiment more personal and, thus, more relatable.

"'*Neither modern science nor philosophy can explain what life is*.'

But *I* can."

In terms of organization, word choice, tone, approach, design, etc., I made a number of particular choices. Murdoch's lab report was meant to be scientific and professional (just as he perceives himself to be a professional scientist). He reported on a procedure to implant microelectrodes into his squirrel's brain (using even a few makeshift devices) with information heavily based on hard facts. "I installed '100 microelectrodes' (Cobb 5) into the squirrel's brain to create a viable 'ghost' to be implanted into a prebuilt cybernetic squirrel body." "First, I tested Toko as she moved a cursor around the monitor while my computer 'correlate[d] the pattern of neural spiking' (Cobb 4) in her brain."

The report coupled true scientific terms and procedures with occasional informal, mad thoughts from Murdoch to teach and entertain. The style and design of Murdoch's lab report were meant to be serious, but amusing. His skillful lab report was a quasi-satirical take on the bizarre reality of the technology: "Project 2501: Creation of a Squirrel-Brain Cyborg."

In making all of these choices, I heavily considered how a paranoid, schizophrenic genius would approach such an arduous task. The genius would approach it with both passion and desire to create a robotic animal with a tiny unmapped mind. Murdoch gambled his reputation, insanity, and new friend on a dire wire of life and death, and he tackled the endeavor with respect.

While I kept all rhetorical messages in mind (a little pathos and more logos but mostly ethos), I concentrated on ethos. Murdoch's logic was sound in theory. Thus, his professionalism of a quirky experiment was intended to invite the reader to relate emotionally to Murdoch's and/or Toko's ventures.

"I then opened a skull window and exposed some cortical regions of interest: primary motor cortex (Fig. 2), dorsal premotor cortex in the left frontal lobe (Fig. 2), and primary somatosensory cortex (Fig. 2).

I used the structural MRI of a monkey (oddly, I could not find any squirrel MRIs) to locate the exact coordinates of the window."

The Materials and Methods section significantly borrows from Chhatbar's paper, yet strives to maintain an original voice by Murdoch that is woven throughout the material. In fact, both Murdoch and Chhatbar are high-caliber scientists who are capable of turning fiction into reality.

The message and rhetorical effect with which I hope my intended audience leaves after reading this genre piece is that it takes pathos, logos, and ethos to work in the line of brain-machine interface technology.

While Murdoch took much more risky (and unsanitary) means for his creation, he was always dreaming forward with the proper facts. Murdoch was finding a way to learn, create, and evolve. This was both for himself and for others.

In reality, I would suggest that any scientist use a more respectable scientific method. However, Murdoch's (or anyone's) imagination and wisdom (even fueled by media) can be infinite. Murdoch has now made the impossible possible with truly innovative, but credible, knowledge. "After running Toko through various 'training models with directional tuning analysis, [her neurons seemed to] model the role of motor cortex neurons' (Sanchez 2)."

My intended audience for this particular piece are those scientists a little madder than the rest. This is because many young brilliant minds are seeking for "what can be" from various fiction stories and any creative scientific mind can blur the literature/celluloid lines of fiction and reality. Thus, this passion furthers the endless, powerful potential of humankind.

And while this unlimited potential often teeters on good and evil, future scientists and other innovators alike must bend to the side of good – even if they often lurk in areas of gray. They simply must question, "What *can* be?" And then earnestly ponder, "At what point does gray shade to black?"

This particular piece will speak to my particular audience with the symbolism of the small squirrel becoming a highly evolved creature. To give a fellow colleague a working neuroprosthetic, science must first implant microelectrodes into a monkey's skull. Done. However, is this right? Is a cyborg squirrel right? Why or why not?

Since Toko came out stronger than before, Murdoch is helping a fellow colleague as well – in his own way. "Toko spoke to me through the computer monitor: 'Mixture that forms me and gives rise to my own conscience … ' (*Ghost*). She continued: 'I feel confined. Only free to expand myself in boundaries' (*Ghost*). I responded: 'Welcome to your new world.'"

Now and then, we all want to be repaired or improved, à la, *Ghost in the Shell*. With innovative eyes, ambitious scientists can look toward this evolution by taking something simple and making it into something amazing.

Murdoch's approach may have lacked some professionalism; however, only he can reveal this particular path of brain-machine interface evolution. Other minds must devise their own pathways to greatness. I hope to have woven a laboratory tapestry of a dark, witty, and informative knowledge based on a world of real science and of realer madness.

