Operationalizing McLuhan's tetrad to focus on innovation effects

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Operationalizing McLuhan’s tetrad to focus on innovation effects

By

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A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Major: Journalism and Mass Communication

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Ames, Iowa

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DEDICATED TO:

All those who support me: friends, faculty and family.
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ABSTRACT

The tetrad, historically limited to media theory, has been around since the mid 20th century. It consists of four basic interrelated questions that, according to Marshall McLuhan are fundamental to media technologies. The objective of this thesis is to demonstrate that the tetrad can be applied to an analysis of other forms of innovation. Generally a product development team has but one concern: the question, what is enhanced? By focusing on an evaluation of an innovation beyond enhancement, its probable future and its effects are generally revealed. Planners are enabled to focus on an innovation’s effects, resultant consumer needs and products. This thesis is the first step toward the establishment of a product development device that will help reveal the consequences of an innovation. By giving planners, leaders and innovators a tool to focus on the future, our technologies can be strengthened while lessening negative social and environmental impacts.
CHAPTER ONE

INTRODUCTION

In order to survive in today’s economy, a business has to grow. The best way to achieve growth is to increase consumer product value relative to competition. The end result is higher market share through greater volume, and higher margin attainment through more desirable product offerings (exclusive patents and rights). If a business can show quarter over quarter growth it will prosper. If a business cannot show consistent growth, company value will decline. Business failure can be devastating; families, friends, communities and cultures are ripped apart and often destroyed, an activity that has become all to commonplace in America.

Consequently, the deep business desire for growth has made new product development a priority. However, the emphasis on quarter growth so permeates the business culture that management teams develop a short-sighted focus on today, this week, this month, and this quarter with little regard for the future. A casualty of short-term thinking is the possible loss of economic value found in longer-term social effects derived from current or recent product innovations.

New product innovations affect how we live and tend to create social change in our culture. Marshall McLuhan, using one of his legendary aphorisms (Marchand1989) said it very well: “We become what we behold. We shape the tools and the tools shape us” (McLuhan, 1994, p. xi). Essentially each new innovation creates effects, which then create new needs, which opens the door for more innovation. The central question of this thesis arises from this innovation, effects, needs, and environment. Can a business organization
To foresee future innovation opportunities (now) based on “anticipated effects and needs” of the future?

To answer that question, the objective of this thesis is to bring “extrapolative” understanding to product innovation effects. This will be accomplished through operationalizing an analytical tool Marshall McLuhan created 30 years ago: the tetrad. “As an exploratory probe, tetrads do not rest on theory but a set of questions; they rely on empirical observation and are thus testable. When applied to new technologies or artifacts, they afford the user predictive power” (McLuhan, 1989, p. 6).

The tetrad, as a prognostic tool may hold such promise for four major reasons. First, it was developed against a background of rapidly changing innovations (mass media). McLuhan and Powers argued that every media form had a tetradic structure. (a) media forms “enhance” something in a culture, (b) “obsolesce” some factor, (c) “retrieve” something long ago pushed aside, and (d) undergo “reversal” when extended beyond their potential. Second, the graphic illustration of the tetrad is a double loop mobius which implies an infinite ability to continually change symmetrically along with rapid innovation. Consequently it may be a tool that can “keep up” with non-stop transformations experienced in the high speed world of marketing, competition and new technologies (Figure 1).
Third, the analytical power of the tetrad appears to lie within figure/ground awareness. The graphic execution of the connected continuous loops “forces” the observer to “compress past, present and future into one through the power of simultaneity” (McLuhan, 1989, p. 9). The tetrad tends to raise intellectual issues that otherwise may not be considered. Fourth, the tetrad also defines the relationships between the four elements which are inclined to coax or probe for greater understanding. “The parts of the tetrad have the same complementary character:

Retrieval is to obsolescence as enhancement is to reversal.

And

Retrieval is to enhancement as obsolescence is to reversal.

. . . As framed, the tetradic metaphor amplifies the potential equilibrium of the relations being explored” (McLuhan, 1989, pp. 8 - 9).

The intent is to use the tetrad as a rhetorical device to focus on a specific aspect of the qualitative product development process: the ideation segment. Thesis research activity will
entail testing the tetrad’s value as a lateral indicator of future social effects and other long range consequences derived from an innovation. The basic generalization is that all innovation, not just McLuhan’s more narrowly studied media innovations create effects whose impact can lead to other new, but undiscovered “product gaps;” resultant opportunities for supplemental innovation and growth.

For example, genetic engineering of food crops leading to new plant configurations may respectively also require new planting and harvesting equipment, chemical applications and fertilizing techniques. If the originating innovator can anticipate future effects resulting from the initial genetic innovation, it logically follows that they may also recognize, create and own numerous supportive innovations. The primary benefit to the originator is a continuous stream of innovation and growth versus “one-off” product development.

When active thought is applied through a forecasting process that is structured and logical, a clearer picture of the future can be derived, hopefully leading to better product decisions (Jones, 1978).

The benefit to society is pre-product development and launch awareness of possible negative social effects. There are no guarantees, but the anticipation is that an originator or marketer’s awareness of possible negative effects will raise a moral obligation to reduce harmful social consequences.
CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Chapter one explained the benefits of an analytical projection methodology to gain some insight into macro-level effects of new product innovations. It also introduced the qualitative analytical framework of McLuhan’s tetrad as a relevant, “lateral” way to understand the impact of broad innovation effects. This chapter will further elaborate on the innovation process along with ideation and forecasting methods in an attempt to compare and contrast capabilities of the tetrad.

Everett Rogers (2003, p. 138) in his fifth edition of *Diffusion of Innovations* outlined the innovation process from the perspective of the innovation developer. Rogers felt that there were six major stages. The stages had a general linear order, but were arbitrary in that the innovation process often varies relative to the difficulties encountered with the complexity of a specific product concept (figure 2).

**Figure 2. Everett Rogers’ Stages of Innovation**

1. Identify Needs/Solve Problems

   → 2. Research

   → 3. Development

   → 4. Commercialization

   → 5. Diffusion and Adoption

   → 6. Consequences

Stage one of the innovation process is the discovery/recognition of a consumer need or a problem to be solved through innovation. From a practical point of view, this is
often accomplished partially in stage two, in that qualitative research methods are
generally used to observe consumer behavior. The objective is to identify technology and
process gaps, often referred to as “work-a-rounds” that could be filled or improved with
an innovation. The other primary originator of stage one that needs recognition is
extraneous innovation. These are technologies that have such readily apparent and
adaptable advantages that they find their way into numerous and varied products to
improve quality, value, cost or simplicity. For example, the innovative computer chip
now also drives appliances, phones, watches, calculators, cameras and cars, replacing less
efficient, more expensive mechanical or electronic controlling mechanisms.

Rogers’ third and fourth stages encompass product engineering, testing, industrial
design and manufacturing engineering. Also included in these segments are the parallel
development of marketing plans and preparation of the product for market launch and
distribution. The fifth stage is product diffusion and adoption, with the diffusion rate
determined by need characteristics of the targeted market in concert with the attributes of
the innovation (Rogers, 2003).

