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THE EFFECTS OF TECHNOLOGY
ON LITERACY(S)

by

THOMAS GLEN PETERSEN

A THESIS

Presented to the Faculty of the Graduate School of the
MISSOURI UNIVERSITY OF SCIENCE AND TECHNOLOGY

In Partial Fulfillment of the Requirements for the Degree

MASTER OF SCIENCE IN INFORMATION SCIENCE & TECHNOLOGY

2009

Approved by

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ABSTRACT

Technologies have enhanced lifestyles in ways only dreamt of a few decades ago - or have they? The Amish, by choice, live successfully without dependence on modern advances such as electricity or gasoline-powered tools in a self-supporting community. They maintain their own schools taught by an Amish community member who holds only an eighth-grade education.

In 1969, John Andrew Hostetler published a report observing and describing the Amish socialization and educational patterns which compared Amish children in all Amish schools, Amish in public schools and non-Amish children from public schools in rural areas of the same approximate size. Five measures from Hostetler's report collected data from a military community public middle school in mid-Missouri on two consecutive days during December, 2008 to evaluate differences between a technologically limited culture and pre/post Internet cultures.

The 2008 scores were lower than the Amish for the "Draw-a-Man" measure but the anime drawing style utilized by several of the 2008 group only when drawing human figures was striking. Drawing is a form of self expression and anime is an art style "imported" from Japan. This assimilation exemplifies the degree to which the figure and ground relationships of human character have become distorted by technology.

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1. INTRODUCTION

1.1. INTRODUCTION

The origin of "creation" is an age old debate, no pun intended, which will continue until the architect and/or builder accepts responsibility, and even that will undergo scrutiny. To avoid pious polemics, the origins of "creation" will be treated academically for the purposes of this discussion. Other phenomenon will be mentioned in a very general sense for rhetoric.

1.1.1. Life. Biological creatures are considered living, yet all things big and small undergo a cycle of processes, chemical or physical during its existence, or lifespan.

1.1.1.1. Galactic life. Let us begin with the formation of the solar system. When a star explodes, if it does not undergo a sudden gravitational collapse (black hole), the resulting debris of dust, gas, and plasma is known as a nebula. Current science follows the nebular hypothesis model of formation and evolution of solar systems. In this model, over time the particles' gravity within a massive and dense interstellar cloud of dust and gas begin to cluster. During this galactic homeostasis, the clustered clumps of debris have the potential to specialize as a planet or star.

1.1.1.2. Micro life. At the micro level, eukaryotic cells undergoing mitosis bear a striking resemblance to the supernova of a star. During the early stages of mitosis, the cell organizes and condenses genetic material (chromatin) into chromosomes. The chromosomes then align at the center of the cell in preparation for the later stages when it separates into two daughter cells. The specific causes of cell differentiation and their specialization is believed to occur from the chemistry of an organisms biological environment and the cells just "know" what needs to be done. Sometimes, the cells get confused and construct malformed

structures. In extreme cases the cell becomes cancerous, leading to the premature demise of the organism.

1.1.1.3. Human life. Stepping from the cellular level where the cells work together to form an organism to the organism's viewpoint, a curious transformation takes place. Much like the biologic environment triggering differentiation and specialization of cellular development, the organism's physical surroundings trigger necessary physical adaptations such as standing upright for an unobstructed view, or an extended reach. Picking up a stick and maneuvering out-of-reach objects within grasp is another strategy to enhance capabilities and increase variety. This arm extension has some drawbacks. The organism has very little dexterity with this extension, which is limited to poking, pulling, or striking and must be transported and protected if reuse is warranted. In wooded areas, fallen branches are plentiful and if the original becomes damaged or simply ineffective, it may be discarded and a new one acquired, a luxury not possible with the biological appendage.

Variety and preference eventually supersede requirements with desires. Acquiring materials an organism is ill-equipped to manage requires additional innovations, replacing physical with cognitive evolution. Rather than the body adapting to the environment, the mind becomes more efficient at devising mechanisms to modify the environment to meet impulses within the limitations of its body. One of these innovations was language and the modified environmental object is the cooperation of other people via verbal communication.

R.I.M. Dunbar remarks:

[...] a strong case has been made for the suggestion that the principal selective advantage for the evolution of language was social rather than environmental or technical (Dunbar, 1993, 1996). This argument rests on the claim that language evolved to supplement (and ultimately largely to replace) grooming as the principal mechanism for social bonding

within the later hominid lineage, once group sizes had begun to exceed those that could be sustained by the more conventional primate mechanism of social grooming. [2, 257]

One of the key components of this claim lies in the fact that:

Grooming is an extremely effective stimulus for the release of endogenous opioid's (Kevene et al., 1989), as well as other endocrines (e.g., oxytocin: Unvas-Moberg, 1989) that seem to act as the primary reinforcers for affirmative social interaction. [...] this pharmacological underpinning for grooming seems to be crucial in facilitating social bonding, perhaps because it creates a sense of pharmacological "warmth" that facilitates intimacy and trust. [2, 257]
 [...] the effect of grooming on the groomee is physiologically relaxing: heart rate and behavioral measures of anxiety (e.g., scratching) decline when an animal is groomed (Goosen, 1981). [2, 260]

Unfortunately:

[...] language fails to address one of the crucial mechanisms that seem to allow grooming to facilitate bonding. In primates, the bonding process has a distinctive emotional component in the form of the pharmacological kick associated with the release of endogenous opioids (Kevene et al., 1989) that makes grooming pleasurable and reinforces [...] the social relationships involved. Where in language-based interactions is the equivalent reinforcer? [2, 264]

The impact of this lack of reinforcement will be discussed in the *Technology Independent/Dependent* discussion.

1.1.1.4. Socio-life. Although similar, each organism is unique with talents and capabilities or "specialties" that make them very effective at completing one or more survival tasks. This specialization may be the direct result of the ability to fashion and effectively wield a particular tool or device that aids in productivity. Or a person just has "the knack" for a task and because of this specialization, the advantages of teamwork became apparent and humans began to congregate with members of the group performing their task specialty for the benefit of the group. Collectively, everyone benefits from each other's contributions.

[...] the strength of one man is so unequal to his wants, and his mind so unfitted for perpetual solitude, that he is soon obliged to seek assistance and relief of another, who in his turn requires the same. Four or five united would be able to raise a tolerable dwelling in the midst of a wilderness, but one man might labour out of the common period of life without accomplishing anything; [...] Thus necessity, like a gravitating power, would soon form our newly arrived emigrants into society. [3, 4]

As the society increases in size, a governing body must take shape to manage communal affairs. Organizations are formed to specialize with the details of a particular area to ensure public homeostasis is achieved and maintained. As people migrate, new communities are built and the cycle repeats. The formation of a society almost mimics the creation process of a solar system when substituting the dense cloud of dust and gas with a nebulous group of people. There is one small, but significant difference, a solar system forms based on natural phenomena such as gravity, pressure, and heat. A society is formed as the result of man's need to manipulate nature to accommodate his desires. Desire is man's greatest asset *and* liability.

While civilization has been improving our houses, it has not equally improved the men who are to inhabit them. It has created palaces, but it was not so easy to create noblemen and kings. [3, 43]

Importance is a relative and subjective term which varies greatly within contexts and individuals. As technology reduces the amount of time and effort involved to finish work, man is freed to pursue other tasks. In some instances the time saving may be reinvested in the task effort to enhance workmanship or build a reserve. It may also be spent on leisure activities.

1.1.2. Physical Law. The natural laws governing the creation of a solar system such as time, temperature, and gravity also apply to the matter within it. Sir Issac Newton

described three laws of motion in his work *Philosophiæ Naturalis Principia Mathematica* published in 1687, which are fundamental to classical mechanics.

1. Law of Inertia: A body remains at rest or along a straight line at a constant speed unless acted upon by an outside force. [1, 30]
2. Law of Acceleration: An objects' acceleration is proportional to the force acting on it. [1, 31]
3. Law of Action/Reaction: When one body exerts force on a second, the second body exerts an equal and opposite force on the first. [1, 32]

1.1.2.1. Newton's Laws of Gravitation. Newton also explained his theory of universal gravitation which states, that two bodies attract each other with a force that is directly proportional to the product of their masses and inversely proportional to the square of the distance between them. [1, 33] This formula mathematically proves Kelpers three laws of planetary motion around the sun.

1.1.2.2. Equilibrium/homeostasis. The homeostasis of a solar system is balanced with the principles Newton identified. None of the physical laws mention "preferential variety" or "leisure" which is precisely how human's puppet the governing natural laws to meet their fancy. As humans have been bending the laws, reactive forces have exceeded their yield limit with anisotropic deformation, and over time the puppeteers seem to have become the puppets.

1.1.3. Interaction of Physical Laws and Life. A few scholars have noted this phenomenon and identified the consequences associated, each from a different perspective with similar results.

- Hans Haas
- Marshall McLuhan
- Neil Postman
- Benjamin Lee Whorf

1.1.3.1. Hans Haas. Hans Haas refers to man's technological developments as artificial organs.

[...] artificial organs were discoveries rather than products of manufacture, and the special intellectual feat associated with them consisted of recognizing that the hand's efficiency could be improved when it was used in conjunction with a foreign object. [...] The word 'artificial' thus does not necessarily imply 'artificially manufactured [but] artificially appended to our bodily organization. [...] Artificial organs may thus be living creatures [...] such as horses, oxen or humans. [5, 103-106]

Haas identifies six advantages of the artificial organ to the biological:

1. Organism biologically generated sustenance is not required for the artificial organ to survive.
2. Detachable
3. Interchangeable
4. Shareable
5. Fabrication by organism not required.
6. Available for rent/purchase.

These advantages do have a disadvantage, protection. "Natural organs cannot be stolen. [...] A lizard may bite off an insect's wings, but cannot use them to fly." [5, 104]

Artificial organs have potential use by anyone with the ability to handle it. In *Guns, Germs and Steel* [6], Jared Diamond reports the people of New Guinea used stone tools prior to the arrival of the Europeans who brought the steel axe. Previously, the stone axe was a dignifying status symbol for the males in the village. The introduction of this artificial organ instantly collapsed the social hierarchy and gender dominance. Now if a man's axe becomes dull he may sometimes borrow a sharper axe from a woman.

Although many organs are of no use to a sleeping animal, they still have to be nourished. Yet in man we are confronted by a creature which can discard organs and exchange them for others. Far from being natural or obvious, this is an enormity

from the evolutionary standpoint – an advance laden with unfathomable consequences. [5, 101]

The steel axe artificial organ does not require feeding, but rather maintenance for its continued usefulness and may be acquired or discarded at will, promoting sharing and upgrades. Although humans have no idea how-to and therefore do not consciously undertake the task of maintaining organic tissue, it is a process the organism must complete for the sustainment of life. In a general sense, in contrast to biological organs, the artificial are detachable, interchangeable, sharable and even purchasable. Similar to the biological organs, organisms are not required to understand their production and manufacturing process to make use of them and this is where the dilemma begins with the artificial.

Prior to speech, most communication was visual and learning took place through personal involvement. Firsthand experience or direct observation provided practical knowledge. Language and speech form an audible communication channel between two or more people using sound waves as an artificial organ that mimics the central nervous system function to relay information, e.g., "the red berry is poisonous." The written word turned the sound of speech into a visual medium, recording more dialogs than could be remembered for all to see and the literate to read with the conversion of experience into words.

Having succeeded in improving our bodies, we passed on the formulas for newly developed structures to others – and what is more, directly (via speech and writing). From then on, the whole laborious system of mingling hereditary factors by means of the sexual act became obsolete. The tempo of potential improvement – in the sense of adaptation and accretion of power – was accelerated a hundred thousandfold. [5, 160]

Quite naturally, they take over the evolutionary work that Darwin had seen in the spontaneity's of biology. [7,37]

The concealed consequence of this transmutation is the functional alteration of biological organs. The human body is physically striving to reach homeostasis in an

imbalanced environment where "... man uses artificial organs not merely for productive purposes but also for the attainment of pleasure." [5, 157] It may be likened to a physiological withdrawal from the release of the endogenous opioids that would occur from social grooming. Money, an artificial organ used to convert any form of input or output, makes the storage of labor possible which man exploits by transferring the responsibility of undesirable tasks or risks to others. *If learning takes place through experience, but personal involvement can be avoided for a price, what is this absent participation paradigm teaching?*

Any invention or technology is an extension or self-amputation of our physical bodies, and such extension also demands new ratios of equilibrium's among the other organs and extensions of the body. [8, 45]

Self-amputation forbids self-recognition. [8, 43]

1.1.3.2. Marshal McLuhan. Similar to Haas' "artificial organs," Marshall McLuhan posits "All media are extensions of some human faculty- psychic or physical," and that "any understanding of cultural change is impossible without a knowledge of the way media work as environments." [9, 26] In *Laws of Media*, McLuhan remarks "One thing Haas overlooks is the absence of biological or psychological means of coping with the effects of our own technical ingenuity." [10, 95]

Over time, man has become spoiled by the luxuries he has created for himself as the result of over-utilizing his technology to the point of dependence and entitlement. The "evolution" of an archetypal mindset where a lavish lifestyle is believed to be effortlessly deserved by a simple transfer of responsibility and if it requires any effort, there should be a cliché.

Environments are invisible. Their ground rules, pervasive structure and overall patterns elude easy perception. [9, 86-87]

McLuhan devised the Laws of Media that reveal the media environment when answering four questions about the invention:

1. What human trait does it enhance or extend?
2. What established way of doing things becomes obsolete?
3. What previous form (already obsolete) is retrieved?
4. What is the reversal (opposite) when pushed to an extreme?

The underlying notion behind the laws involve the perception and consciousness associated with the "swapping" of focal point (figure), and the largely ignored surroundings (ground).

1. Enhancements are rather straightforward since it is generally the impetus behind the innovation. A rock employed as a hammer is an extension of the fist, the wheel an extension of the foot, and writing an extension of the brain (memory) and an ear for an eye. The ground becomes figure or a figure becomes intensified.
2. Obsolesce characteristics most notably are the opposite of the enhancement where figure returns to ground, but some attributes are side effects or impact.
3. Retrieval tends to be serpentine. A medium is a "container" for content, and oftentimes that content is a previously obsolesced medium. For example if when analyzing a television (medium), the content is the "programming" which is itself a medium as the "show" which retrieves the "theater" as a medium with the content of the "play" which retrieves the "written story" as content which retrieves "oral tradition (speech)" as medium where "past experience" is the content. "Ground becomes figure through the new situation." [10, 228]
4. Reversal represents the consequences or effects when pushed far enough. One person is an individual, together; many persons constitute one group, a complimentary configuration.