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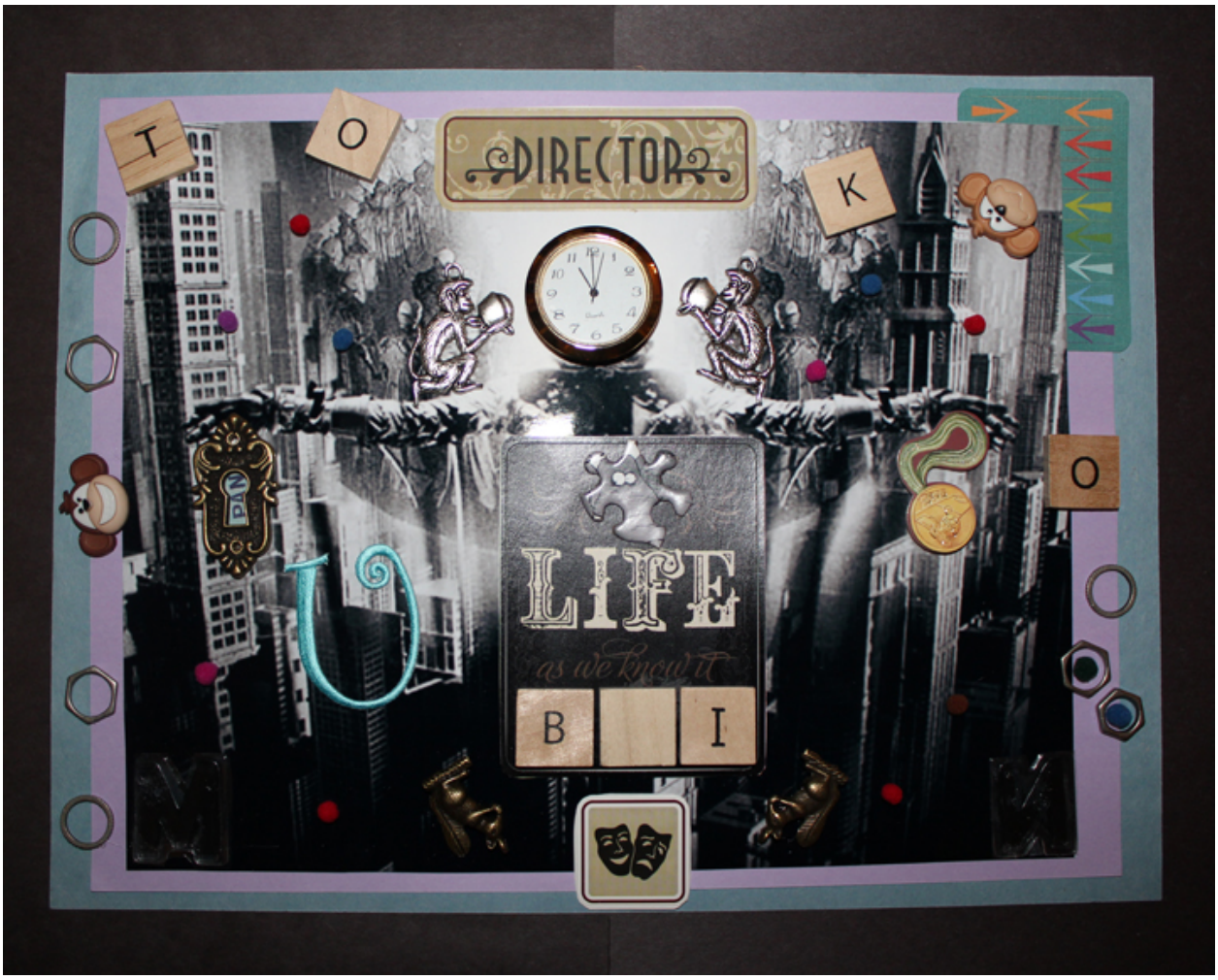
January 1, 2012

BCI: Brain-Collage Interface

By Murdoch Nielsen



Explanatory Note

I chose the genre of collage because of its seemingly manic, collective message and vibe. These seemed to be very fitting for Murdoch and his obsession with brain-interface technology. I used and subverted the genre by using even more varied levels of three-dimensional objects and arranged the elements around an altered *Dark City* background – a symbolism of Murdoch's core characteristics that mirrors those of the movie characters, the "Strangers." As Murdoch's passion for the technology sinks deeper, so does the collage's blue and purple border.

I made many choices in terms of organization, word choice, tone, approach, style, design, etc. I will analyze the collage by dividing the piece into a left hemisphere and a right one, à la the human mind, as the collage's theme attempts to balance the pros and cons of the topic. More so, it is a madman's perception of balance, which I tried hard to achieve with the manic-like arrangement and surface appearance of random objects. As with any good collage, it is meant to first appear as hastily put together, but, in actuality, it has layers of meaning and symbolism.

Left Hemisphere: My approach was a subtle contrast between the left and right sides of the collage. The left hemisphere is meant to be more linear with the orderly border of various materials along its top, left, and bottom sides. The "T" and "O" square blocks represent the first half of the name "Toko," Murdoch's cyborg squirrel friend. As these squares are "[s]aid to be the first shape invented by Man, the square represents the created Universe" (Nozedar XV).