The last stage is what Rogers called consequences, and what others have labeled
effects. Consequences are generally not considered a business issue. However, as stated
in the introduction, it is the view of this thesis that consequences can be thought of as the
leading edge of additional new product opportunities expressed through a second
generation of the originator’s innovation.

It is probable that the tetrad can be functionally applied against Rogers’ stages
one, two and possibly stage six. At the “front end” of the innovation process, the tetrad
may help define the innovation for the originator, (enhance, obsolesce, retrieve, and
reverse/flip). The tetrad may also prove to be useful to predict consequences in stage six, which could “suggest” other innovation needs. Understanding consequences along with future needs may help develop a continuous stream of innovation, which would support consistency toward the objective of business growth.

Rogers’ stages of innovation are in harmony with product development experience in the business sector. At the Maytag Corporation, (consumer household appliances), the brand management division led the innovation stages of trend research: concept discovery, new product development and product launch communications. Maytag marketing professionals and supporting agencies probably analyzed future consumer product opportunities as well as, if not better than, anyone in the appliance industry.

Maytag applied new market research methodologies to define the benefits most desired by the consumer. In the past Maytag would prototype a new appliance or new features and ask the consumer, “What do you think?” Maytag recently applied the science of ethnography, literally having researchers live in a consumer’s home to understand his or her lifestyle, then designing products to serve that lifestyle…. In recognition of its efforts, Maytag received the 1999 Outstanding Corporate Innovator Award by the Product and Development Association. The award, which recognized firms for sustained success in the introduction of new products, was the first in its 12 year history to be awarded to an appliance manufacturer (Hunger, 2002 p. 21).

Even though Maytag was nationally recognized as one of the “best,” its proprietary innovation process limited understanding of the many possible futures of new
technology and product breakthroughs. Even with all the research in place, innovation
decisions were still made in a “today and now paradigm.” Essentially, the company
studied consumer trends, tracked product usability and end user satisfaction. Researchers
practiced ethnography, looking for technology gaps; new product concepts were tested
and re-tested against the consumer market.

When it came to making new product development decisions, Maytag searched
in the past and present, but lacked impetus to study possible future effects of an
innovation. Further, the company was primarily focused on the “effects” or
consequences of consumer safety and the primary value-enhancing benefits. Associates
certainly had not heard of McLuhan’s tetrad, or considered any of his four questions
beyond his first: what is enhanced? A review of literature shows that Maytag planners
were probably not alone; very little has been written or studied about the tetrad beyond
the initial McLuhan and Power’s book The Global Village. This was perhaps for a good
reason -- McLuhan’s mixed metaphors were often accompanied by mixed predictive
results.

Unfortunately, once a product is in market, unexpected effects of both a positive
and negative nature very slowly work their way back through a chain of sales, service and
distribution channels to the originating product team. This takes time, and time is money;
the tetrad as a rhetorical focusing device holds promise as a process to better anticipate
future effects versus reacting to effects that become issues and take months to surface
through normal communication channels.

Currently, there are a myriad of ways to conduct general product development.
(Kuczmarski, 1992) outlines four major processes. All start with a product idea and end
with commercialization. In between, he identifies as many as eight other steps. Most of the steps match up to Rogers’ diffusion model. New products have to move from an idea to eventual commercialization through research, development, manufacturing and marketing. One of the most popular organized product development processes is gate managed progression through (1) idea generation, (2) concept feasibility (consumer research), (3) capability assessment, (4) detailed development, and (5) market launch. Generally called the phase/gate approach, executive management reviews are implemented at each stage of development for which project status becomes either go, or no go, depending upon estimated business value (Cooper, 1993). The phase/gate approach is not a forward looking process, as it is focused on managing investment value, company resources, and speed to market. The primary focus of phase/gate development is to move fast and yet keep management informed with gate checks along the way.

Product development methods, although they parallel Rogers’ stages of innovation, are not really well grounded in theory, but practice. They are personality-dominated processes, and can change with whim. They are also often hope and desire-driven versus truly being prescient and objective. Interestingly, the more poorly executed research and screening stages would seem the most likely to benefit from the predictive format of the tetrad. There is general agreement that the most common failings of product development and greatest need for improvement are in the area of research. Research is often defined as initial screening, preliminary market assessment, detailed market assessment and poor initial project concept (Cooper, 1993; Gruenwald, 1992).
**Forecast Parameters**

By definition, a forecast or prediction is made up of four major elements. The first is identified as qualitative, best described as a future concept, an event, process or phenomenon. It is the “what” of the forecast activity. Of the four elements, it is essential and central to the forecast. The qualitative element defines the future concept, particularly as it relates to a current technology. The second element is quantitative. It references quantity, “a few people will” or “all mankind will.” Ideally it is an expression in numerical terms -- “90% will adopt.” The third element is time. Time adds imminence to the forecasting process. Its value lies through adding perspective of importance to the identified qualitative activity. The last element is the probability that the predicted event will take place (Jones, 1978, pp.60-64).

Essentially, Jones takes the position that a forecast is more powerful with all four elements in place. What is going to happen, how many will be affected, when will the event take place, and what is the level of certainty? Carey (1996) states that a review of forecast techniques for information services indicates that forecast methodology is weak at both a theoretical level and in general practice. One thing is obvious; there are many techniques that address all four elements with differing levels of conclusion and success. Because different techniques deliver different levels of results relative to the four forecast elements, several authors recommend a multiple approach to future-casting. Through the use of combined methodologies, the researcher can make a more accurate and educated assessment of the forecast (Carey, 1996; Jones, 1978; Lanford, 1972; Millett, 1991).
Popular Forecast Techniques

The first is the Delphi technique, which is best known for its consensus-driven approach to quantification and probability. “The Delphi forecasting method was secretly developed by the Rand Corporation during the 1950s for the U.S. Air Force” (Millett, 1991, p. 51). It elicits responses from a panel of experts and is typically structured with continuous rounds of opinions accompanied with anonymous feedback. The goal is to gain group consensus. It is similar to holding a meeting of experts except it is all accomplished at a geographic distance. Panelists share their opinions, receive other experts’ input, then reshape their opinions and share them again. This continues round after round until all participants basically agree on a single future outcome (Dalkey, 1963) (Martino, 2003) (Landeta, 2006) (Gordon, 1963).

A second popular method of forecasting is the scenario. Scenario planning is primarily focused on an entire environment. Several qualitative methods can be used to help form the scenario, with the end result of creating alternative outcomes. An example would be a focused development of the future around three different oil prices; $40, $50 and $60 a barrel. Scenarios are not a product generating tool as much as they are a long range planning and development instrument (Jones, 1978).