The laws are best represented in tetrad form. Where one of the four laws are placed in one quadrant and the media being analyzed in the middle because media effects happen at once, the instant the artifact comes into existence. The emerging attributes or characteristics are tentative and represented as metaphors.

For example:

1.1.3.2.1. Written Word. Figure 1.1 depicts a tetrad for the Written Word.

The alphabet and print technology fostered and encouraged a fragmenting process, a process of specialism and detachment. [9, 8] The fragmenting of activities, our habit of thinking in bits and parts-'specialism'-reflected the step-by-step linear departmentalization process inherent in the technology of the alphabet. [9, 45]

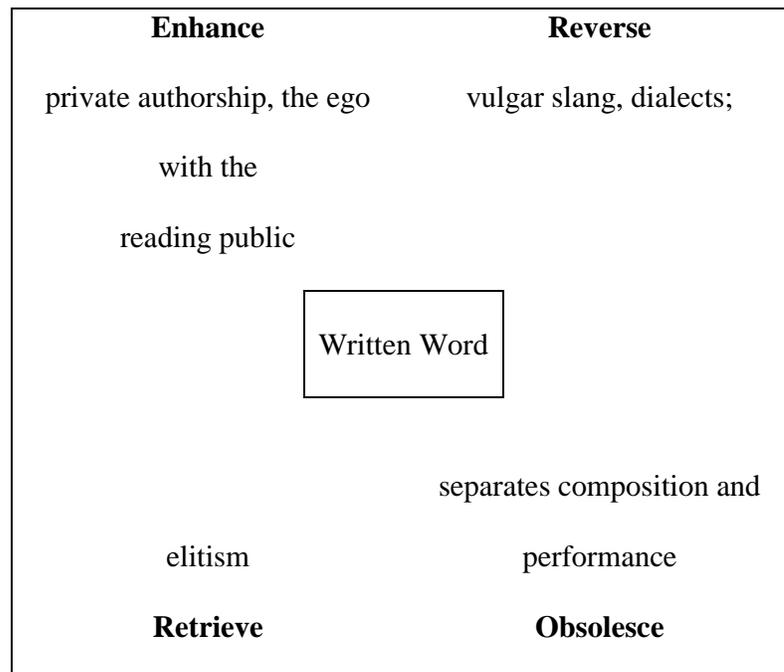


Figure 1.1 - Written Word Tetrad [10, 154]

1.1.3.2.2. Spoken Word. Figure 1.2 depicts a tetrad for the Spoken Word.

Until writing was invented, man lived in acoustic space:
 boundless, directionless, horizonless, in the dark of the mind,
 in the world of emotion, by primordial intuition, by terror.
 Speech is the social chart of this bog." "Whence did this
 wond'rous mystic art arise, Of painting SPEECH, and
 speaking to the eyes?" [9, 48]

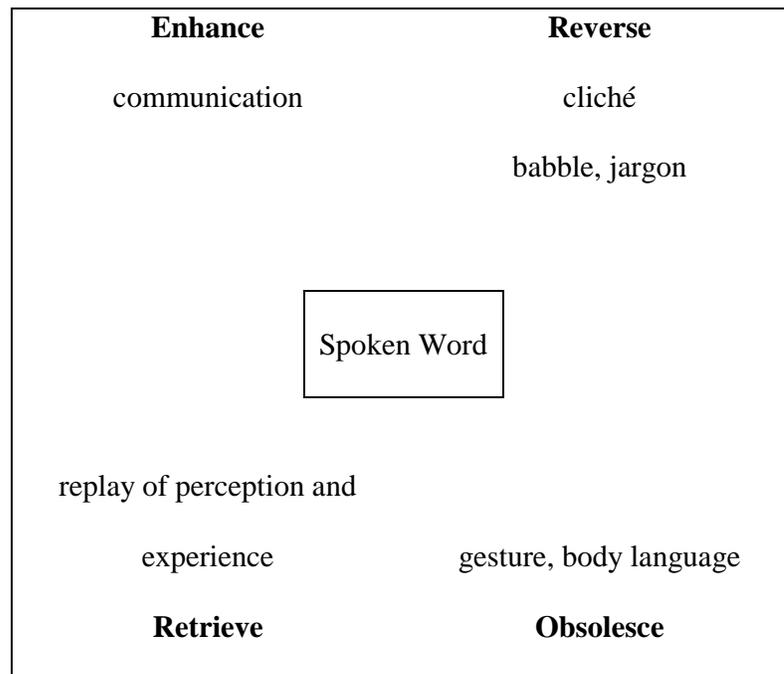


Figure 1.2 - Spoken Word Tetrad [10, 186]

1.1.3.2.3. Grooming. Figure 1.3 depicts a tetrad for Grooming.

[...] language evolved to supplement (and ultimately largely to replace) grooming as the principal mechanism for social bonding within the later hominid lineage, once group sizes had begun to exceed those that could be sustained by the more conventional primate mechanism of social grooming. [2, 257]

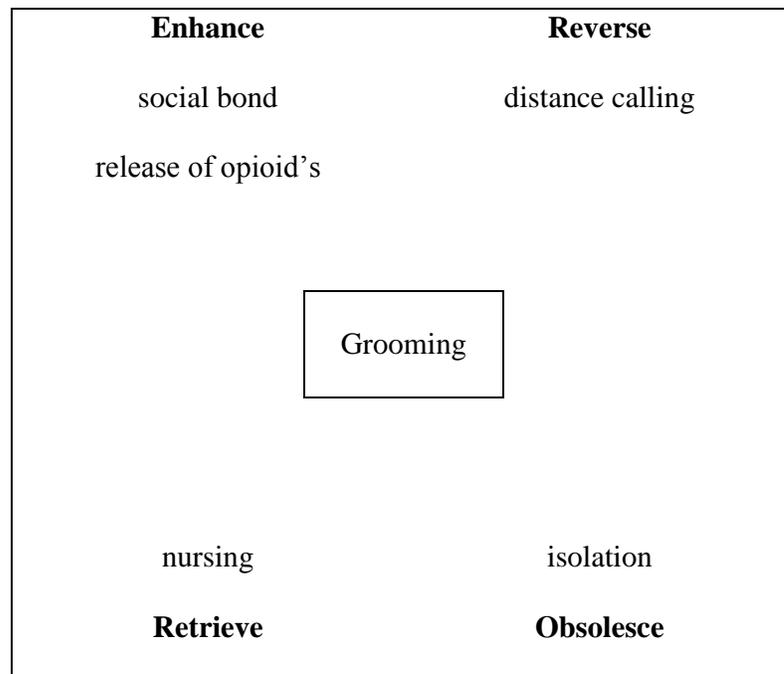


Figure 1.3 - Grooming Tetrad

[...] while the 'enhance' and 'obsolesce' parts seem to concern morphology, 'retrieval' and 'reversal' seem to concern metamorphosis - the embedding of one situation on another." [10, 228]

Looking back at earlier media, the effects are straightforward. Mentioned earlier, all content are previous mediums, but what happens when evaluating current mediums and their content?

1.1.3.2.4. Cell Phone. The cell phone has become more popular than underwear and almost as important as air to some users. Figure 1.4 depicts a tetrad for the Cell Phone.

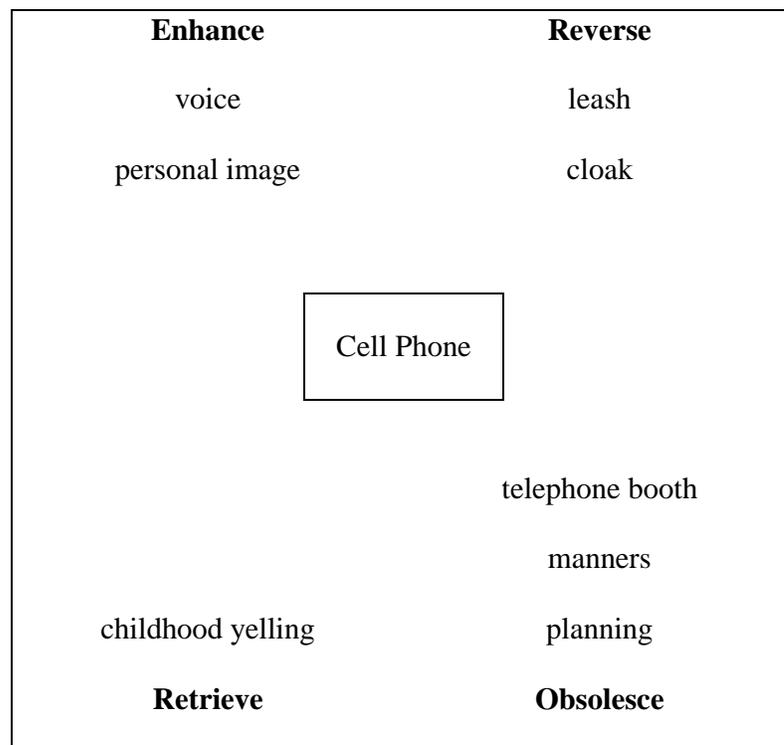


Figure 1.4 - Cell Phone Tetrad

1.1.3.2.5. E-mail. Electronic messaging is a useful personal and business tool. Figure 1.5 depicts a tetrad for E-mail.

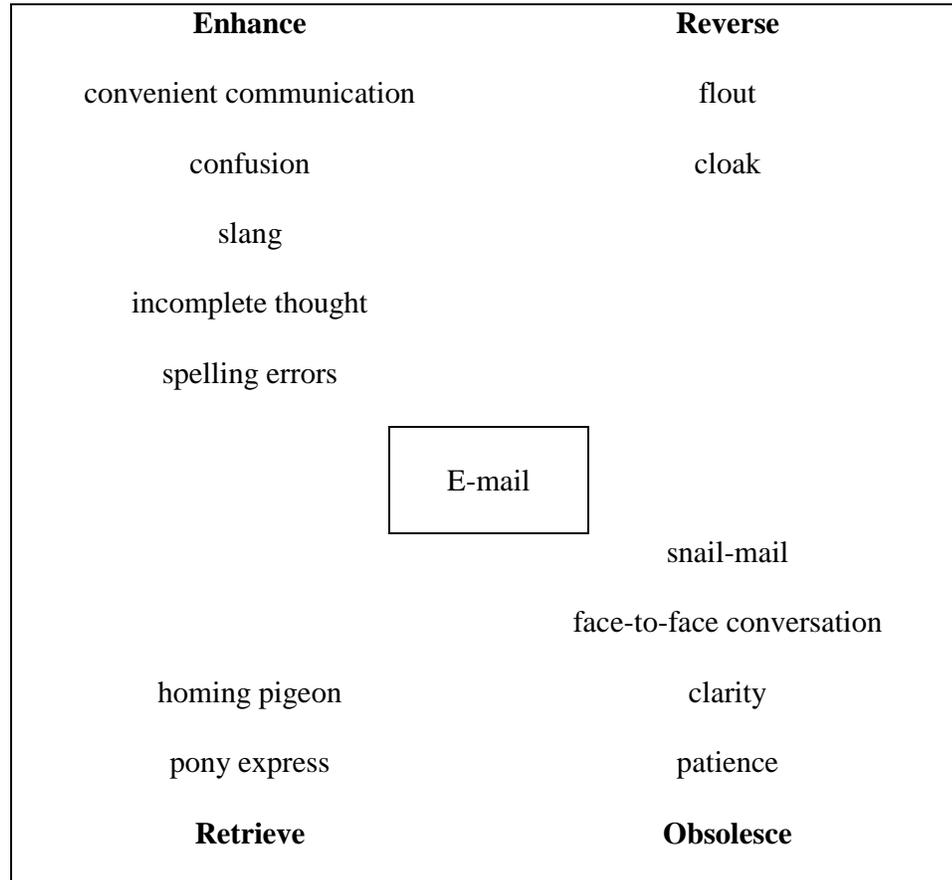


Figure 1.5 - E-Mail Tetrad

1.1.3.3. Neil Postman. Frank Lloyd Wright has been quoted as saying "'Form follows function' — that has been misunderstood. Form and function should be one, joined in a spiritual union." Due to manufacturing costs or design issues, the function is often dictated by the form. For example, the QWERTY keyboard layout of typewriters was originally organized around mechanical limitations of the device. The QWERTY layout is purposely very inefficient because when more than one key was pressed at once, or too quickly, a type-bar clash occurred and the type-bars became entangled, which the typist had to untangle before continuing. Subsequent functional designs and keyboard layouts were able to avoid this limitation; however the QWERTY keyboard layout maintained popularity because people had become accustomed to it. And that is the point of Neil Postman's book, Technopoly: The Surrender of Culture to Technology [11] where Postman defines three types of human cultures: tool using, technocracy, technopoly, and the relationship between societies and their tools.

[in tool using cultures] The tools are not intruders. They are integrated in to the culture in ways that do not pose significant contradictions to its world-view. [11, 25]

Tool using cultures invented tools for two reasons; "solve specific and urgent problems of physical life" or "to serve the symbolic world of art, politics, myth, ritual and religion." [11, 23] The label of "tool using" cultures has not been issued due to an implied lack of sophistication but because ideology and theology governed the physical world and cognition.