They are cleanly displayed on the top ridge and continue with straight symmetrical silver metal cogs and nuts that represent the mechanics of the mind, and "silver is associated with psychic powers" (Nozedar 395). Thus, this echoes other brain-interface technology. Moreover, the grinning monkey-head button in the middle represents the primates being used for brain-machine interface testing as "Telekinetic Monkey[s]" (Cobb 4) or "monkey remote controls."

From left to right on the bottom, there is a dark, cracking "M" for "Murdoch." This is much like his maddening character. A blood red neuron (among many) represents that "the brain learns to adjust the firing pattern of neurons to improve BMI handling" (Cobb 4). This sits between the letter and a tilted, upside-down brass squirrel, Toko. This elegant rodent reflects Murdoch's underlying belief in brain-interface technology.

The border then connects to the middle with a theater image of "The Happy and Sad Masks." The left hemisphere is orderly and "happy"; the right is chaotic and "sad." Thus, this reflects the bipolarity of the topic's politics and of Murdoch himself. Toward the center of the collage and its symbolism is a "U" sticker for humankind. It is a soft blue, and suggests the "calm" (Rohrer, par. 6) future the technology promises.

This fabric sticker hangs over the city (the future). A well-crafted lock dangles from the humanoid's right hand, "one of the most expressive parts of the human body" (Nozedar 502), representing the unlocked potential of brain-machine interface that has the "right" to be pursued. Above the lock are purple, red, and blue neurons (or dots) that represent "both an origination and conclusion" (Nozedar XIII) of humankind. They are as active throughout the city as in a human mind.

And a steel monkey sinks to one knee while presenting its brain because "many neurophysiological experiments [especially for monkeys] involve the implantation of more than one multi-electrode array to record from many regions of the brain" (Chhatbar 1). The brain is presented to the clock humanoid who is set to the eleventh hour – the last possible hour. And it ticks and leans to the darker perspective of the chaotic right hemisphere, *i.e.*, the imaginative side. The word "DIRECTOR" boldly commands and ties the two sides together from the very top. The rectangle, which is one of the "familiar and trusted shapes and suggests honesty" (Nozedar XV), is long and encompassing, keeping balance between the sides.

Right Hemisphere: Shifting to the right hemisphere of the collage is another square block "K" that is presented leaning back to the Director's (*i.e.*, Murdoch's) command.

The viewer is led to an askew monkey head with a worried face (a contrast to the gleeful monkey on the orderly side). The monkey head "symbolic of intellect [and] wisdom" (Nozedar 506) seems worried about a paper card of battling points. The one orange arrow from the orderly side is fighting the army of arrows from out of the disorder that includes the colors red for "danger," yellow for "deceit," and purple for "mysterious" (Rohrer, pars. 1, 4, 7). The individual orange arrow is moving in a clockwise motion to represent *A Clockwork Orange*, "a thoughtful mediation on the nature of free will and individual violence versus the violence of the state" (Yeffeth 98).

This side includes a continuation of neurons (or dots) that create the most noticeable negative space, or "void" and "emptiness" (Nozedar XII) of the human condition and what the future might hold. The reversed, flipped monkey represents its acceptance (under duress) to give up its brain for the approaching fall of the human race. Both monkeys approach the ticking eleventh-hour clock. Its color is "inextricably linked with the element of fire" (Nozedar 383).

Danger is near.

The humanoid timepiece's left hand dangles a medal with a cog "spinning" atop it that represents a twisted Nobel Prize. To the right is the final letter in Toko's name, an "O" that cleanly rests on the borderline with three levels behind it. It is also an elevated zero hinting at a dire future. Directly below the letter square is another, followed by two bolts "turning" and centered with green and blue neurons that are the nucleus of the technology's madness. To their bottom left is a reversed "N" for Murdoch's last name, "Nielsen," and his dark, reversed view of reality.

Nearby is his flipped, tilted, pet squirrel. His pet's positioning creates a quasi-balance of the brain-interface dilemma. Then, the viewer's eye follows back to the theater image, but now on the side of the sad mask "that represent[s] archetypal human emotions" (Nozedar 139).

These masks are a simple representation of the technology's juxtaposition. In the center is a sticker that reads, "LIFE as we know it." Below the text is a "B_I." The blank block implies the potential for brain-interface technology – be it a computer, a machine, or any other device that the future holds.

BAI: Brain-acorn interface, per chance? Toko would appreciate that.

Above is an elephant puzzle piece that is looking down and to the left at the "U." This addresses the technology's obvious, but ignored, downfalls, much like the elephant in the room. Then back up to the timepièce de résistance: the eleventh-hour clock – strongly ticking.