It is anticipated that the tetrad as a method of forecasting best fits the qualitative aspects of prediction. It is more suited for "what" is going to happen vs. when, how many and probability. If this study proves the tetrad as a worthy tool for concept development, it would probably become a place-holder in the long list of qualitative forecasting methods, with its best use being the analysis of several possible future effects vs. a specific prediction. A most interesting aspect of the tetrad is that it is a rhetorically
based process that is consistent in its focus on the future. It is similar to the Potter Box, another rhetorical device designed to organize and focus on the process of ethical decision making (Backus, 2004). Like the Potter Box, four consistent terms are used to focus in on the multiple aspects of an innovation’s possible effects. Several qualitative methods have been identified to create future concepts. All have a similar role, that of determining “what” the future holds, but not necessarily when or how probable it is that it will happen. The primary tool in use today is brainstorming, which generally takes two directions -- an imaginative route and a structured route. Another technique supporting a qualitative approach is contextual mapping. Mapping strength lies with the ability of the process to outline a technology with all of its associated sub-technologies. The mapping process tends to bring issues and opportunities to the surface. Another method of qualitative development is the analogy. Analogy selection is made intuitively, with its projective power being highly dependent on its relevance to the project at hand. Analogies are not so much a method of forecasting as they are a lateral way of creating a new product idea.

The first of the more structured methods is known as morphology. It is a highly structured way to study the maximum number of product permutations. A matrix is formed with key parameters down the side (rows) and alternatives across the top (columns). This is followed by a process of consideration for each permutation. Gap analysis is another structured way to formulate product concepts. It is descriptively referred to as the Mendeleev process. Like Mendeleev and his development of the periodic table of atomic elements, a matrix or linear listing of the “known” is recorded;
when gaps appear, effort is applied to describe their probable characteristics (Jones, 1978; Lanford, 1972; Millet, 1991).

In the pursuit of revealing needs and innovation, a consistent methodology that organizes and focuses thought would appear to be useful for identifying “future effects.” Perceiving and considering such future needs derived from an innovation should be an expected business objective. The tetrad would appear to hold promise as an easily understood structured method to perform a predictive inquiry. Adding the tetrad into the mix of Rogers’ product development process or combined with current forecast methods to better “flesh out” the four forecasting elements could well add respectable “end-game” value to the innovation-generation process.

**McLuhan’s Tetrad**

In 1970, Donald Ellsworth Skiff, a graduate student at Iowa State University, submitted a master’s thesis that reviewed Marshall McLuhan’s notion of “a global village.” He referred to McLuhan as an “untested” phenomenon:

For the most part, McLuhan ignored the traditional theories of social change, and based his assertions on interpretation of the writings of various people from many different disciplines. Also, he avoided constructing a theoretical system that could be examined logically and minutely; rather, he wrote in a curiously disjointed style that exasperated his critics and discouraged logical argument. Whatever the reasons for his popularity, McLuhan’s influence on many in the field of mass communication is undeniable. For this reason, if for no other, it appears that an examination of his ideas by careful and systematic analysis would be valuable. While a great deal has been written, critical and
otherwise, about him and his ideas, little effort seems to have been made so far to put McLuhan to the test (Skiff, 1970 p. 4).

As Skiff pointed out, much has been written about McLuhan and his ideas, critically and editorially. A great deal of it is configured as sound-bites of his predictions with specifically quoted aphorisms regarding media and effects on society.

McLuhan probably fueled his own critics because his ideas were not empirically supported and thus difficult to challenge. He often took the position that his insights were meant to stimulate, and not necessarily be right or wrong. He did not uphold his ideas with data as he considered himself a theorist. He became an integral part of 1960s North American pop-culture, and thus generated both supporters and detractors. His critics were very candid -- “to attach some significance to the clarion call from Canada that the medium is the message, we must be given something more than a worn cliché. It is to be debated whether he or his supporters knows what a medium is in the first place” (Rosenthal, 1969 p. 154-155).

It is really not all that surprising that McLuhan would draw such ire from his critics. He was a theorist living in an academic, quantitative Western world, where proof through research was the normative measure of validity. McLuhan’s predictions also ran from mild to the wild. It is one thing to proclaim that the medium is the message, and quite another in a Playboy magazine interview to announce that – The United States is doomed, will experience a “full blown” racial civil war and will break up into regional and racial mini-states (Essential McLuhan, 1995 p.257) . One of his toughest critics, Jonathon Miller, concluded his book on McLuhan with these words: “Perhaps McLuhan
has accomplished the greatest paradox of all, creating the possibility of truth by shocking us all with a gigantic system of lies” (Miller 1971 p. 124).

On balance, one has to admire McLuhan for his holistic thoughts on media, technology and its effects on man. Many of his predictions were certainly wrong; but at the same time he did enable his generation of academia and subsequent devotees to the study of communications to think differently about their field. Bugeja, (2005) gives a fair accounting of McLuhan. “Despite mixed metaphors and a penchant for puns (as in “the medium is the massage”) – another incurable Shakespearean trait—McLuhan does deserve respect and attention. He is especially insightful asserting that we must understand how technology changes culture” (p. 127).

Among his many technology–culture predictions, he stated that “For those who need escape, high-density screens will amplify and accentuate the alpha state. For those seeking information, TV linked to the computer might eventually surpass the resources of the Library of Congress” (McLuhan, 1986, p. 87). “At the very least it means more personal freedom for the householder and the chance to work at home. This is another way of saying the home could become the center point once again in American society, as it was on the frontier” (p.88). “The computer, working through a myriad of communication devices, will produce tailor-made products and services for potential buyers who have already presignaled their preference through the database” (p. 89). “The computer database power of simultaneity will cause the literal implosion of some business and public services” (pp. 90-91).

These astonishing predictions of technology effects made prior to his death in 1980 were undoubtedly a result of his application of the tetrad, a process he developed to
establish an invaluable “lateral” and relative approach to predict the social effects of new
technology. Laterals (not McLuhan’s term) are an integral ingredient of brainstorming
and/or ideation sessions. They tend to take group thinking to places that are generally
not within their experiential framework. A classic lateral example is that of the fly that
keeps repeating the same activity -- flying and bouncing into closed windows, genetically
driven by light and trapped by the glass. A lateral for the fly is to turn 180 degrees, fly
away from the light and exit through an open door. The tetrad is in essence like that, it
opens doors and unusual paths. Much has been published about creativity and lateral
thinking for the business and innovation world, particularly by Edward De Bono.

“De Bono has written extensively [69 books in 37 languages] about the
process of lateral thinking -- the generation of novel solutions to problems. The
point of lateral thinking is that many problems require a different perspective to
solve successfully.

De Bono identifies four critical factors associated with lateral thinking: (1)
recognized dominant ideas that polarize perception of the problem, (2) searching
for different ways of looking at things, (3) relaxation of rigid control of thinking,
and (4) use of chance to encourage other ideas. . . . Although De Bono does not
acknowledge any theoretical antecedents for lateral thinking, it seems closely
related to the Gestalt theory of Wertheimer” (Kearsley, 2005, p.1).

McLuhan’s tetrad easily satisfies DeBono’s first three lateral thinking tenets.
McLuhan’s approach to the tetrad is also strongly influenced by Gestalt’s concepts of
figure and ground. The most pointed reference to this is the Apollo moon landing in
December 1968 when the astronauts assembled a television camera and focused it on the
earth. “All of us who were watching had an enormous reflexive response. . . . We were on the Earth and moon simultaneously” (McLuhan, 1989, p. 4).