In a technocracy, tools play a central role in the thought-world of the culture. Everything must give way, in some degree, to their development. The social and symbolic worlds become increasingly subject to the requirements of that development. Tools are not integrated into the culture; they attack it. [11, 28]

The mechanical clock was originally used for religious coordination but when "'King Charles V' ordered all citizens of Paris to regulate their private, commercial, and industrial life by the bells of the Royal Palace clock [,]" the clock transformed from "an instrument of religious observance to an instrument of commercial enterprise." [11, 27]

Technopoly eliminates alternatives to itself in precisely the way Aldous Huxley outlined in Brave New World. It does not make them illegal. It does not make them immoral. It does not even make them unpopular. It makes them invisible and therefore irrelevant. And it does so by redefining what we mean by religion, by art, by family, by politics, by history, by truth, by privacy, by intelligence, so that our definitions meet its new requirements. [11, 48]

In a Technopoly, technologies dictate task procedure and man succumbs to the lure of improvement(s). The benefits of typing a document as opposed to writing it using goose quill and hand offset the learning requirements of using the inefficient keyboard layout of the typewriter. Currently, one of society's preferred communication methods has been assigned to "texting" because of the geographic convenience a cell phone or PDA affords along with the cross-platform/tool connectivity. From a technical standpoint, this technology is absolute genius; however, the input interface of the device often determines the quantity and quality of the message content input and sent. For example the phrase, "the quick brown fox jumped over the lazy dog" uses every lowercase letter in the Latin alphabet at least once. With a QWERTY keyboard, entering that phrase constitutes 44 key presses, including spaces. A telephone key pad reduces the 26 keys required to represent each letter to 8, by assigning 3 characters per key, with the exception of 7 and 9 which contain 4. Spelling the phrase above with the keypad of a phone requires 83 presses including spaces. Unlike the efficiency, clarity and consistency obtained with a typewriter as compared to handwriting, this communication interface does the reverse. With this innovation, convenience takes precedence over efficiency and users create much shorter alternate alphanumeric and

phonetic spellings for dictionary words, reducing the formality of the message content, destroy it actually, to facilitate easier input.

Postman poses a riddle to new technologies, "What problem does this solve?" and the solution is trivial, because the problem is the user/buyer and whatever they need to make them feel complete, connected, and part of the conversation.

What the advertiser needs to know is not what is right about the product but what is wrong about the buyer. [...] the business of business has now become pseudo-therapy. The consumer is a patient assured by psycho-dramas. [29, 128]

1.1.3.4. Benjamin Lee Whorf. The aforementioned scholars dealt primarily with physical media. Whorf dealt with "linguistic determinism" and the effects of the language medium on cognition. He argued that the grammatical structures of a language are the architect of thought and world view. On the surface, the concept seems trite since language is thought. Certainly, emotion can impact the state of mind, and humans have words for emotions so emotional words can trigger a reaction and alter the state of mind, but that is more physiological than linguistic and confuses correlation with causation.

According to Steven Pinker's book, The Stuff of Thought, [32, 135-136] a "[...] genuine demonstration of linguistic determinism must show three things" which indicate language has an impact on the structure of mind:

1. Speakers of a language would find it difficult, if not impossible to think in the same manner as speakers of a different language.
2. The language lacks epistemological constituents required for problem solving or reasoning, impeding clear thought and decisive conclusion.
3. Differences in thought must be directly related to the language, not the environment or culture.

There have been several attempts at providing a "genuine demonstration of linguistic determinism" to no avail. A popular example is Whorf's implication that the Eskimo's world view is altered from that of an English speaker due to the quantity of snow-describing words

of the Inuit. Other examples include cultures with few counting numbers such as the Pirahá and the Mundurukú or the spatial relations for speakers of Tzeltal and Tzotzil. Both fail linguistic determinism in terms of language determining thought, as culture and lifestyle determined the language. The Pirahá and the Mundurukú are hunter gatherer tribes where approximation will suffice.

1.2 DISCUSSION

It was once the job of the apostrophe to combine words and signify the reduction of characters. Word construction has been modified combining symbols, numbers, and letters to "more efficiently" represent an already polysemous word with the interfaces of electronic communication. For example, closing a letter with "sincerely" was customary at one time. These days the phrase "see you later" is commonplace which has been reduced to "l8r" when "texting" representing the English equivalent of "later." This reduction mimics, or retrieves, a form of the logo-gram which was intentionally ambiguous, "the kings and priests of ancient Sumer wanted writing to be used by professional scribes to record numbers of sheep owed in taxes, not by the masses to write poetry and hatch plots." [6] Not all "leet speak" is intentionally ambiguous, although in some communities the creativity of character combinations is believed to demonstrate a "prowess." Is creative *misspelling* the current Darwinism?

This rather gruesome example describes the transition from a tool using culture to technocracy occurring in Japan when:

The samurai, for whom swords rated as class symbols and works of art and for means of subjugating the lower classes. Japanese warfare had previously involved single combats between samurai swordsman who stood in the open, made ritual speeches and then took pride in fighting gracefully. Such behavior became lethal in the presence of peasant soldiers ungracefully blasting away with guns. [6]

The specialization of the self-disciplined samurai military tool serving as the artificial organ for the emperors' will was literate and respected as a result of the code of honor that governed their decision making and use of force. The gun could be purchased in bulk and distributed, required little or no training for use, did not have to be fed but was useless without materials such as gunpowder and shot, and if the owner was killed, the gun could be used by friend, or foe. If the weapon is very effective, the foe may reverse engineer the tool and create an improved version of their own.

Technologies offering a more efficient or effective "new way" of completing a task create an amusing conundrum. The "old way" worked fine for many years but is suddenly perceived as too difficult or unthinkable without the new tool. When researching the typewriter, the story a came to mind about a graduate student literally broke down and cried because she discovered a misspelled word (wrong alternate spelling) used (consistently) throughout her 64-page thesis and thought she had to first locate, then re-type each page containing the word. She chose to ignore the issue and it wasn't until after graduation that someone brought it to her attention, out of resentment because this person had to find and retype the pages. In this example, the typewriter had a similar effect on writing as the gun on the samurai with honorable warfare. Although no humans died because of the misspelling, morality was misplaced for convenience.

[...] if a rule has absolutely no exceptions it is not recognized as a rule or as anything else; it is then part of the background of experience of which we tend to remain unconscious. Never having experienced anything in contrast to it we cannot isolate it and formulate it as a rule until we so enlarge our experience and expand our base of reference that we encounter an interruption of its regularity. The situation is somewhat analogous to that of not missing the water until the well runs dry, or not realizing that we need air until we are choking.
[11, 91]

Returning to the samurai, their training and self-discipline instilled dignity and values warranting respect. Honor was the foreground of ethos and the firearm made it irrelevant and consequently obsolete when they took each other's place within the balance of the grounds. It would appear that responsibility should increase with the invention of the gun, but instead whoever shoots first wins. Would you rather be moral and dead, or alive with "justifiable morals" (it was either kill or be killed)? Either way, other artificial organs such as prescription drugs and alcohol exist to temporarily quiet the mind.

During the creation of a solar system, everything falls into place striving to reach equilibrium based on the principles Newton identified. With man's understanding of nature he has the ability to alter it as he sees fit according to his speculative outcome. With each new invention, man essentially removes an adult tooth of humanity leaving a gap that mostly goes unnoticed until more gaps than teeth exist and nourishment becomes compromised. Many of the technologies allow for individualism and an incomplete set of teeth. Rather than bite off the pieces of life he does not have the teeth to chew, he takes smaller, and more bites to receive the same amount of nourishment or modifies his diet to meet the new conditions. These extra bites require more effort and sustenance leading to frustration and consequently to the creation of dentures. Hence, technology has brought us to the prosthetic age of evolution where a belief that anything missing from man's existence can be manufactured as an artificial organ, physical or sensual. Man is handed a pair of dentures at birth and without teeth to sacrifice, the requirements and desires from all of his senses jeopardize his character, leaving holes in the souls that other new inventions try to fill.

Without a traditional family unit, love or affection has become object oriented, fragmented. "Daddy loves me because he works all the time to buy me what I want." What daddy is really doing is buying you artificial organs to transfer his responsibility and assume his role so that he can leave you unattended and conciliated while pursuing self interests with

a justifiable conscience that his parental obligations have been met. Since children have been removed from any type of survival responsibility in the home, electronic pacifiers are an effective method to foreground the adults goals while back-grounding "parenting."

[...] community itself functions as judge, and social sanctions serve as punishment. As with every pattern of behavior which has become habitual, these communal habits are associated with corresponding appetencies. The community clings to them stubbornly and becomes restive if prevented from indulging them by some outside agency. As the world became increasingly organized, these patterns overlapped more and more; many of them reduced others to absurdity, and new ones of wider scope took shape. The modern preference is for dismantling anything conducive to restriction, while retaining anything connected with sensual pleasure and, if possible, reinforcing it still further. [5, 139]

2. EFFECTS OF TECHNOLOGY ON LITERACY(S)

Education is an admirable thing, but it is well to remember from time to time that nothing that is worth knowing can be taught.

~Oscar Wilde

If learning takes place through experience, but personal involvement can be avoided for a price, what is this absent participation paradigm teaching?

2.1. TECHNOLOGY INDEPENDENT: TOOL USING - AMISH

The best way to answer the above question is to evaluate its opposite, the lifestyle of those who learned to live by life's rules, the Amish. Around 1727, the Amish arrived in Pennsylvania to escape persecution from the less disciplined Swiss Anabaptists (Mennonites) in Europe. Anabaptists believe that a person should be baptized by free will when they are old enough to understand the decision to make a choice about practicing Christianity.

[...] the Amish want the Bible to be taught and interpreted only in the home and the church [...] religion is taught all day long in the lessons and on the playground: in arithmetic, by accuracy and no cheating; in language, by learning to say what we mean; in history, by humanity; in health, by teaching cleanliness and thriftiness; in geography, by broadening one's understanding of the world; in music, by singing praises to God; on the school grounds, by teaching honesty, respect, sincerity, humility, and the Golden Rule. [13, 4] Golden Rule: *Therefore, whatever you want men to do to you, do also to them, for this is the Law and the Prophets (Matthew 7:12).*

Five themes are paramount to the Amish culture: "separation from the world, voluntary acceptance of high social obligations symbolized by baptism, maintenance of a disciplined church community, excommunication and shunning, and a life in harmony with the soil and nature." [14, 5-7] The crux of the Amish philosophy is humility, serving the community and serving God. For the purposes of this paper it will be assumed their focus *is*

GOD, Good Orderly Direction, a behavioral homeostasis that puts balance in humanity as Newton's Laws suggest the governing of solar system formation.

The goal of Amish schools is to prepare children for usefulness by preparing them for eternity. The Amish concept of an ideal school is one where children's God-given talents are encouraged to increase and their intelligence developed. [13, 4]

Most states require children to attend school until age 16 but the Amish do not believe in education past the eighth grade, which forces some youth to repeat the eighth grade until their 16 birthday.

The Amish know that adolescence is a crucial age in the socialization of their children; [...] the non-academic life of the public high school admirably prepares the students for participation in American culture. [...] Not only do children learn things they should not learn when they attend high school, they are also prevented from learning things they must know in order to live a successful life within the Amish community. [14, 102]

Because of this, some Amish communities have created their own vocational schools.

Social cohesiveness rather than intellectual creativity or critical analysis is the goal of Amish schooling. Therefore, in Amish schools the emphasis on values generally supersedes the emphasis on facts. However, factual material, though somewhat circumscribed, is learned thoroughly. Amish children are taught both by practice and by example to care for and support the members of the school and the community. [...] They believe that learning should be practical and lead to a disciplined life on earth, concern for others, and an eternity in heaven. [14, 111-112]

As the saying goes, "we reap what we sow." This relates to the crop and the farmer.

The Amish community has steadfastly refused to send their teachers for higher education beyond the eighth grade. They see danger in that exposure for their teachers. Furthermore they prefer to emphasize practical learning rather than 'book knowledge.' [13, 58]

The Amish are bi-lingual, speaking a form of German in the home and learning English in school to facilitate communicate with the world as a survival obligation.

[...] one problem we Amish have is in knowing how to pronounce English words. Many English words are not pronounced how they look. [...] much of our contact with the outside world is reading rather than radio and television, so we don't hear words pronounced correctly.[...] Many times I have been embarrassed upon finding that for years I have been saying a word wrong and didn't even know it. [13, 62]

Reading, [...], is the most important subject, since it is the foundation of every other school subject. [13, 6]

Since written messages are the main means of communication among Amish families, it is important that the school child be taught to have legible handwriting. Due to the lack of telephones in their homes and limited transportation facilities, the Amish rely on the postal system [...] [13, 7]

While the content of textbooks is restricted to those that are morally wholesome and those that do not teach about God (since that is considered sacred and should be done in the home and church), Amish children usually have access to a broad scope of reading material. [13, 42]

Amish schools prepare their children to be God-fearing, hardworking, and self supporting persons. They do not however teach them to be self-seeking, ambitious, and competitive.

Amish children learn to support themselves by the work of their hands. They learn basic business principles, how to borrow and lend money, how to sew their own clothes, plan and cook meals, prepare a field, and drive a horse and buggy team. Not all of this education happens in the schoolroom, however. The farm and home are seen as viable places for learning also.

An Amish child is taught not to have selfish needs of privacy, space, recognition, admiration, ambition, and rewards that a child in the larger society absorbs as birthright. [13, 88]

The Amish are a church, a community, a spiritual union [form and function], a conservative branch of Christianity, a religion, a community whose members practice simple and austere living, a familistic entrepreneuring system, and an adaptive human community. [15, 4]

The Amish, who have successfully kept radio, television and the movies outside their experience, have been virtually unaffected by Marshall [sic] McLuhan's (1962) revolution,

'the medium is the message.' They also have limited the printed word, accepting the Bible, but rejecting most of the material that flows from the world's printing presses. In their attempt to recreate the primitive Christian church, they have also returned to (or maintained) the oral tradition. By its very nature the oral tradition is social, it is tied to the community. Unlike the written work, where teacher and pupil never meet, the oral tradition requires personal interaction. Teaching within this tradition is by example as well as by word. [16, 154]

In summary, the Amish believe honest living and hard work builds character while serving God and community, being exposed to an alternative lifestyle by attending public schools during adolescence will expose them to "worldly" experiences that may compromise these Amish values. Competition is not stressed because it contradicts unity.

2.2. TECHNOLOGY DEPENDENT: TECHNOLGY - ENGLISH

To quote Erich Fromm, "Modern man is alienated from himself, from his fellow men, and from nature. He has been transformed into a commodity, experiences his life as an investment which must bring him the maximum profit obtainable under existing market conditions. Human relations are essentially those of alienated automatons, each basing his security on staying close to the herd, and not being different in thought, feeling or action. While everybody tries to be as close to the rest, everybody remains utterly alone, pervaded by the deep sense of insecurity, anxiety and guilt which always results when human separateness cannot be overcome." [17, 79-80] First let's define a couple of key words:

alienated: 1) To cause to become unfriendly or hostile; estrange, 2) To cause to become withdrawn or unresponsive; isolate or dissociate emotionally.

automaton: 1) A self-operating machine or mechanism, especially a robot. 2) One that behaves or responds in a mechanical way.