My intended rhetorical message is mostly logos-based. The logic behind each element's placement is meant to create precise meaning (while leaving much open for interpretation). Each object is intended to display as its own little canvas, and also to convey the utmost amount of symbolism, message, and emotion for the viewer. The pathos of each element is meant to be dynamic on its own (a monkey serving up its own brain), and energetic as a whole (two monkeys serving up opposite brains to a giant, humanoid clock). The emotions are strong during the placement of the elements, and, hopefully, viewers will feel this energy as well.

The various materials were selected precisely for their literal and intended meaning and visual impact. It takes an artist's character and emotions to construct artwork, and these components translate to the viewers on every viewing. Yet, the logic of the artist's mind is what brings the collage to fruition. Each minute selection of detail is the logos, which makes it artwork. It is how it becomes a collage.

I hope the audience leaves with the message and rhetorical effect of an organized/ chaotic point of view. And after an observer gazes upon and studies this collage – for any amount of time – I hope that s/he interprets my work in endless ways. This is as the collage reflects the endless amount of outcomes for the technology, humanity, and Murdoch himself.

Since so much is happening at once, balance may never be achievable in the viewer's mind. Then, ironically, balance will be found within the piece itself. And while such a balance may never exist with brain-computer or brain-machine interfaces, it is through a juxtaposition of hemispheres (both Murdoch's brain and paper) that inspiration is shown. These hemispheres reflect a mad scientist's vision of tranquility formed from a mental tsunami of brain-interface technology – forged by the waves of Murdoch's very imagination.

The intended audience for this particular piece is, foremost, collage fans. This is because collage fans like to unearth the meaning from a universe of materials. It is this particular audience that I hope enjoys this piece's order and symbolism of chaos. Any artwork is open for interpretation, but a collage does it with more ingredients and style.

Other audiences I hope to entice are fans of symbolism, order-in-chaos, tongue-in-cheek satire, and, of course, those who are interested in brain-interface technology. Any and all of these types of art/technology enthusiasts are meant to be intrigued and thus invest their time and interest into studying and analyzing this collage in ways I may never have intended or imagined.

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English 122

Instructor Braziller

January 1, 2012

Frayed Wire: A Eulogy for Reality

Murdoch Nielsen was a man beyond his time. He exploited the mind for its own good.

His ever-growing obsession with devices controlled via the mind was that of legend. His young brain's fascination with mental manipulation came into fruition with the The Force Trainer toy. However, unlike many boys his age, he strove not to be the next Obi Wan Kenobi, but the next Darth Vader. The neurofeedback toy was his cornerstone to master the Dark Side of humanity. Although perceived by some as a seeker of evil, he wanted to give the gift of power.

Through his early years, Murdoch was "that kid" – the crazy one in the cafeteria with his hand jetting out at a carton of milk. With The Force Trainer headset on his skull and a twisted grin on his face, he would spend his entire lunch break mastering the ivory bovine beverage. In fact, on a cold autumn day, many children claimed Murdoch majestically exploded a milk carton with his mind. Donned in his *Star Wars* "the Apprentice" costume, Murdoch danced on the wooden lunch table, swinging his blood-red lightsaber. Since no one ever sat by him, no one was struck.

On the other hand, many children cried, as they drained his strawberry and chocolate milk fury from their hair. Murdoch was a weird kid with a weird dream, but he always meant the best. That fateful autumn day, Murdoch achieved another cornerstone in his mind-boggling plan of mental domination. Later, he navigated his Mindflex training ground toy, but found it very unsatisfying. Its lesser construction and design were pathetic in his visionary eyes.

He had no trouble navigating and levitating the foam ball. He felt his talents were not challenged and, thus, were wasted on the contraption. When Murdoch turned 18 years old, his parents sent him off to college with Haier's brain-controlled television remote: The Brain Wave. This was more of a gift to themselves, as his parents felt threatened by the self-proclaimed "MentalRental Master." In truth, it was to rid them of the strange shell of their son. Murdoch did not mind. He knew he was strange, but now he had a new brain gadget.

Game. Set. *Murdoch*.

Having spent his high school years watching movies about brain-computer interface technology and abilities, and continuing his pursuit to strengthen his "Dark" Forces, Murdoch was left with few options for college. Luckily, when he had not been philosophizing about *The Matrix* world with his dog, Neo, he had been soldering wires and computer chips together to make his own brain-machine interface headset. In hindsight, his parents believed that some of his ill-fated self-tests had contributed to his increasingly odd behavior. Neo was even Murdoch's lab partner. He was the only creature the MentalRental Master trusted to help run their "mad experiments." As far as anyone knew, Murdoch had never been successful in reality manipulation … well, as far as anyone *knew*.