“The tetrad, like the metaphor, performs the same function that the camera did in the Apollo 8 mission: it reveals figure (moon) and ground (earth) simultaneously. The left brain with its sequential linear bias hides the ground of most situations, making it subliminal. Left-hemisphere thinking, as a dominant mode, is linear and tends to place emphasis only on the connected; it is steeped in a priori notions of order, masking the complementarity of both right and left brain modes. The terms figure and ground were borrowed from Gestalt psychology by the Danish art critic Edgar Rubin, who, about the year 1915, began to use them to discuss the parameters of visual perception. At the Centre for Culture and Technology, we broadened Rubin’s usage to take in the whole of perception and consciousness. All cultural situations are composed of an area of attention (figure) and a very much larger area of inattention (ground). The two are in a continual state of abrasive interplay, with an outline, boundary or interval between them that serves to define both simultaneously (pp. 4-5).

In the order of things, ground comes first. The figures arrive later. Coming events cast their shadows before them. The ground of any technology is both the situation that gives rise to it as well as the whole environment (medium) of services and disservices that the technology brings with it. These are the side effects, and they impose themselves haphazardly as a new form of culture. The medium is the message. As an old ground is displaced by the content of the new situation, it becomes available to ordinary attention as figure. At the same time a
new nostalgia is born. The business of the artist has been to report on the nature of ground by exploring the forms of sensibility made available by each new ground, or mode of culture, long before the average man suspects that anything has changed” (McLuhan & Powers, 1989, p.6).

McLuhan writes at length about acoustic and visual space. He relates the two concepts to figure and ground in such a way that they lead to what he calls resonance or the resonating interval. Visual space is defined as left brain -- linear, visual, western hemisphere and quantitative. Acoustic is ear-oriented, right brain, spatial-tactile, and eastern hemisphere. The tetrad figure, due to its graphic imagery, helps reveal both the figure and ground simultaneously (McLuhan, 1989).

“Audile (acoustic) space and tactile (visual) space are in fact inseparable. But in the interfaces created by these senses, figure and ground are in dynamic equilibrium, each exerting pressure on the other across the interval separating them. The interface, therefore, is resonant and not static. The pressure creates a condition of continual, potential transformation called chiasmus (p. 6).

The tetrad, a right-hemisphere visualization, helps us to see both figure and ground at a time when the latent effects of the mechanical age tend to obscure the ground subliminally. Its chief utility is that it raises the hidden ground to visibility, enabling the analyst to perceive the double action of the visual (left hemisphere) and the acoustic (right hemisphere) in the life of the artifact or idea. As such, the tetrad performs the function of myth in that it compresses past, present, and future into one through the power of simultaneity. The tetrad illumines the borderline between acoustic and visual space as an arena of spiraling
repetition and replay, both of input and feedback, interlace and interface in the area of an imploded circle of rebirth and metamorphosis (McLuhan & Powers, 1989 p.9).Essentially, the graphic display of the tetrad acts as a lateral which forces the analyst to see hidden effects that otherwise would not come into play due to the visual left brain linear dominance of western societies. “Simultaneous understanding” or “integral awareness,” can be seen in the tetrad. McLuhan invented the tetrad as a means of assessing the current cultural shift between visual an acoustic space. “At present, every artifact of man mirrors the shift between these two modes” (McLuhan, 1989, p. x).

McLuhan’s theoretical position is technological determinism. “McLuhan repeatedly claims that man makes his machines and then his machines make him, and it is this remaking of man that he gives most of his attention to explaining. It is also the aspect of social change that is most closely associated with his theory” (Skiff, 1970, p. 16). In the book The global village (M. McLuhan, & Powers, B.R., 1989), McLuhan’s association of determinism with the four facets of the tetrad is “theory transparent;” that is, all four questions are focused on the social effects of a new media innovation.

“Our research at the Centre for Culture and Technology in Toronto constituted an inquiry into the formal aspects of (linguistic) communication which, in the process, uncovered a tetradic structure: all media forms (a) intensify something in a culture, while, at the same time (b) obsolescing something else. They also (c) retrieve a phase or factor long ago pushed aside and (d) undergo a modification (or reversal) when extended beyond the limits of their potential. The result is a four-part metaphor.
When this four-part “structure of the word” (*logos*) is applied to technologies, one is able to ascertain the dynamic and social impact of any human artifact on the society into which it is extended; this can be formulated in a simple four-part analysis” (McLuhan, 1989, pp. x – xi).

To appreciate the output of McLuhan’s tetrad as a future focused instrument, the researcher needs to center on two key points. First, the tetrad is in fact a set of four broad questions that Powers and McLuhan developed by dissecting and modeling innovations. Second, the figure and ground composition of the tetrad responds (resonates) with the incessant change of artifacts. In concert, the four questions and sustained resonation reveal hidden effects.

For example, the **innovation of the cell phone** allows individuals to: 1.) connect anywhere at anytime (**enhancement**) making communication more convenient, and improve work flow through timeliness of contact and response; at the same time; 2.) land lines, unsightly poles and supporting service jobs will (**obsolesce**). The cell phone 3.) brings back, (**retrieves**) a sense of smallness, “global shrink,” reduces cities and corporate conglomerates back to a small town ease of personal contact perspective. In (**reversal**); 4.) with high saturation, the cell phone intrudes on our privacy, demands attention 24/7, and even distracts automobile drivers and workers causing accidents and even death.

At this juncture, society approaches a new round of cell phone innovation and hence a new resonating interval. We are starting to see remote speakers and microphones attached to the ear and head. In the near future, we will only see smaller and more efficient attached devices that leave the hands free to drive and work. This **reversal**
creates a new ground and figure for the four tetrad questions associated with the next
generation of the cell phone that essentially connects to the body.

In this study, when the tetrad is experimentally applied to new innovations, the
expectation is that insightful predictions of future effects can be made with the four
tetradic questions in conjunction with figure and ground.

**Research Questions**

**Research Question 1:** Can McLuhan’s tetrad be used to focus group ideation
(brainstorming) sessions to reveal future innovation effects?

**Research Question 2:** Will the business and organizational groups that use the
tetrad as laterals believe the tetrad adds value to their ideation process?
CHAPTER THREE

RESEARCH METHODOLOGY

Research design and data collection for this study is fairly straightforward. It is anticipated that the group most likely to benefit from an operationalized tetrad is the business sector. For external validity and generalization, data gathering has been constructed around settings that replicate probable use. Since it is an objective of the research to create a future focused product development tool, a convenience sample of six different groups, representing five different industries has been targeted for implementation. These are John Deere, (farm implement manufacturing – two sessions), Jacobson Companies (warehousing, packaging and transportation), Innovation growers, (40 Iowa farmers – no trans-fat soybean products), Leo Burnett Worldwide, (Chicago advertising agency) and a group of graduate students in the Greenlee School (academia). All of the groups are dramatically different in their approach to marketing, markets served, values and products manufactured or developed. The data will be collected through inclusion and participation in ordinary, commonplace group ideation sessions. Post-session, a questionnaire will be administered to the participants who will be charged with evaluating the tetrad’s value as an ideation lateral. The primary objective is to determine if McLuhan’s four tetrad questions can "enrich" an ideation session by predicting and analyzing future effects of innovations.