The following is an everyday example. Man wants to stand out from the rest of the herd, however must conform to the herd "rules" or "standards" of appropriation to feel accepted. Therefore he dresses like others in the herd, but modifies the outfit ever so slightly as to be different. He has the same accessories as everyone else in the herd, cell phone, MP3 player, etc. but in reality, all that is happening is he is achieving *sameness*, not the *oneness* sought. In order to fit in with the rest of the herd, members are compromising their own self and personal needs to satisfy the herd, making them feel isolated, alone and insecure.

Now when separated from their herd, they have the cell phone which serves a multitude of functions. One such function is it keeps them connected to their herd. Another such function is what could be considered "ignore mode." When someone is on the phone, most people have been conditioned to be courteous citizens and keep their voices down as not to interfere or interrupt the conversation. Also, since this person is involved in another conversation with someone not proximal, they do not have to engage in conversation with someone who is, hence "ignore mode." It seems as if the person on the phone is passively saying to everyone else, "You are not supposed to talk to me because I am on the phone and who I am talking to is more important than you right now, so I am important because this person needs to talk to me right now and you will just have to wait your turn if you want to talk to me! I will ignore you until I am ready to talk to you!"

Because of the "deep sense of insecurity, anxiety and guilt which always results when human separateness cannot be overcome" as Fromm described, people have difficulty holding normal conversations with complete strangers or those not in their herd. To escape this, the cell phone has the vibrate feature, and only the person holding the phone "knows" when it's vibrating. Because of the insecurities, and lack of self-confidence when speaking with someone outside of their herd, a cell phone user has the ability to switch a person into ignore mode, even if there aren't any callers! "Oops, I got a call I can't talk to you right now."

Automaton-ic response for many people when someone approaches is to engage in polite conversation. Social relations have become interchangeable and discard-able just like other artificial organs. After all, as Dunbar suggests, speech arose as a more efficient method to build a social bond than that of grooming. If a flea and tick picker could not do the job, a new one was found.

Long and short, is that humans have lost the ability to communicate without some sort of medium other than conversation. Ever notice how girls are wearing less, showing more but are more personally shielded and take offense when they receive attention from those outside the herd? A recent story at FOXNews.com, "Texas High School Orders Prison Jumpsuits for Offenders of Dress Code" [18] reports about Gonzales, Texas high schools attempt to enforce dress code. Some parents are complaining about possible humiliation from being seen in the jumpsuit so students have the option to serve in-school detention instead of donning the jumpsuit. When did it become the schools responsibility to dress students?

In a Technopoly, a "wealth without work mindset" answers the question, "*If learning takes place through experience, but personal involvement can be avoided for a price, what is this absent participation paradigm teaching?*" The current culture concerns itself with "what an education can do for me?" instead of "what can I do with an education?" An education, the purpose of schooling, takes backseat to a label, a status. It doesn't matter if knowledge can be applied; all that matters is the coursework has been completed. Sadly, some employer's primary concern is that an employee has the skills necessary to perform a task, and what better affirmation than a college degree? Well, other than the fact that a degree can be purchased, the coursework at some schools has been drastically modified regardless of educational effectiveness to meet the requirements of the medium such as on-line training, and enrollment takes priority over quality instruction, nothing. Any ambiguity or missing detail of this new method is solved by the guise now cliché, "collaborative problem solving

facilitating communication among students, broadening their horizons." In other words, a few come up with an excuse/solution, the rest corroborate, and it will be justifiable, even if wrong. Did someone say "wealth without work?"

Some on-line training reminds me of an amusing analogy in Alan Cooper's book, The Inmates Are Running the Asylum, where he equates poor software design to that of a dancing bear. A bear cannot dance very well, but who cares, the bear is doing something it was not "designed" to do, and that's pretty cool!

The prodigious gifts of silicon are so overwhelming that we find it easy to ignore the collateral costs. [19, 27]

Too bad *learning* is the *collateral* of "convenient education." In tool using cultures, education is a part of the life symbiosis. In a Technopoly, the "educational convenience" conundrum prepares us to look for an easy way to move from point A to point C, avoiding work/effort, where the real learning takes place which is at point B.

Children today are bombarded with educational toys labeled "edutainment" to keep them occupied while parents focus on things other than parenting such as managing the output from their time-saving devices. Since birth, "educational toys" have been occupying a child's time. It's no surprise when children reach school age they are easily distracted by other children and the classroom education must cater to the attention deficit of the students. This "edutainment" teaches "if learning isn't fun, it's not worth learning; education is just a toy for my amusement."

Reading, writing, and spelling are crucial survival skills and to a certain extent writing and spelling skills have been off-loaded to tools such as Microsoft Word, which provides real-time spelling and grammar checks. OpenOffice.org Writer will try to complete words once a few characters are entered as will some PDAs or Smart-Phones. How do you

learn to spell the word "communication" when it is only necessary to key the letters c-o-m and make a selection from a list of suggestions?

The dental hygienist once told a story about a high school kid who came in and was very disappointed by the fact she could not continue "texting" while the hygienist did her job. This situation illustrates one of the critical impacts of technology: self-absorption. McLuhan might suggest this phenomenon began with the creation of the printed book. In the oral culture an audience would experience an oratory. The book made stories a private and individual, isolated experience, a significant step towards community fragmentation. Oftentimes electronically managing the separateness caused by community dissolution takes priority over public safety as in the situation where a commuter train engineer missed a stop signal and collided with a freight train, killing 25 and injuring 130 others. [20]

Computerworld on-line magazine ran an article entitled "IBM Software Acts as Human Memory Backup" [21] that discusses a software product that collects important, but small details to serve as audio/visual cues to remember things. This artificial organ functions like a cross between memory jogger and Déjà vu. Other than the ethical miss-uses for a product like this, what are the human experience consequences? Granted, pencil and paper have been around for a long time but handwriting, as the name suggests, is a manual process so thought and effort are required to inscribe. At this point the software still requires a fair amount of human intervention, but in time the developers hope to automate the organization of collected data based on the context and data meanings itself. McLuhan makes mention of the fact that writing puts the brain (memory) outside of the body because once the memory is off-loaded to an external medium, memory is not required. The human is still required to retrieve the writing and read it but this new software will manage recording, storage, and recall.

2.3. DISCUSSION

There is a stark contrast between the Amish and Technopolistic cultures. In one culture individuals work together to maintain the homeostatic community, and they are responsible for being accountable to each other. The other focuses on a community to serve individuals regardless of individual contribution, *koyaanisqatsi*. Very little was said about education of the Technopolist's, because there really isn't much to say. They attend public or private school through the 12th grade which effectively prepares them for college or the "real world" as demonstrated by their scores on standardized tests. Some students enjoy the educational experience and actively take a part in their role of learning, others learn only to push the correct button or lever as a means to achieve their "deserved" reward, or is the label "deceived" reward more appropriate?

One striking difference not mentioned is the lack of publicly advertised Amish social dysfunction. When was the last time the Amish were in the news? It was probably when an "English man" broke into the school and murdered five children on August 22, 2007. What surprised many English was that a few Amish showed-up at the funeral for the killer. They did not attend as a cheap attempt to solicit pity or seek retribution, the Amish recognize he was a sick man and were there to *pray* for his family in their time of need. The Amish do not have dentures; they live life on life's terms and learn the lessons of life by living them. The English go through the motions of teething and have opportunities for the exposure to life, but they also have the choice to "opt-out" when they don't have the necessary teeth to chew the morsels life provides them. Regardless, nourishment must come from some place.

The deepest need of man, then, is the need to overcome his separateness, to leave the prison of his aloneness. The absolute failure to achieve this aim means insanity, because the panic of complete isolation can be overcome only by such a radical withdrawal from the world outside that the feeling of

separation disappears--because the world outside, from which one is separated, has disappeared. [17, 9]

The Technopologist's children are left alone to be raised by technology. If uncontrolled they will be exposed to mature content unsuitable for minors. Children have plenty of growing pains to endure as a part of life even in the "best" home life situations where parents take an active part in their lives. The absence of parenting multiplies the amount and types of separateness to overcome. Children often behave amorally to gain the acceptance of herd members and on July 10, 2008, children were seen pouring lighter fluid on a kitten and a 9 year-old set it on fire. Granted, as sick as it may be, the kid who set fire to the feline is probably not the first child to commit such a heinous act and it is only because of the Internet and a co-worker making reference to the appalling miscreant that the event made its way into this paper. By publicizing the event some people may mimic the act such as those inspired(?) by the Columbine High School shootings, like the 2007 Virginia Tech shooter and 2007 Colorado YWAM and New Life church shooter.

Is it not much better to have the child carry marks of the rod a few days than to have him leave a wake of rebellion and self-will behind him for a lifetime? [33]

The English have church and God as a part of their lives too, but it takes a different form. For example the Youth With a Mission (YWAM) missionary group in Colorado works with troubled teens to get their lives on track through service to God by helping others. "Rev. Jonathan Bonk, the director of the Overseas Ministries Study Center in New Haven, Conn., said that missions like those YWAM offers appeal to those looking for something other than the consumerist lifestyle.' They want to be attached to a cosmic project that gives their little lives some kind of sense of purpose or meaning,' Bonk said." [22] Exactly. Direction and purpose is something missing from many children's lives because of the separateness technology has the tendency to engender.

Organizations such as YWAM cannot help everyone and they have received "very serious" complaints from former staffers and families of members accusing the group of "brainwashing" and being a cult. On November 9, 2007, Matthew J. Murray whom had been expelled from the YWAM program three months earlier and inspired by Eric Harris, one of the Columbine murderers, returned to YWAM and killed two people, wounding two others. The next day, at "The New Life Church" about 90 miles away from YWAM, Murray killed two people and wounded three before he was shot by a concealed firearm toting church member and Murray finally took his own life.

On a side note, the establisher of "The New Life Church" mega-church, Ted Haggard, was forced to leave the fellowship in 2006 after allegations of a sex-for-cash relationship with a male stripper. [23]

[Considering the fact] even the clergy are turning into plagiarists. With sites like sermoncentral.com, sermonspice.com, and desperatепreacher.com offering easily download-able transcripts of sermons, more and more pastors, according to the Wall Street Journal, are delivering recycled sermons almost verbatim, without crediting the original author. [...] In our Web 2.0 world, it's just so easy to use other people's creative efforts; even our priests, whom we expect to be paragons of virtue, are doing it. [24, 144]

If love is a capacity of the mature, productive character, it follows that the capacity to love in an individual living in any given culture depends on the influence this culture has on the character of the average person. [17, 77]

Looking again at galactic life, if a star cannot generate enough energy to sustain itself, it may collapse creating a black hole. A similar effect happens to humans when their separateness cannot be overcome or their at-oneness cannot be achieved. People become depressed, collapsing on themselves and sometimes taking others, unwillingly, with them.

Not all separateness is overcome with violent acts. The Internet literally connects the world as a global village allowing for the creation of tribes for almost every interest, and

many people belong to multiple tribes/herds. In a 2004 study about how Americans use the Internet for faith and spiritual reasons titled "Faith On-Line" by the Pew Internet & American Life Project, it was discovered that out of the 128 million Internet users:

Some 28% of the on-line faithful said they had used the Internet to seek or exchange information about their own religious faith or tradition with others, while 26% said they had used the Internet to seek or exchange information about the religious faiths or traditions of others.

In a follow up question about the motives of those who got information about others, 51% said they did this out of curiosity so as to find out about others' beliefs, 13% said they did it for purposes of their own spiritual growth, and 31% said both those reasons were important to them. [25]

These numbers suggest people are interested in leading a spiritual life, but expect it to be like Burger King, where they can get it *their* way.

There is no great religious leader -- from the Buddha to Moses to Jesus to Mohammad to Luther -- who offered people what they want. Only what they need. [29, 121]

Children today are born to parents who grew up with the Windows operating system and grandparents raised by a television.

[...]

'Cause when love is gone, there's always justice.
And when justice is gone, there's always force.
And when force is gone, there's always Mom. Hi Mom!

[...]

In your arms.
So hold me, Mom, in your long arms.
Your petrochemical arms.
Your military arms.
In your electronic arms. [30]

"[...] the weight assigned to any form of truth-telling is a function of the influence of media communication." [29, 24] In Jesus' day, communication between mortals took place via writing and speech. Communication between the immortal and mortal was achieved

through supernatural events such as plagues, earthquakes, floods or burning bushes. With the power of electronic technology, mortal man has the ability to virtually perform immortal feats.

The aesthetic dimension to religion is the source of its attraction to many people. This is especially true of the Roman Catholics and Judaism, which supply their congregants with haunting chants; magnificent robes and shawls; magical hats, wafers and wine; stained-glass windows; and the mysterious cadences of ancient languages. The difference between these accouterments of religion and the floral displays, fountains and elaborate sets we see on television is that the former are not, in fact, accouterments but integral parts of the history and doctrines of the religion itself; they require congregants to respond to them with suitable reverence. [...] The spectacle we find in true religion has its purpose enchantment, not entertainment. The distinction is critical. By endowing things with magic, enchantment is the means through which we may gain access to sacredness. Entertainment is the means through which we distance ourselves from it. [29, 122]

Now that we live in an electronic environment of information coded not just visual but in other sensory modes, it's natural that we now have new perceptions that destroy the monopoly and priority of visual space, making this older space look as bizarre as a medieval coat of arms over the door of a chemistry lab. [7, 7]

When the natural, pleasure inducing oxytocin or opioid release ended with social grooming, humans found other methods to self-medicate. Eventually, the church became a suitable stimulus for the opioid release... that is before Web 2.0 entered the scene. As with previous work/effort related innovation's and their requirements for artificial replacement/compensation, Web 2.0 in the church has the ability to extract teeth from the dentures.