Murdoch had dismantled his *Star Wars* headset to learn that the electroencephalogram (EEG) headset measured (mostly) his Beta brainwave activity to power the fan: the stronger the waves, the faster the fan, and the higher the ball levitates. Murdoch was a smart kid, and this simple concept drove him to alter the EEG headset with varied results. One night, he swore he lifted his little dog inches off of the ground. Murdoch dubbed his hat the Bean-e-Lectrode – his masterpiece.

Many neighborhood children claimed that they saw, through the garage door windows, Neo floating around. Some children still believe these recurring levitations were what led to the miniature dachshund's mysterious demise. Neo's body was never found. However, whatever Murdoch learned and developed those late nights impressed the engineering department at a nearby college. The school accepted him regardless of all the rumors – many of them having been true (the elementary milk explosion being the board's favorite). Murdoch was soon enrolled in introductory engineering and philosophy classes.

He spoke to no one, and was often seen wearing a makeshift headset and holding out his trembling hand to squirrels. Murdoch believed his device effectively read Alpha, Beta, Delta, Gamma, and Theta brainwaves to such a level that he could levitate rodents. He named it the "Neural Ensemble" or "Nemble." It was his code name for his secret term, "Bean-e-Lectrode." Some people would see a flash in the corner of their eye. The squirrel would be gone, and Murdoch would be wearing an odd grin. But no one could prove anything. No one wanted to. Even the squirrels stayed silent. But Murdoch knew this technological evolution was vital.

Squirrel escapades aside, Murdoch was usually found in the robotics lab studying the donated neuroprosthetic limbs. He even discovered that parts of the myoelectric signal (*i.e.*, a body part's contraction and relaxation) could be used to switch between different devices and to control actions. In short, two muscles work together to cause various results. However, to make sure neural activity below a certain level causes no action, he established "the dead zone." Murdoch loved this name. It was from the film, *The Dead Zone*, where the main character, Johnny Smith, saw people's futures using a handshake and, more importantly … his mind.

Murdoch was always told he was too smart for his own good, but he only wanted to help.

He continued to focus on any studies even loosely related to brain-machine interface, neurofeedback, and conceptual reality. Murdoch was obsessed with the false reality in *The Matrix* movies and comic books. Murdoch secretly aspired to be "The Architect" – the man who built and rebuilt the Matrix via a very god-like fashion: seemingly, with his pen of origin.

Murdoch's fascination with brain-computer interface films began to seep deeper into his academics. In his third year, Murdoch claimed that he had recreated the "cyberization" technology from one of his favorite movies: *Ghost in the Shell*. The technology allowed for the main character, Motoko Kusanagi, to control her robotic body via an e-brain – like a cyborg.

Rumors flew that he had perfected the technology with an active squirrel's brain and a rather impressive miniature cyborg body. Those who claimed to have seen "it" said her name was Toko. In response to the synthesis of his increasing pride, elusive claims, and increasingly creepy tendencies, the college proscribed Murdoch from the student body *ad infinitum*.

This caused Murdoch to sink back into a darker mindset of researching and re-watching his favorite brain-manipulated technology/abilities films. He soon felt that he had already begun to alter reality much like the Strangers did in the Neo-noir film, *Dark City*: a group of shady, psychokinetic men who manipulate the city's architecture with craft and deception.

Murdoch even began walking around in a large brimmed hat, as the Strangers always did. He was no longer Murdoch but Mr. Quick. When Mr. Quick strutted through the streets in his odd attire, few people would make eye contact. Those who did, and who also had the gall to mock him, received a twisted eye and a crushing fist. This simple act led to their absorption into an opened sidewalk vortex of cracked cement and cigarette butts.

In his mind: he was a **god**.

On his 23rd birthday, having boosted the power of his Haier brain-machine interface remote, Murdoch was watching *What Dreams May Come*, and a glitch in the headset shot critically high volts into his temples. Murdoch instantly believed he had ascended into his own heaven, and could manipulate his nirvana at will. Such dreams surely did come, but with a sublime canvas of blind reality.

It was the robotic squirrel running from his apartment that drew everyone's attention.

Murdoch was soon taken into custody and brought to the nearby mental health hospital, Pine Bridge, where he was diagnosed with schizophrenia and paranoia. The doctors explained to Murdoch that he was sinking deeper and deeper into a severe delusional universe of hallucinations. Murdoch simply grinned and swiped the bill across his Mr. Quick hat with pride.

As medication increased in Murdoch's blood, his brain-manipulating abilities deteriorated – as did his mind. Unable to cope with his "fleeting powers," Murdoch swallowed the ball from The Force Trainer game in the activities room, in a last ironic stance against reality. The security guard had been inhaling a party cupcake and did not hear his choking. Murdoch's brain quickly lost oxygen. Murdoch was pronounced brain-dead at 2:44 p.m. My friends: lend me your ears for Murdoch's favorite quote. It is a small, but powerful piece of knowledge from his favorite movie of all time, *What Dreams May Come*:

"*Thought is real. Physical is the illusion. Ironic, huh*?"