Each of the ideation/brainstorming sessions will consist of three major segments. The first segment, part (1) is an introduction of Marshall McLuhan’s tetrad concept to the participants. This will be a focused PowerPoint that will be presented to each of the participating groups. In this study, the researcher will serve as the moderator/facilitator
and data gatherer. The PowerPoint is expected to take about 20 minutes and will be presented to each group in an identical manner, (Appendix B, -- PowerPoint example). The second part (2) is an ideation assignment. The assignment will be an ideation goal that is relevant to each specific group, (Appendix C – example from the graduate student group). Data collection of sessions is designed to be scalable; thus the number of ideation events within any one company will depend on the number of participants divided by the optimum number of session attendees. Specific group size will contain four to eight associates. Each participant will receive an agreed to “unique” tetrad session assignment. Because each ideation objective will be written specifically for each company or group, it is anticipated that the assignments may vary in complexity. Actual content that is brainstormed along with any information gathered will be considered proprietary to each of the business groups and will remain the property of the participating companies. A sample report-out from the graduate student ideation session is attached, (Appendix D). The objective of the study is not for the researcher to evaluate actual ideation output, but for the “participants” to determine and appraise the value of their output relative to the inclusion of the tetrad in their ideation session. See study design (figure 3).
The third segment, part (3) is a report-out followed with a questionnaire. The questionnaire is the data gathering instrument for the study, and will not vary from company to company, (Appendix E). All respondents will receive the same vehicle to evaluate their success or failure of using the tetrad as an integral part of a brainstorming session specific to their team’s ideation goals. The questionnaire immediately follows the report-out of results by each of the ideation teams which should clearly focus results for quantitative evaluation.
The generalization of the research results because of convenience sampling methodology will not lend itself to traditional statistical validity tests. On the other hand, the research is purposely being conducted and applied directly into “diverse” business and organizational climates. Although the groups are being hand selected, the participants are unknown. The net generalization will depend greatly on the dynamic response level and consistency of response from the evaluation questionnaire. The research will show that a fair test was administered against the targeted diverse groups thus weighing the value of the tetrad for lateral ideation purposes. If the evaluation among firms is directionally inconsistent, generalization may not be possible. The values assigned to question responses can best be resolved through simple descriptive statistics (Wimmer, 2006).

Questionnaire coding instructions for the evaluation questionnaire have been assembled into a table (Appendix F).
What will be the effects, and even more important, what will be the new products it will spawn? The primary objective of this study was to discover whether McLuhan’s tetrad could be operationalized, (successfully applied) to real world issues. The determining assessment of operational success would be the opinions of research participants as to the tetrad’s usefulness as a lateral for ideation toward new product development.

The strategy for generalization behind the research methodology was to probe organizations selectively diverse enough to generalize findings onto a broad environment. Six different and diverse tetrad scenarios within four businesses and one academic organization were completed. The following table #1 shows each group or company analyzed, the scenario for each specific tetrad investigation and the number of participants involved.

Table 1, Convenience Sample Structure

<table>
<thead>
<tr>
<th>Company or group</th>
<th>Tetrad Scenario</th>
<th># of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate students</td>
<td>Social Effects of E-mail</td>
<td>20</td>
</tr>
<tr>
<td>John Deere</td>
<td>Global Positioning and farming</td>
<td>16</td>
</tr>
<tr>
<td>John Deere</td>
<td>Genetic Engineering and farming</td>
<td>14</td>
</tr>
<tr>
<td>Innovation Growers</td>
<td>No trans-fat soybean oil</td>
<td>4</td>
</tr>
<tr>
<td>Jacobson Companies</td>
<td>54 vs. 57 foot trailers</td>
<td>4</td>
</tr>
<tr>
<td>Leo Burnett Adv</td>
<td>Electronic paper technology</td>
<td>5</td>
</tr>
</tbody>
</table>
Prior to each session, a topic relevant to the business or group was selected. These have varied from tactical detailed projects such as 57 vs. 53 foot over-the-road tractor trailers to abstract, far-reaching future technology considerations such as electronic paper and its effect on the advertising industry. Printed materials outlining each ideation scenario were prepared in advance along with four carefully written tetrad questions focused on what would be enhanced, obsolesced, retrieved, and reversed. The ideation session at each location took two hours. Each session required about 20 minutes to introduce the tetrad. This was followed by one hour of brainstorming with 15 minutes devoted to each of the four tetrad questions. The session culminated with a group download and self-administered questionnaire developed for the single purpose of assessing the value of the tetrad to each of the participants and in essence their organization.

Overall, this study was more qualitative than quantitative. There was never any intent for the sample to be drawn at random. This was a convenience sample determined through personal relationships. There was anonymity in that I had met only five of the 63 participants on previous occasions. Consequently, I do not feel there was any general bias based on the participants need to please the researcher.

The purpose of the tetrad session and the questionnaire was to answer two specific, but related questions. **Research Question 1**: Can McLuhan’s tetrad be used to focus group ideation (brainstorming) sessions to reveal future innovation effects? **Research Question 2**: Will the business and organizational groups that use the tetrad as laterals believe the tetrad adds value to their ideation process?
Description of Groups and Sessions

The graduate student study was conducted in a normal classroom setting within the Greenlee School at Iowa State University. The topic selection, effects of e-mail, was selected after consultation with the course instructor. The class first sat through an explanation of the tetrad. This was followed by breaking the 20 class members up into three ideation groups located in three different physical settings. I visited each group several times during the session to both observe and help them progress toward the report-out session that followed. There were three noteworthy observations. First, the students did not need my help; the prepared materials and format questions seemed to provide an outline conducive to brainstorming. Second, they were interested, and even competitive about answering the four tetrad questions. Third, they were having fun, which is considered to be a positive aspect of creative brainstorming. A synopsis of the student output is exhibited in appendix D.

The sessions with John Deere took place at their Ankeny, Iowa facility. The 30 engineers in attendance were from their cotton harvester division. It is important to note that these two tetrad groups were composed of both R & D along with manufacturing and technical engineers. They were not homogenous relative to a concentrated interest in the R & D aspects of focusing on future effects for product development. From the group of 30 engineers, four ideation groups were created; two of the groups were given a GPS farming tetrad and two were given a genetic crop engineering tetrad. Four breakout rooms were used. I rotated from room to room, and observed both group competitiveness and intensity around the two tetrad problems. The report-out from bringing the four groups back together took longer that expected. Instead of 20 minutes, it took 40 minutes
and prompted both questions, and discussion. We ran out of time. I was finally forced to cut the discussion short, and administer the questionnaire. The questionnaire ended up being rushed. I felt this had an effect on the quantity of written comments relative to output from the other tetrad research groups.