The traditional Amish fulfill their needs for human support and interaction within the community. All their emotional needs and to a surprising extent their physical needs are met within the community. Their religious development is

community structured with such rites as baptism being dictated by age, season of the year and community readiness. [16, 280]

Any addict will tell you, "the problem is the environment (people/places), not the person using the drug (the addict)." The substance abuser is in denial and instead, the problem is assigned to external, dynamic and interchangeable quodlibets the addict disagrees with. This habit of responsibility transfer that has weakened human moral fibers finally made its way into the virtuous institution called church. If dwindling attendance could be reversed by making the service entertaining with loud "Christian Rock," video projection screens displaying animated scripture, announcements as "commercials," and inspirational/motivational videos to "tithes" before collection/offering/giving, it must be OK because "There is no great religious leader -- from the Buddha to Moses to Jesus to Mohammad to Luther -- who offered people what they want. Only what they need." [29, 121] America assumes it has the *right* to be entertained. If they *need* to miss church Sunday they can listen to the sermon on-line later that week if convenient, then read/post comments and partake in "on-line giving," if they *need* to. Figure 2.1 depicts a tetrad for Church 2.0.

I believe I am not mistaken in saying that Christianity is a demanding and serious religion. When it is delivered as easy and amusing, it is another kind of religion altogether. [29, 121]

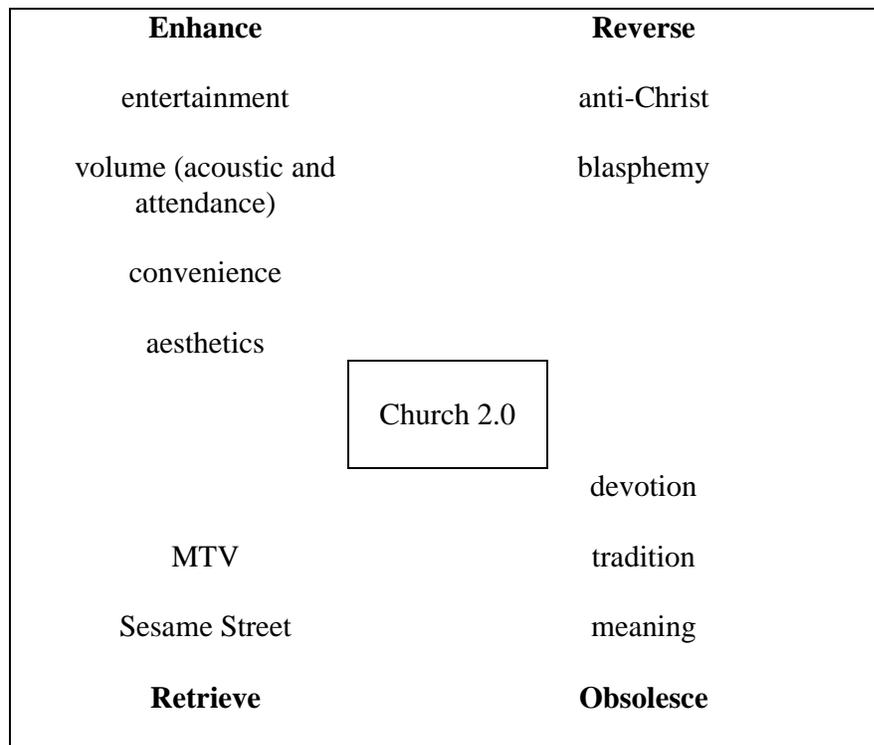


Figure 2.1 - Church 2.0 Tetrad

Participatory media such as blogging and You-Tube help man overcome his separateness with the availability of more herds to connect and socialize with. Much of the communication via the Internet involves "reading" and "writing," but *writing* for this new media takes on a whole new form as does *reading* and being *social* with it.

1. Some people blog simply because they have an audience. The church shooter wrote some disturbing prose in an on-line community similar to what one of the Columbine shooters had posted to a website before *his* killing spree, another example of how on-line communities are not fulfilling social needs like the traditional did. Social media does not always fill the missing tooth for attention void or provide the "pharmacological kick" previously obtained by grooming, but creates an artificially inflated ego that is dangerously sensitive.
2. Writing for electronic mediums is very informal, leet-speak is OK and the more creative the (mis) spelling, the more attention it (may) receive, assuming readers can understand it.

3. A "spell checker" visually flags misspellings, and intentional misspellings may be added to the "list of words to ignore" at the writers discretion therefore some incorrect words may be wrongfully ignored. Some spell checkers automatically correct misspelled words, giving the author a false impression of accuracy.
4. People will write things they would not dare tell a person via phone call or face-to-face.
5. Man does not read text on a computer screen, he scans it. This "scanning" has much to do with the distinctiveness of rendered text on computer screen as well as that which is written, suggested by the first point.

The user-run Internet not only allows, but encourages, the invention of false identity. Yet no one questions why so many of us are determined to hide who we are or what our affiliation is. [24, 79]

Another unintended consequence of virtual communities is induced schizophrenia caused by the avatar or "[...] 'sock puppet,' [serving as][...] the alter-ego through which one speaks on an on-line community or posts on a blog." [49, 76] Real or fictitious, the image (visual and the mental picture it creates) makes the unknown author/person "real." Men can be women, children can be adults, ectomorphs can be mesomorphs and have the physique of Governor Schwarzenegger (as Mr. Olympia) instead of their real physique of Mr. Salty the pretzel. This comes in handy when trying to present ourselves for acceptance by the herd with two drawbacks:

1. Are the people we are trying to gain acceptance from really who *they* say *they* are and can *they* be trusted?
2. Are *they* going to trust and accept me for who I am? Should I misrepresent myself?

The young person today is a data processor on a very large scale. Some people have estimated that the young person, the infant and the small child, growing up in our world today works harder than any child ever did in any previous human environment only the work he has to perform is that of data processing. The small child in 20th Century America does more data processing-more work than any child in any previous culture in the history of the world, according to Jacques Ellul, among others. [26]

In a typical day, the Technopolistic English read and write more than ever before in history, but how do they measure up to the tool-using Amish? How will they measure up to students before the Internet?

3. PROCEDURE

3.1. BACKGROUND

One of the challenges when measuring the effects of technology on literacy(s) is finding a control group where technology; does not play a major role in the culture. The Amish successfully live in a Technocracy where mechanical/electronic tools are used only when absolutely necessary; the Amish are not dependent on them for survival. The crux of the Amish philosophy is humility, serving the community and serving God. Ironically, they have suffered tremendous repercussions for adopting a wholesome, selfless lifestyle which is contrary to most popular world views, regardless of religious or spiritual views.

There are some teachers who feel that testing, even if done by sympathetic outsiders, will on the long run be harmful to the Amish. [16, 165]

When the researcher approached a community with a request for their participation in this study, he was invited into a member's home where an Amish man spent almost two hours talking about their history, lifestyle, and the challenges the Amish have faced over the years which concurred exactly with the literature the researcher had read. In true pacifist form, a clear "yes" or "no" response about research participation was not declared, only that "publicity is bad," which this researcher interpreted as a "no." The feelings of disappointment were quickly replaced with embarrassment as the researcher walked to his car, because with the amount of studying the researcher had performed prior to contact, he should have known not to ask. The Amish are not some spectacle for curious amusement and as the quote above suggests, the non-Amish may unintentionally threaten the Amish way of life. As the researcher drove home, he seriously contemplated continuing his research. Hopefully, "[in] the long run [it will not] be harmful to the Amish." [16, 165]

In 1969, John A. Hostetler published a report for the U.S. Department of Health, Education and Welfare titled Educational Achievement and Life Styles in a Traditional Society, the Old Order Amish with four objectives:

1. To construct the charter or what has also been called the "core culture" of the traditional community and to relate these to educational patterns.
2. To observe and describe the socialization patterns of the community through the life cycle from infancy to adulthood in the traditional community and the changing community.
3. To ascertain the achievement levels and personality variables of school children on various school tests in the traditional community and compare them to the levels of children in various other settings including those in the public schools.
4. To describe the changes in social patterns, noting the areas of human integration and the areas of discontinuity or deprivation. [16, 15]

Hostetler's research employed several different measurements that collected data from Amish in all-Amish public schools, Amish in private (parochial schools), Amish in public schools with non-Amish, non-Amish in public schools and a control group of "[...] pupils in modern rural public schools, selected for their social and economic similarity to that of the Amish." [16, 2] The fourth objective, concerning social patterns, is the focus of this paper. Hostetler's report, defined two (2) categories, traditional and emergent.

"Traditional" life styles are characterized by the preference for the tried as opposed to changing methods of child rearing and communal consensus in contrast to individualistic decision making. "Emergent" life styles are characterized by differentiation of social patterns, receptivity to new methods of child training, and developed interest in rational efficiency and verbalization of belief as opposed to nonverbal symbols and sharing. [16, 12]

3.2. METHOD

Five (5) measures from the 1960's report were chosen to solicit data from a military community public school. Data was collected on two (2) consecutive days during one (1) fifty (50) minute session per day. The results are compared to the data from the 1960's report to evaluate differences between a technologically limited culture and pre/post Internet rural cultures.

[...] children can serve as anthropological-style informants, being qualified like their elders by membership in a society and command of a limited part of that society's culture. It is reasonable to assume that children not only can but should be solicited to act as informants, since their very naiveté offers advantages. They can tell us first-hand and without retrospection what their society and culture look like through their eyes, or what childhood is like with respect to its perceptions of society and culture. [27, 979]

3.2.1. Drawings. Drawing is a non-verbal activity most children enjoy that provides information about the culture.

3.2.1.1. Draw-a-Man. The Goodenough-Harris Draw-a-Man test has been validated to provide a reasonable indicator of intelligence, however; for the purposes of this report, the measure was used as a means to solicit comparable cultural data.

In order to obtain a measure of intelligence on a non-verbal level and as free from imposed cultural influence as possible we chose the Goodenough-Harris test. In addition to measuring intelligence, the test also yields insights on the relations of cultural influences to patterns of learning, the ability to form concepts, and the ability to conceptualize relationships. Cross-cultural use of the test has shown that children everywhere regardless of educational opportunity enjoy representational drawing, and that where literacy and book education exist development is more rapid than in non-literature cultures (Harris, 1964). The pupil is asked to draw a man, a woman, and he and the drawings are scored using 100 as a mean standard IQ measure. [16, 48]

Although all three drawings were used in this analysis, only the first drawing (man) has been validated to give a

reasonable indicator of intelligence. The drawing of woman and self are used in this analysis to obtain insights on nonintellectual and cultural factors. [16, 178]

3.2.1.2. Freehand drawings. The freehand drawings were obtained to get an understanding of the 2008 groups' world view as in Hostetler's report.

[...] (a) "Your house--the house in which you live;" (b) "An animal or a machine, any kind you wish;" (c) "My happy time--what you do that you most enjoy." The purpose of these drawings was to obtain a greater knowledge of the child's environment and especially how he conceives of these elements in his environment and his response to them. These drawings were obtained in conjunction with the Goodenough-Harris assignment, usually on the day following that assignment. [16]

3.3.1. Writing. In Hostetler's report, each group wrote an essay about their occupational aspirations. The responses helped evaluate if the vocational choices of Amish children in public schools would be swayed from the traditional head of household occupation as the result of the non-Amish schooling. The 2008 occupational aspirations were evaluated for patterns or themes.

"What kind of work I want to do when I grow up, and why." In this analysis, children's views are solicited through a topic essay. The responses are classified by age and sex and compared to the occupation of the household head. The purpose of this exercise is to investigate the focus of the children's values, attitudes and social concepts and to relate them to the goals of the culture. This method has been used by Goodman (1957) [27] for investigating the attitudes of Japanese and American children and by Ruth and Stanley Freed (1968) [28] to study the occupational goals of children in India. The phrasing of the topical essay differed slightly in these two studies, and our investigation is based on the Freed working of the topic." [16, 49]

4. RESULTS

4.1. PARTICIPANTS

4.1.1. Groups. The participant groups will be referred to as 2008, Amish and 1960s Control. Any reference to military or non-military will be the 2008 group.

4.1.1.1. 2008. Volunteers from a military community middle school with twenty (20) to thirty (30) students per classroom.

4.1.1.2. Amish. This group consisted of Old Order Amish children from fourteen (14) schools with a total enrollment of 492 pupils. Two (2) schools had two (2) rooms, one (1) for the lower grades and one (1) for the upper, the rest were one (1) room schools from Iowa, Indiana, Ohio and province of Ontario. [16, 53] The number of participants varied for each measure.

4.1.1.3. 1960s Control. Pupils from Ohio and Michigan public schools were selected as the control group. [16, 53]

4.1.2. Age and Gender. Males and females have similar but gender specific experiences.

4.1.2.1. 2008. Table 4.1 lists age and gender of the 2008 group.

Table 4.1 - 2008 Age and Gender

Age	Male	Female
13	13	7
14	3	5
15	2	-
Total	16	12

4.1.2.2. Amish. Age and gender fluctuated with each measurement.

4.1.2.3. 1960s Control. Age and gender fluctuated with each measurement.

4.1.3. Relocation. The length of time a person lives in an area may have an impact on their general outlook and connectedness with the community.

4.1.3.1. 2008. Table 4.2 lists the numbers of military and non-military families in the 2008 group. Table 4.3 lists the total of domestic and international relocations for military and non-military families in the 2008 group. Table 4.4 lists the number of domestic and international relocations for military and non-military families that moved at least once in the 2008 group. Table 4.5 lists the number of military and non-military families in the 2008 group that have not relocated.

Table 4.2 - 2008 Military/Non-Military

Military	Non-Military
23	5

Table 4.3 - 2008 Relocation Total

	Domestic	International
Military	79	19
Non-Military	11	1
Total	90	20

Table 4.4 - 2008 Relocated at Least Once

	Domestic	International
Military	19	11
Non-Military	4	1
Total	23	12

Table 4.5 - 2008 Participants No Relocation

Military	Non-Military
4	1

4.1.3.2. Amish. No data available.

4.1.3.3. 1960s Control. Six and five-tenths (6.5) years is the average since the family moved.

4.1.4. Religion. Table 4.6 lists the total of military and non-military families who claim a religious affiliation and the total number for each affiliation.

Table 4.6 - 2008 Religion

	Military	Non-Military	Total
None	2	1	3
Christian	21	4	25
Hebrew	-	-	-
Islamic	-	-	-
Anabaptist	-	-	-
Total	23	5	28

4.1.4.1. 2008. 90% reported Christian, 10% no religious affiliation.