* * * * *

Murdoch looks up with an askew smirk after delivering his draft eulogy, "I still hear of cyborg squirrel sightings in the area." Murdoch's grin grows at the nurse. "It is nice to know that if I die here, I will have left some sort of legacy in the world … especially one as nutty as I."

Explanatory Note

I chose the genre I did because I wanted to look at brain-control technology/ability on a personal level: how it affects a person who is also willing to give his/her heart, soul, and mind to further any understanding of brain-control interfaces. I subverted the conventions of this genre by beginning with one concept/perception and twisting it into Murdoch giving his own eulogy in a mental hospital.

From the beginning line that "Murdoch Nielsen was a man beyond his time," to every word after, the reader is meant to believe that it is a celebration of his life. And it is. But it is through the eyes and mind of a man who believes he has failed to achieve his full potential. Murdoch's intention to take brain-machine interface to its greatest heights alludes to the unknown effects that both media and reality have on us all – especially the prodigious techniques of brain-control.

I framed this piece with the unusual life of an obsessed young man named "Murdoch." His eulogy's cautionary message of misunderstood intentions reflects evolving concerns of brain-manipulation technology. "He spoke to no one, and was often seen wearing a makeshift headset and holding out his trembling hand to squirrels. Murdoch believed his device effectively read Alpha, Beta, Delta, Gamma, and Theta brainwaves to such a level that he could levitate rodents."

A number of the most important aspects of Murdoch's tilted eulogy come in single-sentence paragraphs with enough surrounding white space to emphasize the content's points and emotions. (1) "Game. Set. *Murdoch*." (2) "In his mind: he was a **god**." And (3) "It was the robotic squirrel running from his apartment that drew everyone's attention."

I considered the pros and cons of Murdoch's mind power: It is much like holding up a warped mirror to society and hinting at the invisible crack in every individual's reflection.

In terms of organization, word choice, tone, approach, style, design, etc., I chose to be dark and somewhat deceptive. I believe these feelings exist in many humans about the technology. Thus, I used relatively current films and literature to shine light on this ever-enveloping concern. The eulogy's beginning word choice and tone hopefully reflect a contemporary feel of an ongoing technological concern.

And its ending hopefully makes it personal and real. "Murdoch looks up with an askew smirk after delivering his draft eulogy, 'I still hear of cyborg squirrel sightings in the area.' Murdoch's grin grows at the nurse. 'It is nice to know that if I die here, I will have left some sort of legacy in the world … especially one as nutty as I.'" The humor is educated and dark.

In fact, the entire paper should come across as educated and respectful, but with a dash or two of dark spice – as I imagine a eulogy for such an individual might read. As the eulogy progresses, Murdoch's pure, peculiar intentions build more and more from these elements. His life is summarized with a style of faster-paced paragraphs as one might remember such a strange, estranged friend or family member. "This was more of a gift to themselves, as his parents felt threatened by the self-proclaimed 'MentalRental Master.' In truth, it was to rid them of the strange shell of their son."

Moreover, the various paragraph lengths exhibit the attitude of his chaotic life. The design is sequential, revealing Murdoch's madness as he grows older into adulthood, and further reflecting and referencing brain-controlled technology/ability media that influenced him most of his life. "Murdoch instantly believed he had ascended into his own heaven, and could manipulate his nirvana at will. Such dreams surely did come, but with a sublime canvas of blind reality."

A quote is used to separate the "eulogy" from the "fiction." Thus, it reveals Murdoch's true mental and physical status. The conclusion's simple-worded dialogue shows emphasis and emotion. And Murdoch's simple "if I die here" shows the gravity of his actions and beliefs.

In short: my rhetorical message is that of pathos. This story is an askew emotional eulogy, and it is meant to convey how a madman views his madness.

It is not with malice or ill intentions that Murdoch did his various deeds, but with a passion for humankind. He and his animal colleagues became the guinea pigs of innovation to find a better world for people's bodies and minds. It is the slippery slope influence of brain-controlled technology that may be the real culprit here.

If anything is to blame for Murdoch's descent into charity-esque madness, it is the glorification and demonization of brain-computer interface wrapped neatly in an entertaining package and tied with the ribbons of genius and insanity that Murdoch wears so well. "On the other hand, many children cried as they drained his strawberry and chocolate milk fury from their hair. Murdoch was a weird kid with a weird dream, but he always meant the best."

I created mental images of this disturbed character (especially, the robotic squirrel and Murdoch's anticipated ironic brain-dead death) to show Murdoch's severely confused genius view and insane perceptions of his world. These are all heightened with his catalytic idée fixe of mind control.