The Innovation Growers session was made up of two farmer members from their board of directors and two outside business associates, one a marketing representative, and one a possible natural cosmetics customer for non GMO, no trans-fat soybean products. This group had a definite flavor of entrepreneurship and small business orientation. Brainstorming was an unusual activity which they seemed to enjoy and wanted to share with others on their board. I had the distinct impression that the tetrad session trained this group to conduct future sessions on their own. The tetrad investigation process made them think about possible product and market opportunities which they were excited to share with the balance of their farmer organization.

The Jacobson Companies project was conducted with four director/managers in their logistics division. These were not researchers, marketers or planners, but managers who were focused on moving freight on a daily basis. The session topic was about the basic opportunity to switch from 53’ to 57’ trailers. The political/public trigger was fuel energy efficiency derived from larger loads and fewer over the road trucks. This was an interesting session; on the surface, there were obvious advantages to a 57’ trailer (enhancement). But as we progressed through the tetrad, looking into future effects, the advantages disappeared. It seemed enlightening to them that the study of future effects would be beneficial to today’s decisions.
The session with Leo Burnett in their Chicago office was exciting. The five participants were research, planning professionals with direct account planner responsibility. Essentially what they learned in the session they were ready to apply with their clients. By pure chance, the meeting room was configured in a way to display the output as we progressed through the tetrad. This created the opportunity for the participants to practice what McLuhan referred to as the resonating interval. This was a major unexpected discovery of the research. The topic was also interesting. E-paper was not a subject they had seriously considered. There was some familiarity with what it was, but no consideration for its effect on the advertising industry. Thus this session differed from the others in that it included an educational discussion of e-paper vision. This was accomplished at the beginning of the session through the use of an Epson press release.

Findings

The questionnaire was basically designed to explore tetrad worth by asking similar validation questions in five different ways. The primary questionnaire objective was to verify consistency of results in all five of the possible responses. The first of these approaches was a question that had 16 parts; a semantic differential scale with seven possible choices for each pair of adjectives. The adjectives were drawn from standardized questions as found in Communication Research Measures: A Sourcebook (Rubin and Palmgreen, 1994). Within the questionnaire, the differentials were randomly reversed left to right in order to thwart casual response patterns. For ease of understanding, the following table 2 has been restructured with negative responses all on the left (score of 1) and positive on the right, (score of 7).
Table 2, Results of Semantic differential Scale

Regarding the four tetrad questions [enhance, obsolete, retrieve, and reverse] as “laterals” for ideation, would you say they are:

<table>
<thead>
<tr>
<th>Not Meaningful</th>
<th>5.7:</th>
<th>Meaningful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable</td>
<td>5.7</td>
<td>Applicable</td>
</tr>
<tr>
<td>Illogical</td>
<td>5.8</td>
<td>Logical</td>
</tr>
<tr>
<td>Trivial</td>
<td>5.2</td>
<td>Fundamental</td>
</tr>
<tr>
<td>Unreasonable</td>
<td>5.8</td>
<td>Reasonable</td>
</tr>
<tr>
<td>Mundane</td>
<td>5.7</td>
<td>Fascinating</td>
</tr>
<tr>
<td>Useless</td>
<td>5.7</td>
<td>Useful</td>
</tr>
<tr>
<td>Unintelligent</td>
<td>5.7</td>
<td>Intelligent</td>
</tr>
<tr>
<td>Uninspired</td>
<td>5.6</td>
<td>Inspired</td>
</tr>
<tr>
<td>Incomplete</td>
<td>5.2</td>
<td>Complete</td>
</tr>
<tr>
<td>Not perceptive</td>
<td>5.7</td>
<td>Perceptive</td>
</tr>
<tr>
<td>Insignificant</td>
<td>5.7</td>
<td>Significant</td>
</tr>
<tr>
<td>Naive</td>
<td>6.0</td>
<td>Insightful</td>
</tr>
<tr>
<td>Superfluous</td>
<td>5.1</td>
<td>Vital</td>
</tr>
<tr>
<td>Unexciting</td>
<td>5.6</td>
<td>Exciting</td>
</tr>
<tr>
<td>Nonsense</td>
<td>5.6</td>
<td>Sensible</td>
</tr>
</tbody>
</table>

The question asked each participant to rate the four tetrad questions as to their value as laterals on a seven point scale. This question received an overall positive result as shown by the average answer to each set of adjectives in table 2 above. An interesting aspect of the diversity of answers to this question was a subtle, but noticeable difference between the participating groups. Overall the John Deere groups gave slightly lower ratings, averaging 5.37 and 5.32 on all 16 differentials. The Jacobson group was also in this range, at 5.2 with the lower score seeming to reflect the nature of their subject and their logistical daily focus, figure 4.
Figure 4, Difference in Group Response

Average scores of 16 Semantic Differentials by research Group
(Exact 7 point scale - explicit graphic representation)
Both Burnett and innovation growers score high at 5.81 and 6.14 respectively. Finally the graduate students also came in high, at 5.99 as depicted in the table above. Table 3 outlines variance between the group scores. The groups are analyzed with both statistical measures of variation, (the standard deviation) and also percentages of each group’s scores as negative, neutral and positive relative to their overall averages.

Table 3, Group Variation in Differential Scores

<table>
<thead>
<tr>
<th>Ideation Group</th>
<th>Mean Score</th>
<th>Standard Deviation of mean</th>
<th>% of scores 1 – 2 – 3 negative</th>
<th>% of scores 4 neutral</th>
<th>% of scores 5 – 6 – 7 positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jacobson 57’ trailers</td>
<td>5.17</td>
<td>.77</td>
<td>3.1</td>
<td>7.8</td>
<td>89.1</td>
</tr>
<tr>
<td>Innovation Growers Soybean oil</td>
<td>6.14</td>
<td>.73</td>
<td>0.0</td>
<td>1.6</td>
<td>98.4</td>
</tr>
<tr>
<td>Leo Burnett E-paper</td>
<td>5.81</td>
<td>.94</td>
<td>2.5</td>
<td>2.5</td>
<td>95.0</td>
</tr>
<tr>
<td>JD GPS</td>
<td>5.37</td>
<td>.94</td>
<td>6.3</td>
<td>8.5</td>
<td>85.3</td>
</tr>
<tr>
<td>JD Genetic</td>
<td>5.32</td>
<td>1.02</td>
<td>3.5</td>
<td>13.7</td>
<td>82.8</td>
</tr>
<tr>
<td>Graduate Students E-mail</td>
<td>5.99</td>
<td>1.01</td>
<td>1.3</td>
<td>5.9</td>
<td>92.8</td>
</tr>
<tr>
<td>Total</td>
<td>5.63</td>
<td>1.02</td>
<td>3.1</td>
<td>8.0</td>
<td>88.9</td>
</tr>
</tbody>
</table>

There appears to be more variance in the scores of the larger groups. This is the opposite of the experience anticipated from central tendency usually found with an increase in the number of observations. I suspect this may be due to the qualitative observation that the larger groups where not homogenous in their make-up and level of interest in research – future focusing techniques. The Burnett group scores also had a
fairly high deviation. The main variance came from scores in the maximum (7) range. Only 2 of the Burnett scores were 3 or lower; whereas over 20 percent of their scores were the maximum of seven.