4.1.4.2. Amish. 100% Anabaptist once baptized.

4.1.4.3. 1960s Control. No data available.

4.2. DRAW-A-PERSON

Due to the low number of 2008 participants, the raw scores and ages for each gender were averaged and then the standard scores obtained from the average age and raw score for gender. The Draw-a-Man measure is the only test demonstrated to provide valid and reliable results. Due to time constraints, the Draw-a-Woman data was collected on the second day and five (5) children, four (4) boys and one (1) girl were absent.

4.2.1. Draw-a-Man. The Goodenough-Harris Draw-a-Man test has demonstrated valid and reliable results as a measure of intellectual maturity.

4.2.1.1. Male results. Table 4.7 lists the Draw-a-Man results for each male participant group.

Table 4.7 - Draw-a-Man: Male

Group	2008	Amish	1960s Control
Raw Score	37.9	43	44.1
Age	13	13	13
Actual/Chart	92.4/92	100.6/101	102
Pupils	16	22	-

4.2.1.2. Female results. Table 4.8 lists the Draw-a-Man results for each female participant group.

Table 4.8 - Draw-a-Man: Female

Group	2008	Amish	1960s Control
Raw Score	41.6	44	45.4
Age	13	13	13
Actual/Chart	95.6/95	99.2/95	101
Pupils	12	25	-

4.2.2. Draw-a-Woman. Due to the variety of apparel and accessories for females, the Draw-a-Woman does not provide valid and reliable results, but serves as an effective measure to collect cultural information.

4.2.2.1. Male results. Table 4.9 lists the Draw-a-Woman results for each male participant group.

Table 4.9 - Draw-a-Woman: Male

Group	2008	Amish	1960s Control
Raw Score	39.3	-	-
Age	13	13	-
Actual/Chart	94.9/95	99.9/100	-
Pupils	15	22	-

4.2.2.2. Female results. Table 4.10 lists the Draw-a-Woman results for each female participant group.

Table 4.10 - Draw-a-Woman: Female

Group	2008	Amish	1960s Control
Raw Score	42.3	-	-
Age	14	14	-
Actual/Chart	91.6/90	92.6/93	-
Pupils	8	19	-

4.2.3. Draw-Yourself. The self drawing provides insight to how an individual feels about the way they “measure up” to adults when compared against the male and female drawings.

4.2.3.1. Male results. Table 4.11 lists the Draw-a-Yourself results for each male participant group.

Table 4.11 - Draw-Yourself: Male

Group	2008	Amish	1960s Control
Raw Score	41.9	-	-
Age	13	13	-
Actual/Chart	98.2/99	102.3	-
Pupils	15	22	-

4.2.3.2. Female results. Table 4.12 lists the Draw-a-Yourself results for each female participant group.

Table 4.12 - Draw-Yourself: Female

Group	2008	Amish	1960s Control
Raw Score	43.4	-	-
Age	14	14	-
Actual/Chart	92.9/91	93	-
Pupils	8	19	-

4.3. FREEHAND DRAWINGS: MY HAPPY TIME

4.3.1. Common Activities. Table 4.13 lists the My Happy Time common activities results for each gender and participant group.

Table 4.13 - My Happy Time: Common Activities

	Boys-2008	Girls-2008	Boys-Amish	Girls-Amish	Boys-Control	Girls-Control
Swimming	-	-	-	-	4	4
Baseball	2	-	1	2	-	1
Snowball fight	-	-	-	-	1	-
Reading	1	1	-	5	-	-
Fishing	1	-	4	3	-	-
Swinging	-	-	1	1	-	-
Bicycle	1	-	1	-	-	-
Playing ball (catch)	1	-	1	1	-	-
Playing basketball	5	-	-	-	1	-
Buying new things at the store	-	2	-	-	1	-
Hunting	2	-	1	-	-	-
Eating	1	-	6	-	-	-

4.3.2. 2008 Activities. Table 4.14 lists the My Happy Time activities results for each gender of the 2008 participant group. Table 4.141 lists the average number of activities results for each gender of the 2008 participant group.

Table 4.14 - My Happy Time: 2008 Activities

	Boys-2008	Girls-2008	Boys-Amish	Girls-Amish	Boys-Control	Girls-Control
Camping	1	-	-	-	-	-
Drawing	2	-	-	-	-	-
4X4	1	-	-	-	-	-
Laughing	1	-	-	-	-	-
Boxing	1	-	-	-	-	-
Watching football	1	-	-	-	-	-
Board/card games	1	-	-	-	-	-
Music (playing guitar)	-	1	-	-	-	-
MySpace	-	1	-	-	-	-
Watching TV w/ boyfriend	-	1	-	-	-	-
Church	-	2	-	-	-	-
Electronic Gaming	7	2	-	-	-	-
Soccer	5	3	-	-	-	-
Football	6	1	-	-	-	-
Volleyball	-	1	-	-	-	-
Outdoors	1	1	-	-	-	-
Sleep	1	1	-	-	-	-
Unclear	1	1	-	-	-	-

Table 4.15 - 2008 Activities Per-Drawing

Male	Female
2.9	1.4

4.3.3. Amish Activities. Table 4.15 lists the My Happy Time activities results for each gender of the Amish participant group.

Table 4.16 - My Happy Time: Amish Activities

	Boys-2008	Girls-2008	Boys-Amish	Girls-Amish	Boys-Control	Girls-Control
Sledding	-	-	4	-	-	-
Ice skating	-	-	2	-	-	-
Gathering eggs	-	-	1	-	-	-
Fix motor	-	-	1	-	-	-
Open Sears packages	-	-	1	-	-	-
Going on bus trip	-	-	1	-	-	-
Slide down icy hill on foot	-	-	-	2	-	-
Drive buggy on trip	-	-	-	1	-	-
Making snowman	-	-	-	1	-	-
Playing in wagon	-	-	-	1	-	-
Playing in snow	-	-	-	1	-	-
Boating and picnic	-	-	-	1	-	-
Taking test	-	-	-	1	-	-
Playing ping pong	-	-	-	1	-	-
Sewing	-	-	-	1	-	-

4.3.4. Control Activities. Table 4.16 lists the My Happy Time activities results for each gender of the 1960s Control participant group.

Table 4.17 - My Happy Time: Control Activities

	Boys-2008	Girls-2008	Boys-Amish	Girls-Amish	Boys-Control	Girls-Control
Hit teacher with snowball	-	-	-	-	1	-
Blow up school	-	-	-	-	1	-
Play golf (when older)	-	-	-	-	1	-
Hit car with snowballs	-	-	-	-	1	-
Climbing into tree house	-	-	-	-	1	-
Swinging on rope in barn	-	-	-	-	1	-
Christmas	-	-	-	-	1	-
Wrestling with dog	-	-	-	-	1	-
Birthday	-	-	-	-	-	2
Running to mother	-	-	-	-	-	1
Eating ice cream at circus	-	-	-	-	-	1
Walking dog	-	-	-	-	-	1
Flying Kite	-	-	-	-	-	1
Roller skating	-	-	-	-	-	1
Drinking coke	-	-	-	-	-	1
Looking at grandfather's coin collection	-	-	-	-	-	1

4.4. FREEHAND DRAWINGS: MY HOUSE

4.4.1. **Background.** Table 4.17 lists the background classification by gender and participant group for the My House drawing.

Table 4.18 - My House: Background

	Boys-2008	Girls-2008	Boys-Amish	Girls-Amish	Boys-Control	Girls-Control
No Bkg.	40% (6)	37.5% (3)	70% (12)	57% (8)	29.5% (5)	28.5% (4)
Little Bkg.	60% (9)	50% (4)	6% (1)	36% (5)	29.5% (5)	28.5% (4)
Good Bkg.	-	12.5% (1)	24% (4)	7% (1)	41% (7)	43% (6)
	15	8	17	14	17	14

4.4.2. Perspective. Table 4.18 lists the perspective classification by gender and participant group for the My House drawing.

Table 4.19 - My House: Perspective

	Boys-2008	Girls-2008	Boys-Amish	Girls-Amish	Boys-Control	Girls-Control
No Perspective	40% (6)	62% (5)	88% (15)	93% (13)	100% (17)	100% (14)
Little Perspective	47% (7)	38% (3)	6% (1)	-	-	-
Good Perspective	13% (2)	-	6% (1)	7% (1)	-	-
	15	8	17	14	17	14

4.4.3. Fence. Table 4.19 lists the fence classification by gender and participant group for the My House drawing.

Table 4.20 - My House: Fence

	Boys-2008	Girls-2008	Boys-Amish	Girls-Amish	Boys-Control	Girls-Control
No Fence	66% (10)	88% (7)	-	-	-	-
Fence Present	33% (5)	12% (1)	-	-	-	-
Detailed Fence	-	-	-	-	-	-
	15	8	-	-	-	-

4.4.4. Chimney. Table 4.20 lists the chimney classification by gender and participant group for the My House drawing.

Table 4.21 - My House: Chimney

	Boys-2008	Girls-2008	Boys-Amish	Girls-Amish	Boys-Control	Girls-Control
No Chimney	80% (12)	75% (6)	-	-	-	-
Chimney Present	20% (3)	-	-	-	-	-
Chimney w/ Smoke	-	25% (2)	-	-	-	-
	15	8	-	-	-	-

4.4.5. Number of Windows. Table 4.21 lists the number of participants that drew from one (1) to twelve (12) by gender and participant group for the My House drawing.

Table 4.22 - My House: Number of Windows

Number of Windows	Boys-2008	Girls-2008	Boys-Amish	Girls-Amish	Boys-Control	Girls-Control
0	1	-	1	-	1	1
1	1	-	2	-	2	-
2	3	2	-	3	-	5
3	3	1	2	-	3	3
4	1	1	1	1	3	2
5	1	2	1	4	1	-
6	1	1	-	2	2	2
7	-	1	2	1	1	-
8	2	-	2	1	1	1
9	1	-	2	2	2	-
10	-	-	1	-	-	-
11	-	-	2	-	-	-
12	1	-	1	-	-	-
Total (average)	68 (4.5)	34 (4.2)	109 (6.4)	75 (5.3)	73 (4.5)	47 (3.3)

4.5. FREEHAND DRAWINGS: ANIMAL OR MACHINE

Table 4.22 lists the total in each category for each gender of the 2008 participant group.

Table 4.23 - Animal or Machine

	Boys-2008	Girls-2008	Boys-Amish	Girls-Amish	Boys-Control	Girls-Control
Animal	33% (5)	100% (8)	-	-	-	-
Machine	47% (7)	-	-	-	-	-
Both	13% (2)	-	-	-	-	-
Other	7% (1)	-	-	-	-	-
	15	8	-	-	-	-

4.6. OCCUPATIONAL ASPIRATIONS

4.6.1. 2008 Activities. Table 4.23 lists the occupational job titles and count by gender and matching father's occupation for the 2008 participants.

Table 4.24 - Occupational Aspirations: 2008 Activities

	Boys-2008	Girls-2008	Father's Occupation
TV Producer	1	-	-
Chef	1	-	-
Pilot (military)	2	-	1
Lawyer	1	-	-
Mechanic	1	-	-
Music	1	-	-
Mathematician	1	-	-
Scientist/Astronomer	2	-	-
Sports	5	-	-
Therapist	-	1	-
Photographer	-	.33	-
Teacher	-	.33	-
Writer	-	1	-
Chef	-	1.33	-
Veterinarian	-	1	-
Cosmetologist	-	1	-
Medical	-	1	-
Unclear	-	1	-

4.6.2. Amish/non-Amish Activities. Table 4.24 lists the occupational job titles and count by Amish, non-Amish and matching father's occupation.

Table 4.25 - Occupational Aspirations: Amish/Non-Amish Activities

	Boys-Amish	Father's Occupation	Boys-Non	Father's Occupation
Farmer	18	15	3	5
Professions	0	-	7	-
Skilled Manual Work	5	4	6	10
Unskilled Manual Work	4	1	2	5
Religious Leader	-	-	2	-
Performer	-	-	2	-
Gov.'t Services	-	-	3	1
Artist	-	-	1	-
Salesman	-	-	1	-
President	-	-	1	-
Supervisor	-	-	-	1
Scientist/Astronaut	-	-	6	-
Private business	-	1	-	1
Factory	-	6	1	15
Military	-	-	1	-
Sports	-	-	2	-
No information	-	-	2	1

5. EVALUATION

5.1. AGE AND GENDER

For the 2008 study, although children aged fourteen (14) were specifically requested, the requirement was relaxed to compensate for the low participation response. After the final session, one of the participants remarked that the "250 word essay scared a lot of people." When reviewing Hostetler's report, no mention of essay length was made and as it turns out, fifty words sufficed. On a side note, one (1) parent contacted the researcher via phone in reference to where the research would take place, and who would be present during the test. The researcher informed the parent the testing would take place at the school and a faculty member would be present.

5.2. RELOCATION

No data are available for the Amish group, but it is assumed they have lived in the same community (general location) since birth. The 1960s Control group was measured in years since last move which was six and five-tenths (6.5). Due to the transient nature of a military community, relocation data was collected by number of moves, international and domestic then organized by a parent's military status, past or present.

5.2.1. Domestic and Military/Non-Military. Twenty-three (23) of the twenty-eight (28) or 82% of the children had at least one (1) parent in the military, past or present, which accounted for the average of three and nine-tenths (3.9) lifetime domestic moves by 82% of the children who relocated at least one (1) time during their life. The average move for non-military was two and seventy-five hundredths (2.75) and military was four and fifteen-hundredths (4.15). The same percentage of children with parents in the military and

relocation is a coincidence because of the twenty-eight (28) with zero (0) lifetime relocation's, one (1) or 20% was non-military and four (4) or 17% were military.

5.2.2. International and Military/Non-Military. Twelve (12) of the twenty-eight (28) participants moved at least one (1) time internationally and only one (1) participant was non-military. The participants were instructed to count each international border crossing as an international relocation, i.e. moving from America to Germany for six (6) months then back to America would count as two (2). The average international move was one and seven-tenths (1.7), rounded up to two (2).