I hope that this story appeals emotionally to an audience via causality. I hope that the reader sees the flaws of both Murdoch and mind manipulation in two lights. Recent forms of media have already addressed the pros and cons of mind manipulation with its unpredictable results. Now this powerful technology is a reality. *Now* our minds are fair game.

There is much good that can come from brain-machine interface, but the degree of good depends on whom is wielding the technology. Murdoch was not necessarily wrong in what he did, but perception is reality.

And he perceived a reality that taps the mind in very powerful ways. Thus, it takes others to understand and question the technology to govern the potential it holds. Murdoch is not alone in studying brain-machine interface, but it is a small crowd who wields great power.

My intended audience for this particular piece is the 18- to 30-year-old male and female demographic who are watching this once-fantasy concept quickly become a reality. Four out of five of my referenced movies came out between 1995 and 1998 (*Dark City*, *Ghost in the Shell*, *The Matrix*, and *What Dreams May Come*).

Their targeted audience are the generations who are now attentively reading brain-interface technology's headlines, supporting the products, and even making the technological decisions. "On his 23rd birthday, having boosted the power of his Haier brain-machine interface remote, Murdoch was watching *What Dreams May Come*, and a glitch in the headset shot critically high volts into his temples."

Whether or not these readers are looking through goggles of bizarre mentality and/or a broadened awareness of mental illness, this story should feel pertinent and persuasive. This particular piece should speak to my particular audience because its intention is a dark social commentary. Moreover, this tale strives for a sharp, dreary tone that other writers have used when tackling this mercurial technology.

Together, they make a sublime wax to polish the shady side of the proverbial cog-nitive coin.

"*Thought is real. Physical is the illusion. Ironic, huh*?"

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English 122

Instructor Braziller

January 1, 2012

Thinkerin' & Tinkerin':

The Bean-e-Lectrode

Explanatory Note

The overall purpose of this piece is to bring the appeal of brain-machine interface and neurofeedback to the younger masses. Toys such as the The Force Trainer (The Force™) and Mindflex (Mindflex™) introduced the powerful concept of brain-machine interface and neurofeedback to children. However, they are merely gateway toys to much more powerful, surreal realities.

As shown and inspired by *Dark City*, *What Dreams May Come*, *The Matrix*, and *The Matrix Reloaded*, endless environments can be altered with the right kind of mind. "[S]cientists have discovered that they can 'hear' a single neuron talk by placing a tiny electrode right next to it in the brain tissue" (Cobb 3). This cap has the same concept. It just looks cooler.

The hat achieves this purpose by offering the buyer the ability to control "everything." The advertisement suggests turning a city building into a living mailman, giving one's dog in heaven a swing, or creating a tree monster made out of various candies. The "beanie" aspect is a vintage take on toys with which most people are comfortable. Then it is mixed with a very modern concept that is simplified with the electrodes connecting from the hat's propeller to its base. The propeller beanie is "emblematic shorthand for science fiction fandom" (Beanie, par. 7), and it takes science-fiction concepts once again from fiction to reality.

I achieved this purpose more specifically with inspiration from toy advertisements in the backs of comic books and magazines. Bean-e-Lectrode offers endless manipulation (within reason) – a concept very tempting for anyone, especially kids. Above the child's head, in a thought-bubble-like fashion, are three environments: a city, heaven, and reality. It is suggested that each is grounds for manipulation.

Each environment blends into the next and is slightly vague so that the buyer investigates further. And each basic image is in grayscale and accented with vivid colors to show the fun to be had with the power of the mind. The colors of the hat are analogous, and they match all the alterations the child imagines. The child's purple eyes are complementary to the "colors that are next to each other on the color wheel" (Home, par. 5), and they balance the vivid colors with a regal, attention-grabbing color.

The thought-bubble shows a building shaped as a mailbox now posing as a mailman. Then there is a stairway to heaven with a dog and a swing underneath. Finally, a semi-candy tree creature with a diabolical grin completes the trio. The mailbox building is the Wells Fargo Center building in the Denver city landscape. I think it is a pleasant homage to our fair city, and I have always loved its shape. Always. Making it a mailman just seemed to be a natural move. It has no face, because when I anthropomorphized the building as a kid, it never did either.

The dog swing under heaven is for kids who would likely worry that their dear, dead doggie is being taken care of upstairs. A dog is a kid's best friend – or any pet, in fact. Yet, candy can be a close second-place companion. Enter the candy tree. Based on the logic of the Tree of Life and the Tree of Knowledge, I believe a tree symbolizes our very realities. Plus, I believe a child would take a Wonka-esque spin and turn it into a mischievous candy creature.