Both the John Deere and graduate student groups seemed to have some participants who tended to have a wider range of response to the questions throughout the questionnaire. This matches up with qualitative observations made during the research sessions to be commented on more fully in the discussion section. Overall the scores for the semantic differential portion of the questionnaire were consistently positive and high. Out of the 1008 possible responses to this section by the 63 participants, only 31 of the scores were below the midpoint of four. Only 3.1% of the answers to this question on all values could have been considered as negative.

The next question dealt with the participants’ ranking of the four questions in order of importance. Table 4 shows the four tetrad questions with their rankings of value to the ideation session.

**Table 4, Ranking of tetrad questions in value (frequency of response)**

<table>
<thead>
<tr>
<th>Ranking</th>
<th>% Enhance</th>
<th>% Obsolesce</th>
<th>% Retrieve</th>
<th>% Reverse</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>59.6</td>
<td>18.0</td>
<td>8.3</td>
<td>16.4</td>
</tr>
<tr>
<td>2</td>
<td>21.0</td>
<td>32.8</td>
<td>28.3</td>
<td>21.3</td>
</tr>
<tr>
<td>3</td>
<td>9.7</td>
<td>31.2</td>
<td>26.7</td>
<td>27.9</td>
</tr>
<tr>
<td>4</td>
<td>9.7</td>
<td>18.0</td>
<td>36.7</td>
<td>34.4</td>
</tr>
</tbody>
</table>
The observed outcome was somewhat expected. An “unmistakable” pattern of general rank agreement for enhancement was anticipated. Based on traditional business orientation and practices, I felt that enhanced would be selected as first, followed by the other three words in mixed order. We clearly have enhanced ranked number one, then comes obsolesce a weak second, with retrieve and reverse somewhat tied for 3rd and 4th. After ranking enhance first, the participants seemed to rank the importance of the other three words somewhat equally. Out of the 24 possible permutations of ranking 1, 2, 3, 4 the participants came up with 21 variations. Only four of the possible sequences had more than five agreeing participants. Overall, save for enhance, there is a lack of strong importance patterns of rank distribution in the four tetrad words. This tends to support the idea that variations in the individual participants, groups and tetrad subject matter led to inconsistent values in three of the four tetrad questions.

The next set of four questions investigated the concept of developing new products based upon the idea of predicting future effects.

**#3. How do you feel about the idea of trying to predict future effects relative to developing new products? (circle one)**

3a. Understanding future effects will be useful for developing new products.
   - Strongly agree < 5 4 3 2 1 > Strongly disagree

3b. Innovation effects should always be considered, they help us understand gaps and other new product needs.
   - Strongly agree < 5 4 3 2 1 > Strongly disagree

3c. I don’t think we really need to predict future effects, we can get the same information by studying trends.
   - Strongly agree < 5 4 3 2 1 > Strongly disagree

On the above five point scale, question 3a. (useful for product development) received a score of 4.5, strongly agree. Question 3b. (understand need gaps) received a
score of 4.6 strongly agree and 3c. (just study trends) received a response of 2.1, strongly disagree. All three scores indicate tetrad concept support for predicting effects for new product development. An analysis of the answers to these questions pointed to some differences existing in the 6 groups, table 5.

**Table 5, Importance of predicting future effects for product development**

<table>
<thead>
<tr>
<th>Ideation Group</th>
<th>Mean and standard deviation</th>
<th>Future effects are useful for product development</th>
<th>Effects should always be considered for gaps and needs</th>
<th>No need to predict effects just Study trends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jacobson 57’ trailers</td>
<td>4.8 - 0.5 SD</td>
<td>4.0 - 0.0 SD</td>
<td>2.0 - 1.4 SD</td>
<td></td>
</tr>
<tr>
<td>Innovation Growers Soybean oil</td>
<td>5.0 - 0.0</td>
<td>4.75 - 0.5</td>
<td>1.3 - 0.5</td>
<td></td>
</tr>
<tr>
<td>Leo Burnett E-paper</td>
<td>5.0 - 0.0</td>
<td>5.0 - 0.0</td>
<td>1.6 - 0.9</td>
<td></td>
</tr>
<tr>
<td>JD GPS</td>
<td>4.6 - 0.5</td>
<td>4.6 - 0.5</td>
<td>2.4 - 0.9</td>
<td></td>
</tr>
<tr>
<td>JD Genetic</td>
<td>3.9 - 1.4</td>
<td>4.5 - 0.6</td>
<td>2.1 - 0.6</td>
<td></td>
</tr>
<tr>
<td>Graduate Students E-mail</td>
<td>4.6 - 0.49</td>
<td>4.6 - 0.6</td>
<td>2.2 - 0.9</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4.5 - 0.9</td>
<td>4.6 - 0.5</td>
<td>2.1 - 0.9</td>
<td></td>
</tr>
</tbody>
</table>

On a 5 point scale, (5 strongly agree…… 1 strongly disagree)

Overall, for these three questions there seemed to be more inter-group consistency; high scores (5 point scale) and less variance than the semantic differentials as shown in table 5 by the standard deviation for each mean.
This question sequence ended with an opportunity for open-end comments on effects and prediction of product needs. There were two insightful comments: “The demand changes so quickly that we need to predict the changes in trends to meet those changes.” “Too often we focus on & get excited about what technology can do, especially in the short run for new product development! By focusing on effects, especially bigger, long term effects, companies would truly be more innovative & hopefully display a conscience.”

The next major question regarding the tetrad was how well just these four questions outlined future effects. On a similar five point scale, looking for disagreement, the following two “leading” questions were asked:

**How well do the tetrad questions outline future effects?**

4a. The questions seem to bring out new lines of thinking, a productive paradigm shift.

*Strongly agree < 5 4 3 2 1 > Strongly disagree*

4b. The four questions, (enhance, obsolesce, retrieve, reverse), seem to cover the entire field of possible future effects, I would not add any other questions.

*Strongly agree < 5 4 3 2 1 > Strongly disagree*

Respectively the scores to these two questions were 3.9 and 3.3 on the 5 point – strongly agree, strongly disagree scale. From the perspective of the entire study, even though these are positive scores, they are the lowest found in the research. Some of the comments following this question lead to a better understanding of the lower scores. “I hate to call anything fully conclusive as it often immediately stagnates thinking.” “Very well, but there are always other considerations & I would not limit myself to only those four categories.” “Not sure, Seems to be pretty comprehensive but would want to spend more time exploring.”
The last two questions of the questionnaire were the acid test of tetrad acceptability. Question number five asked if they would ever use the tetrad set of questions in a future brainstorming session.

**#5. Do you feel that you will use the tetrad set of questions in future brainstorming and ideation sessions? Yes ___ No ___ Don’t Know ___**

Of the total participants, 73.0% said they would, 19.1% did not know, 2 said no, and 3 did not answer the question = 7.9%.