5.2.3. Domestic/International Relocation and Military. When combining the domestic and international relocation's, the average move for military increased from four and fifteen-hundredths (4.15) to five and fifteen-hundredths (5.15) and non-military increased from two and seventy-five-hundredths (2.75) to three (3).

5.3. RELIGION

5.3.1. 2008. Of the 89% reporting a religious affiliation, 100% were Christians and 11% reported attending services only on holidays, "the twice a year Christians," 14% monthly, 46% weekly, 10% daily and 17% do not attend services.

5.3.2. Amish. 100% Anabaptist once baptized. Worship services (preaching) are held every second Sunday in a community member's private home. Amish homes are built to accommodate large groups for worship. On alternate Sundays, a form of 'Sunday School' may be held depending on the community.

5.3.3. 1960s Control. No data available.

5.4. DRAW-A-PERSON

Due to the low number of 2008 participants, the raw scores and ages for each gender were averaged and then the standard scores obtained from the average age and raw score for gender. The Draw-a-Man measure is the only test demonstrated to provide valid and reliable results. Due to time constraints, the Draw-a-Woman data was collected on the second day and five (5) children, four (4) boys and one (1) girl were absent.

5.4.1. Draw-a-Man. The Draw-a-Man test is useful as a "culture free" intelligence test although various cultures have varying garb components or cultural beliefs which may determine how items are drawn and what is shown having an impact on the score.

[...] the test may be unsuited to comparing children *across* cultures; it may still rank children *within* a culture according to relative intellectual maturity. [31, 133]

For example the Amish have a "[...] taboo against photographs and representation of the human figure." [16, 165] The images from Hostetler's report indicate a relationship between those drawn full-figure and those drawn profile based on the school type where public school or "emergent" Amish drew more full figure and private school, "traditional" Amish, drew figures in profile. The public school images varied most notably where the body trunk is drawn full and the head is turned profile. The Draw-a-Man scale favors "profile" drawings with seven (7) points that are easier to obtain when drawing in profile. Table 5.1 lists the profile favorable criteria and number of 2008 participants who met them.

Table 5.1 - Draw-a-Man: Profile Points

10. Nose, two dimensions	57% (16)
12. Lips two dimensions	7% (2)
13. Both nose and lips two dimensions	7% (2)
37. Hip II	3% (1)
38. Knee Joint	17% (5)
60. Profile I (head/trunk/feet)	3% (1)
61. Profile II (figure)	3% (1)

When the seven points are applied to the 2008 male results of ninety-two (92) the score becomes ninety-nine (99), and the score is two (2) points lower than the Amish score of one hundred one (101), and three points lower than the 1960s Control of one hundred two (102). When the seven (7) points are added to the 2008 female results of ninety-five (95), the score is equal to one hundred two (102) and the score exceeds the Amish score of ninety-nine (99.2) by three (3) points and the 1960s Control of one hundred one (101) by one (1) point.

5.4.3. Draw-a-Woman. In the original report, drawings of a woman were evaluated for their cultural content to determine whether there was a difference between Amish and non-Amish characteristics drawn by the private and public school groups. Five percent (5%) of the boys and sixteen percent (16%) of the girls in private schools drew non-Amish female figures while fifty-five percent (55%) of the boys and seventy percent (70%) of the girls in public schools drew non-Amish female figures. [16, 186] Even the Amish and their strong sense of morality can have their symbols altered or influenced by culture.

The 2008 student drawings of women showed a strong cultural influence, primarily in garb. Table 5.2 lists some of the female scoring criteria and shows the feminine figure

features with low scores although the drawings had a feminine appearance. All of the feminine drawings had a head of feminine styled hair and the body composition contained feminine attributes such as an "hourglass" figure, exposed mid-drift, pronounced chest, low-cut or v-cut blouse. Table 5.3 lists notable features not on the Draw-a-Woman scoring criteria.

Table 5.2 - Draw-a-Woman: 2008 Notable Characteristics on Goodenough-Harris Scale

8. Cheeks	8% (2)
15. Lips Cosmetic	8% (2)
20. Hair Shaped	95% (22)
21. Hair Style	82% (19)
22. Hair Part/Shading	69% (16)
23. Necklace/Earrings	30% (7)
38. Feminine Shoes	43% (10)
45. Sleeve Detail	13% (3)
46. Neckline Clothing	60% (14)
52. Feminine Garb	52% (12)
53. Garb Complete (shoes, sleeves, skirt and blouse)	8% (2)

Table 5.3 - Draw-a-Woman: 2008 Notable Characteristics Not on Goodenough-Harris Scale

Bare Mid-Drift	13% (3)
Dress/Skirt	39% (9)
Hourglass figure	43% (10)
Womanly	30% (7)

5.4.4. Draw-Self.

The drawing of Self may possible reflect special personality features--interests, attitudes, and preoccupations--more readily than a child's drawing of the adult figure. This

hypothesis, plausible though not empirically validated [...] [31, 318]

In order to uncover the idiosyncrasies of the Self drawing, a slightly different evaluation approach is taken.

1. The Self drawing is examined for missing features, if a juvenile character is drawn, and if the image implies a specific individual.
2. The Self and adult drawing of the same sex are compared for the presence or absence of characteristics such as freckles, hat, background or if indicators of idealization or glamorization are present.
3. A series of seven (7) questions specific to the self image are answered yes or no and an explanation if yes is chosen. For example, "Does Self figure have a juvenile character? Does Self figure suggest a game or play activity? Quality of execution: Adult same sex, and opposite sex." [31, 320]
4. Finally, all three drawings are evaluated for several differences to include detail, neatness, glamorization and realism.

When evaluating the drawings based on the above criteria, some of the self drawings had an "older look" than the adult, but nothing glaring stood out to suggest a six (6) point difference between the Self and adult male scores as seen in Table 5.4. The self drawings were collected after the man drawings on the first day which may have given them a chance to warm-up. The woman drawings were drawn on the second day so it is possible they were tired of drawing. Women are naturally more self-conscious than men so it is understandable that the differences in score for the females would be smaller than for the males but the change is almost negligible for the females whereas the males a six (6) point increase is seen. The Amish males scored higher than 2008 on both the Self and adult drawings and even the humble Amish self drawings were higher than the adult drawings by one and seven-tenths (1.7), but the difference was not as substantial as the 2008 males with six and one-tenths (6.1) points. Table 5.5 shows the Amish females drawing of Self dropped six and nine-tenths (6.9) from the adult drawing which put them slightly ahead of the 2008 group which stayed basically the same. The Amish are humble and perceive an image of the human figure as

idolization; therefore the low Draw-a-Woman score is an effect of culture, not intellectual maturity.

Table 5.4 - Draw-Self vs. Draw-a-Man

	Self	Adult	Change
2008	99.85	93.75	6.1
Amish	102.3	100.6	1.7

Table 5.5 - Draw-Self vs. Draw-a-Woman

	Self	Adult	Change
2008	92.87	92	0.87
Amish	93	99.9	-6.9

5.5. FREEHAND DRAWINGS: MY HAPPY TIME

In Hostetler's report, the only shared activity between the two groups was baseball. [16, 255] The 2008 group shares several interests with the 1960s Control and Amish in addition to baseball such as fishing, playing catch, riding a bicycle, hunting and eating. Reading was an activity in five (5) Amish girls drawings and shown in one (1) 2008 male and one (1) 2008 female drawing. In two (2) of the 2008 female drawings, a cross labeled "church" appeared. It so happens these two girls were seated at the same table and were only present on the first day. The 2008 group drawings showed more sports related activities as well as electronic technology related activities, the later being no surprise. The interesting point is that forty-six percent (46%) of the group drew an average of four (4) activities.

Amish children included in their drawings of "a happy time" work-related activities [babysitting, raking leaves, baking]. Not one suburban child [nor 2008 child] drew a work-related scene. This may reflect the Amish practice of giving their children chores which contribute to the household in a meaningful way, whereas suburban children are given fewer chores and their participation in work is not important to the functioning of the household. [16, 256]

5.6. FREEHAND DRAWINGS: MY HOUSE

The house drawings scores were comparable to those of the Amish and control group based on the criteria of "Background" and "Perspective." In Hostetler's report he points out the presence of items such as a chimney or a fence in the drawings having meaning, but was not scored. A few of the 2008 drawings contained the items and inspired a closer look.

5.6.1. Chimney. "[...] emphasis on chimneys indicate sexual inadequacy (sex role inadequacy), and an indication of anxiety may be abundant smoke coming from the chimney." [16, 262] Three (3) males and two (2) females drew chimneys, and only the females drew smoke emitting from the chimney. One (1) female wished to be a pediatric nurse and the other a surgeon, both care-taking vocations where the pediatric nurse is typically a feminine occupation and the surgeon a masculine position. The first male wished to be a lawyer, the second a bio-technology engineer and the third an air-vac pilot. All of the positions require a high level of skill and a fair amount of independent decision making. For both genders, one (1) of the five (5) the chimney drawers had married parents of a military family, and one (1) non-military but divorced, the rest were military and divorced.

5.6.2. Fence. The presence of a fence may indicate a guarded personality. One (1) of the six (6) who drew a fence did not have a parent in the military and was the only girl to draw a fence, and her Step-Dad works as a gate guard. A fence not only marks a territory for keeping people out, it also keeps animals and smaller children in. Some of the houses in the

participants living area are close together their house had a fence when they moved into it; they are representing "their house." None of the fences had barbed wire or looked ominous, but none of the fences mimicked a Normal Rockwell piece either.

5.6.3. Windows. Fewer windows were drawn by the 2008 males and females than the Amish, but more than the 1960s Control. The presence of many windows is thought to make the house friendlier. The Amish homes are built to support church services for the community and with this in mind are naturally inviting from the start.

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5.7. ANIMAL OR MACHINE

Most of the Amish females drew animals and a good portion of the Amish males drew automobiles. The "[...] English word 'machine' had been adopted in the Amish dialect to be synonymous with 'automobile.'" Which accounts for the number of automobiles drawn. When the researcher was presenting the task he "suggested" that they choose to draw something that required more effort than an MP3 player or computer. All of the 2008 females drew an animal and forty-seven percent (47%) (7) of the 2008 males drew a machine, thirty-three percent (33%) (5) drew an animal, thirteen percent (13%) (2) drew both and seven percent (7%) (1) drew a "Freaky mutant thing."

5.8. OCCUPATIONAL ASPIRATIONS

The purpose of soliciting occupational aspirations was to get an understanding about attitudes toward work and compare them to the household head. [16, 247]

They [Amish children] see (and are taught) that their fathers hold their jobs because of religious and cultural values. Consequently, there is no stigma attached to desiring a similar job. Amish society, in fact, encourages its children to seek similar jobs. [16, 254]

Only one (1) 2008 child chose the same profession as his father stating: "I want to join the military because my father is in the Army and now deployed in Iraq, and when I grow up I want to be like my Dad."

6. SUMMARY

6.1. IMAGE OF MAN

If there is a reason for supposing a change over time in the culture patterns of a group, or in its social values and mores, and such a secular trend in drawings can plausibly be related to this culture change, then the change demonstrates the impact of culture on drawings. [31, 134]

Figure drawings reasonably portray the fashion and style from the time-period of its inception since the artifacts in the artists' present environment are reflected in the rendering and sometimes serve as an adumbration of the meme. Six (6) of the 2008 group, two (2) boys and four (4) girls, drew images reminiscent of the style which gained popularity in America during the 1990's called anime or manga. This development is in itself an effect of technology on literacy(s) from the spread of culture throughout what McLuhan labeled, the global village. An interesting phenomenon, is that the anime style visible in the man, woman and self drawings was only evident in two (2) happy time drawings where people were drawn, meaning the entire scene or all objects did not have the anime look, only the people.

One participant drew a mixture of characters. The Draw-a-Man figure appeared to be a warrior with wings and a sword from a game, the Draw-Yourself figure is a teenage boy without an anime appearance on what appears to be an island and the Draw-a-Woman drawing has an anime look to it where and figure is sitting on a bench looking at a drama mask leaning against a tree with few branches and no leaves. The happy time drawing shows a figure similar to the man drawing only without the wings but swinging a sword similar to what the man was holding. Beneath the figure are sword-like weapons which again match the anime style. No allusions or interpretations of the drawing will be put forth, only that it stood out from the others.

Getting back to the importance of the anime style of figure drawing, first, it is apparent the Japanese culture has influenced American culture as it imports a good portion of toys and games from Japan which naturally take the form of the Japanese culture. The second point poses a question. Why was the anime style chosen to draw human figures? There are any number and combinations of possibilities such as it has a neat look, they see it all the time and it is fairly easy to draw which is why the anime style emerged, to make drawing animation sequences more efficient. Figure 6.1 represents an anime Tetrad, or is there a deeper phenomenon?

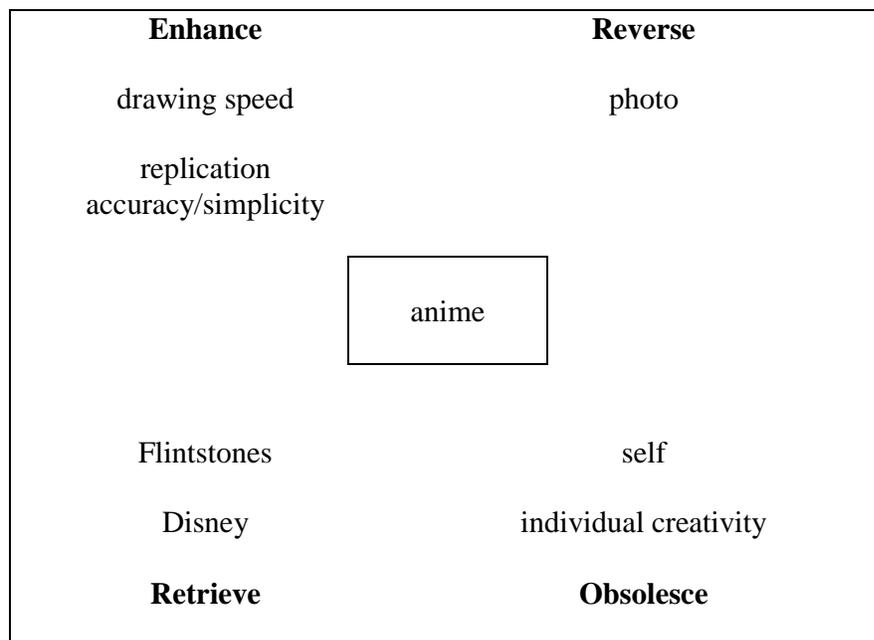


Figure 6.1 - Anime Tetrad

In chapter two of Thomas De Zengotita's book Mediated, the title of the sub-chapter "*From Leave it to Beaver to The Simpson's*" sums up my point. In the 50's, mom stayed at home to housekeep while dad was the head of the household and kept things in line, usually.