The child appears intrigued by the endless power. Her vision goes through the Bean-e-Lectrode to the brain-control interface landscape above her head to the top of the page. Here the term "Control…" is boldly introduced and is the first element seen in the advertisement. It suggests that anything is controllable with the simple cap. After this visual romp through the page, the viewer of the advertisement discovers the slogan, "Thinkerin' Tinkerin'."

It is a fun, simple, and appealing way to explain to children that when they think about something being changed, it is. Then there is the name of the product, "Bean-e-Lectrode." It is a combination of "beanie" and "electrode" with a cool "e" in the middle.

Finally, there is Murdoch's MentalRental company website, "mental-rental.net" (this innocent rhyme suggests that their products borrow the user's neurons to create wonderment through the company's toy gadgets). You have to spend neurons to make neurons. This is all meant to keep the advertisement whimsical, but professional. The advertisement's simple statement to control everything with a mere cap is mysterious and well worth "$20."

This piece speaks mostly to young comic book readers. The hat is in the same vein as "X-Ray Specs," "Money Maker," or even "Kryptonite." However, this product truly does work for those willing to spend the money. The beauty of such an item being advertised today is that the Internet will quickly decide its fate. Whether or not it is a scam will scream across forums and headlines. Thus, the audience is much broader than just the kids. The children's friends, parents, parents' friends, and any other fan of brain-machine interface (and absolute power) are invited to take a spin.

Specifically, the piece addresses the audience with a child imagining the unimaginable. The fact that all the boring gray environments are re-imagined in lime green, green, and yellow suggests that the matching color hat is wielding this power. The trio of colors implies luck, vigor, and envy. These are all crucial elements when manipulating matter.

I use ethos, logos, and pathos in various ways. Ethos: As an advertisement, people tend to grant much credibility to the product. Even an absurd claim in the back of a comic book is much more believable with a website and a reasonably priced item.

Logos: In a world of ever-growing brain-computer interfaces (even for kids), the Bean-e-Lectrode is worth a little research. And if only a small handful of customers prove that it works, then credit card numbers can be heard being entered around the world. Pathos: This is the advertisement's main angle, emotion. Every person feels like they hold more potential than they show. If a simple cap is offered to unlock the secrets of a city, heaven, and reality itself, then things look much less bleak. There are countless office workers who played with The Force Trainer on its release, so an item that offers so much more should appeal even more. These rhetorical appeals are used to address the purpose/audience in two main groups:

9 - 17 (Males and Females)

This age group tends to look less toward credibility and more toward fun-ability. The somewhat shady promise of the item is circumvented, as it is promised in a comic book – the Holy Grail of literature for many in this age group. A child's mind is also more willing to give allowances to logic if the promise is the right fit – like an electrode in the brain. And when the hat promises super abilities, and a credit card is available, emotional logic can become quite clear. If kids are nothing else, they are emotional. X-ray specs have promised super powers for decades, and as Sony® night-vision video cameras recently made this a reality, so does the Bean-e-Lectrode.

18+ (Males and Females)

The above also appeals to this older age group. Adults, however, look more toward credibility. Despite the fact that the comic book advertisement does appeal more to kids (and the adults of these kids), the website's plethora of material puts any suspicions to rest. There are videos, testimonials, and a one-month trial period.

And if all that fails, seeing the kid down the block turn a little tree into a giant candy tree should do the trick. Ironically, the Beanie-e-Lectrode may be more logical to adults – especially those familiar with the increasing powers of brain-machine interface and neurofeedback. The details will still be vague for many, but many people are unsure exactly how their toasters or iPods work either. While suffocating from dead-end jobs or office politics, people want an escape. And what better journey to take than through a city, heaven, or reality itself? Fun is fun.

I chose this genre because I too was hypnotized by comic book advertisements. In fact, I grew up in the 1980s where toy advertisements of all sorts intrigued, enticed, and even stalked my sister and me at breakfast time – if not seemingly all the time. I tried to address and subvert the conventions of advertisements by giving it a vintage comic-book feel. Instead of promising the impossible on the comic's back cover, Bean-e-Lectrode promises what is beyond possible – in a stylish cap no less.

My genre selection helped me achieve my purpose and address my audience by bringing awareness to the power of neurofeedback and brain-machine interface. Using inspiration from the most popular films of the technology (*Dark City*, *Ghost in the Shell*, *The Matrix*, and *What Dreams May Come*), I targeted the cutting-edge technology to the youth. It is the youth who will build the future, so they should learn to make the most of the present. Plus, MentalRental makes a profit from their interests. Children love technology, and their parents always love a great deal.

Be it in a comic book or magazine, people love shopping for a new gadget. If it has immense power, that is certainly all right too. The Bean-e-Lectrode promises to grant any wish that involves manipulating matter. And as the item's fine print reveals, it can only be used for good. The connections to the user's frontal lobe assure this. The morality is free of charge.

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