The parents or at least mom took a regular active role in their children's lives, and dad too even if it was just to discipline the children. Discipline? There is no discipline on *The Simpson's*, there isn't even self-control. Homer is a hedonistic screw-up who frequently makes a mess of anything he takes part in. Seeing Homer make poor decisions or do ignorant things gives man the opportunity to feel better about himself because he can criticize Homer for "we would never do anything as ignorant as Homer." But Homer is funny and likable, so pity is obtained and he is forgiven and if a human makes a mess of things he can be forgiven too, when it's funny. What is really frightening is that Homer, albeit exaggerated, is a loose representation of the 2008 American adult male and in 2001, one of Homer's trademark remarks, "D'oh!" was added to the Oxford English Dictionary.

This is why the Sapir-Whorf hypothesis or linguistic determinism is so difficult to consistently test and validate because a culture ultimately determines the communication methods and the labels a society assigns to objects and concepts, which is one of the criterion that nullifies the hypothesis. The only way a word makes its way into a language is if the concept or object appears in the culture. Ironically, the reverse is true with behavior; where the culture determines behavior and the moral structure/framework of the mind as evidenced by the Amish.

When communicating electronically using avatars to visually represent associates, it is the representation or visual nickname that is associated with the person, and the value of the person is sent to the background subconsciously. It is possible the influence of anime or avatars associates the value of human relationships to a cartoon image in a similar way to the way a person's name has an impact on the way others perceive them. For example a female named Bambi. The name gained popularity from the Disney animated film titled Bambi about an innocent deer orphaned when her mother was killed in a forest fire. Somewhere Bambi gained popularity as a female name associated with the flibbertigibbet behavioral

patterns of a woman with loose or questionable morals. What is also interesting about the anime drawing style of the human figure is that it is an acquired or learned compositional form. The participants chose, consciously or not, the anime drawing form (sameness) over their own personal style (oneness). Traditionally, art was considered a form of self-expression but in the case of anime, it is an adopted (imported) expository form, so anime is a tool or, artificial organ, for self expression. None of the 1960s Control drawings resembled *The Flintstones*, *Scooby-Doo*, or *The Jetsons*. What fills the void "self" once occupied?

6.2. IMAGE OF ENTERTAINMENT

It is understandable that people enjoy a variety of activities depending on the season and weather, but the fact that forty-six percent (46%) of the group drew an average of four (4) activities was an unexpected outcome. It seemed as if it was a contest to see who could draw the most activities rather than to choose one (1) and draw it with enthusiasm. This could be related to any number of factors, a form of pride showing how entertainingly diverse they are, the imbalance and fragmented lifestyle of 2008, or the frequent exposure to interfaces displaying a constant bombardment of polysemous scenes of imagery, they have been conditioned for "busy'ness" and they need more stimulation. It has been suggested that lack of attention or Attention Deficit Disorder ADD apparent in today's youth is an evolutionary adaptation to overstimulation.

Like the 1960s Control, none of the 2008 activities involved a work-related activity but the shared activities among genders for 2008 was six (6) where the Amish shared four (4) and the 1960s Control, one (1). Six (6) Amish listed eating as a happy-time activity, zero (0) of the 1960's but one (1) 2008 participant had eating listed. It stands to reason the Amish would enjoy eating since they literally "worked the food" that made its way onto the table

and they are in general grateful to have a meal. The Amish also eat together as a family, not when it's individually convenient.

6.3. IMAGE OF HOME

Hostetler's report makes mention to the amount of detail in the Amish drawings. Some of the 2008 drawings had a fair amount of components that could be considered "details," but most seemed "rushed" lacking quality. It is possible, the presence of haste suggests a lack of connection to the dwelling as a "home" possibly to the frequency of moves, but this has not been validated.

Home is not a place to go when there is no other place to be,
but the center of all good things. [35, 174]

6.4. OCCUPATIONAL ASPIRATIONS

Two (2) occupational categories were shared between the 2008 and the non-Amish, Scientist/Astronomer and Sports. A couple of 2008 males were interested in being a sports agent rather than playing a sport and categorized as "sport." The rest of the participants chose occupations quite different from the Amish and non-Amish. Like the non-Amish, most of the 2008 occupational choices were focused on upward mobility and quite a few specifically mentioned "good money" as a motivating factor. An intriguing aspect was the eight (8) occupational title misspellings.

6.5. OBSERVATION

Technology has advanced to the point that the older experienced workers in an industry are almost obsolete because they are not familiar with the new tools of the trade and their expertise is to a certain extent incompatible with the new techniques. There has been a

reversal in business arena with the professional and the hack similar to the samurai and the gun where inexperience and a powerful tools trump disciplined tradition. Instead of who ever shoots first wins, whoever Google's first wins or for that matter any web search engine will find almost anything you are looking for. At the cost of time and patience information and software 'tools' are available for almost anything giving younger generations more power than they have the ability to understand how to use "responsibly".

Socrates points out the consequences of the written word in the Legend of Thamus, as you read the excerpt now, apply it to the web and search engines and the effect of technology on literacy (s) will become apparent.

"The specific which you have discovered is not an aid to memory, but to reminiscence, and you give your disciples not truth but only the semblance of truth; they will be heroes of many things, and will have learned nothing; they will appear to be omniscient and will generally know nothing." --
~Socrates, "Phaedrus"

All industries are changing so dynamically, and rapidly that many of the traditional occupations are not so much disappearing as morphing into a new type of profession where a vast set of skills are needed to perform the job and remain competent. Unless employed in academia or the government, lifetime jobs are virtually nonexistent. The "Peter Principle" where one rises up the ladder of success to the level of incompetence and either remains there, moves down a rung (demoted) or moves laterally to a new ladder is a reality in many American businesses. An empirical observation the researcher has made that has not been validated by this or other research applies the reality of the "Peter Principle." Rather than moving up each rung on the ladder of success based on skill and aptitude, it has almost become socially acceptable to step in the faces of others on the ladder, and if someone ahead of you will not move or you get passed, simply sabotage their ladder rung so they are forced to move vertically, horizontally, come back to your level or fall off the ladder completely. In

the world of business this is probably nothing new and the unfortunate circumstances of the business environment, but it does not foster a trusting and cooperative working environment, instead, manipulation not task performance skills are advanced. Figure 6.2 depicts a tetrad for Electronic Literacy(s).

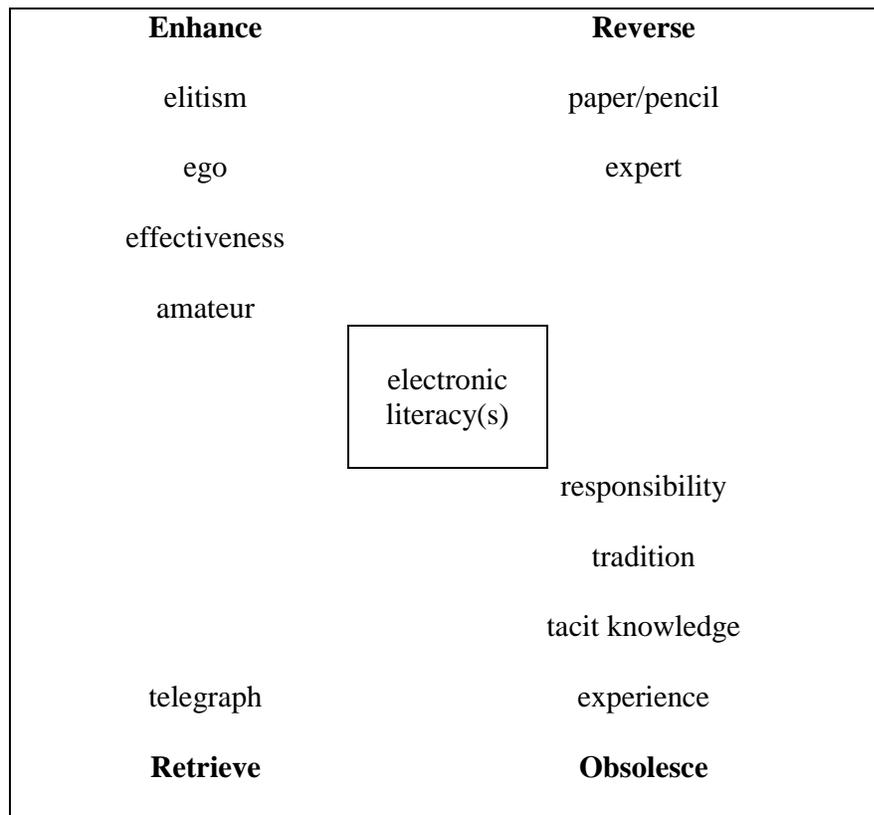


Figure 6.2 – Electronic Literacy(s)

An unfortunate example of this is the state of the American economy as of March 2009. Depending upon with whom you converse determines the opined cause of the current economic crisis and the “obvious” solution. This researcher is neither an economist, nor a politician, but could be labeled a cultural critic, and as Postman remarked in Technopoly, most critics congratulate themselves for identifying the problem in the first place. This

research concurs with many of the points made by Postman in his books Technopoly, and Amusing Ourselves to Death, and instead of rehashing them; they will be applied within the scope of this research to an economic super-power on the brink of its second great depression, America.

Many professionals were promoted based on personality rather than performance. They were able to build strong ladders out of deceptions and lies. Only in cases of pure greed are they to blame because over time, commercial industries are “on fire” as they create and distribute the perception of value to its customers, partners and employees. By the time the smoke clears all that is left is a flimsy scaffold of a corporation that is broken down and sold off. Selling American business to foreign countries has become the United States most lucrative export in years! Companies that can't be sold internationally, such as banks, are getting enormous amounts of money from the government to keep them afloat. One of the factors that contributed to the banking mess is home foreclosures. A few years ago banks would extend home loans to people if they had a heartbeat, not necessarily a brain-wave, and definitely not their financial past or present.

On the other end of the spectrum are those who use ladders to move downward, but make it appear as if they are trying to go up. They are dependent on government support and in most cases believe they are justified doing so, and many are. However; in order to obtain the benefits, certain criterion must be met and as soon as they are able to walk on their own two feet the rug is pulled from beneath them. Rather than use the ladder to climb out, the ladder is broken and used as a crutch which actually requires less effort and is more “rewarding.”

These disturbing events were all made possible by the use of technological advances and it all started with the artificial organ of community organization into a government, which extends man's god given morality. All men/women may have been created equal, but

ego leads each person to believe they deserve more than everyone else, because they are unique... (just like everyone else). The Amish understand mans lack of humility and recognize pride is man's biggest liability. If an Amish man does not work to feed his family, they starve. In America if a man has a “good” reason (or excuse) not to work, he can be put on welfare, sit at home and watch satellite programming on his plasma TV. In some circumstances, welfare provides a better standard of living than a steady paying job.

American's pay taxes to nourish the government organ that defines boundaries with laws and regulations and employs workers to carry out the governments will which is supposed to be controlled by taxpaying voters, but there is no guarantee it will deliver the results expected by each taxpayer. Rather than provide nourishment to an external governing body the Amish community *is* the governing body with GOD (Good Orderly Direction) guiding thought and behavior. Each member has a shared vision to serve their community and serve GOD through honest hard work. Materially the Amish have very little compared to the English, but if there was a financial representation of spirituality, one Amish man or woman could pay off the national debt, and fund Obama’s economic stimulus bill.

7. CONCLUSION

The beginning of this thesis reference was made to how mass, gravity and heat strive to reach homeostatic balance and of a solar system, then compared to the process through which basic life forms struggle to reach equilibrium in the environment commonly referred to as evolution. The organism changes over time to adapt to the environment. Eventually humans emerged and adapted the environment to meet the limitations of the human, offsetting the balance of nature.

Marshall McLuhan's tetrad of media effects helps man organize and visualize the ecology of his mediated environment but it isn't until comparing the values and morals of a homeostatic existence instilled by hard work and dedication to that of a lifestyle fueled by convenience and amorality that the impact of the effects are noticed. Through technology, man has conquered many of nature's challenges often unleashing a new set of covert issues that impact his physical, biological and moral environments.

The Amish live a humble life serving their community and God with hard work and as few technological innovations as possible, keeping the natural balance intact. They live in what Neil Postman refers to as a technocracy where the humans and tools work together, but the tools are secretly trying to gain the upper hand. When they do, the tools dictate how humans must perform a task; Postman defines this tool and human relationship as a technopoly.

The 2008 American lifestyle is the epitome of a technopoly and although the dangers seen in Hollywood movies may not be upon us, this research uncovered three literacy's affected by technology.

1. Drawing style (self-expression)
2. Quantity of activities (busy'ness)

3. Occupations (“self” centered)

The Japanese anime drawing style which gained popularity in the United States during the 1990’s was evident in a few of the drawings, but only when drawing the human figure. This occurrence is important because drawing has been a personal style of expression. The application of the anime drawing style limits creativity and suppresses self expression.

The quantity of happy time activities (average of four) reinforces the hypothesis that the lack of attention common in 2008 is an evolutionary adaptation to overstimulation. It could also indicate lack of dedication or creativity. It is easier to draw a few low fidelity activities than one activity with high fidelity which was the unspoken expectation.

Most of the occupational choices were focused on upward mobility and personal gain as opposed to the betterment of mankind. Sports related occupations were the most common, and only one (1) specifically mentioned following in his father’s footsteps whereas almost all of the Amish chose their father’s profession.

The results confirmed differences between the 1960s Control and the 2008 group that reflect a forty (40) year technology gap. The appearance of the anime drawing style was unexpected however logical due to the popularity of Japanese graphical themed entertainment. The differences between the Amish and 2008 groups as far as discipline, selflessness and responsibility suggest a form of self referential behavioral determinism where if Good Orderly Direction is in the culture GOD will be in the behavior that determines the culture.

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