**Figure 5, Bar graph of future tetrad use**

<table>
<thead>
<tr>
<th>73% Yes</th>
<th>Don’t Know</th>
<th>No</th>
<th>NA</th>
</tr>
</thead>
</table>

The second acid test question, asked participants for their e-mail address, where they would then receive more information on McLuhan and his tetrad.

**Would you like more information on Marshall McLuhan and the tetrad?** There are some subtleties about the tetrad that may help you in future ideation sessions. If you have an interest, write in your e-mail address and I will send you some of the more important excerpts from his book on innovation and the prediction of effects.

(e-mail address)________________________________

Of the 63 participants in the study, 30 or 47.6% gave up their e-mail address to receive more information. These last two questions were responded to quite differently by the groups in the study. Basically the participants within Innovative Growers, Leo Burnett and the Jacobson business groups all responded yes to using the tetrad in the future and all save one person asked to be sent more information. The John Deere and graduate class had lower interest levels on these two questions.
Discussion

Some of the more important ingredients of a desirable ideation or brainstorming session are excitement, interest and involvement on the part of the participants. The tetrad sessions were exciting, interesting, and involved participants. Perhaps because it was new and different, the groups all seemed to really “get into” the tetrad process. The answers to the questionnaire are partially attuned to the value and enjoyment of the session along with output of the tetrad process. The questionnaire response cannot be isolated to the tetrad concept. It is really a reflection of the entire experience: process, tetrad questions, subject to be explored and the session itself.

On all measures, the tetrad and process seemed to perform well and connect to the participants as having value. My most significant finding was the consistency in the participants’ responses along with the positive questionnaire scores. The questionnaire gave the participants every opportunity to express their thoughts both positive and negative – yet the response was positive in most aspects. The tetrad does open doors to possible future effects. The participants see value in the process and responded positively to the acid test of: will you use the tetrad in the future? 73% yes.

Regarding the ideation methods, and tetrad test topics, there are several changes that could be made to enhance the experience. First, the tetrad appears to work best within an environment of highly interested participants and groups. Within the two John Deere groups there were participants who seemed not to have an interest in the long term ideation process. Both groups were made up of a broad spectrum of manufacturing engineers as well as R & D associates. This meant that the groups were not homogenous in their interest toward new product development. The other business groups were
smaller, and had a more direct interest in product development and methods of revealing future effects and needs. For example, the following two quotes came from the John Deere groups: “Most things are given to me. I feel this is only applicable to brainstorming sessions.” “Our focus is most often on the shorter term – 2 to 5 years. Not 10 to 25 years.”

The tetrad worked best with those who were in common with research, trend data and methods of investigation. The Burnett group was nearly the opposite of the Deere group, being wholly made up of strategists and researchers, planner/consultants for agency clients. They were highly interested and involved with the tetrad. In his book *The Global Village*, McLuhan describes what he calls the “resonating interval.” This resonating interval meant that a practitioner of the tetrad would bounce back and forth between figure and ground, seeing all four tetrad questions as being interrelated and revealing. The idea is that one could consider past, present and future at the same moment in time. This concept was not included in the pre-session training as part of the study. I did not feel that I could get implementation beyond the initial four tetrad questions. In the Burnett session, we were working off easels and flip charts of paper. Unlike the other sessions, output was hung up all over the walls of the room. The process was the same in all sessions; we generally worked through each tetrad question, one at a time. But the Burnett team started jumping from question to question, particularly from obsolete and retrieve to reverse. Here is a quote from that group: “What was interesting was the interplay between obsolesce & retrieval helped to re-define how things might change or re-emerge.” In retrospect, I believe a tetrad session would be more productive by working all four questions separately, but also in parallel, bouncing
back and forth through the four question relationships. I feel that I could have introduced the resonating interval concept to Burnett with the result of having even more predictive information come from the exercise. I also believe past, present and future could be brought in as another dimension of ideation to enhance discovery.

The one area of some weakness is the completeness of the four tetrad questions. Several of the participants felt there are other possible words. No one came up with anything -- there was just a feeling that something was missing. I too feel this way, and from time to time look for a fifth dimension to the tetrad.

Two of the five in the Burnett group felt that the consumer was missing in the tetrad analysis. This is true. The tetrad, as it was presented, was an “insider” inquiry. Perhaps the missing consumer element can easily be brought into the process by including them as a group for a specific session topic. As an alternative, it would be simple to move the tetrad questions into the consumer focus group environment.

Another problem that shows up with the tetrad is that it appears to be good at predicting future effects and perhaps even products. But as one participant noted: “Can come up with opposing outcomes to the same issue—how to decisively resolve?” We seem to be able to enumerate future effects, but which effects are really going to happen? The answer to that seems to be a second or additional step to the basic tetrad process of investigation. In nearly every session, differing, sometimes opposing effects were predicted. It seems like the tetrad process would benefit from an exit Delphi-like exercise where the group has to gain consensus on a single outcome.

Selected open-ended verbatim comments: “Interesting concept and something I have never seen before.” “It is a very good process to allow all participants to review the
aspects of a subject. Keeps ideas generating and forces participants to review the whole picture.” “I think this would be good to do at a future board meeting.” “Think it could really give an interesting frame for my clients who usually stop @ enhance. Many thanks, very cerebrally exciting.” “Allows for better organization of brainstorming activities.” “I am surprised that this theory can fit into business related topics so well” (See Appendix A for all qualitative open-ended comments).
McLuhan’s tetrad is a rhetorical device that can be effectively used to focus thought or inquiry into the study of future effects, needs and products. As such, it provides a framework for a reflection process that is dependent on individual and group intellectual input. The tetrad along with each participant’s knowledge, experience and interest in a specific topic, influences the prediction or output of the process. Thus, it is not absolute that a tetrad “event” or session will envisage the same specific future each time, and with each participating group. The tetrad’s great strength is its capability, when used appropriately by a business or organization, to channel (focus) thoughts about the future. Thus it is not a predictor, as much as it is an investigator of possibilities.

For the purpose of brainstorming, the tetrad seems to have a fundamental relationship to the life cycles of products, ideas, and technologies. In this respect it is unique; it appears to be both a “relevant and a lateral” ideation tool combined. Within and across organizations in the study, there was a general recognition of the tetrad’s significance when projecting a new product’s life cycle. The three tetrad questions beyond “enhance” were seen as avenues to understanding future consequences and product opportunities.

For the intention of diffusion, the tetrad has organizational “taken away” value. Essentially, it is just four simple words wrapped around an ideation experience coupled with an explanation of relevancy to product life cycles. It is very easy to learn. Those who have undergone a single session quickly recognize that they can easily run a tetrad session on their own. After going through the tetrad experience, the Leo Burnett
advertising group, composed of strategic account planners whose clients were Starcom Worldwide, Discover Card, Nintendo, Allstate, and McDonalds were essentially trained and excited about running a tetrad session with their clients.

Application of the tetrad seems to work best with a topic related to revolutionary vs. incremental change. The aspect of “big ideas” seems to gain heightened participant interest; challenging the thought process and contemplation of future possibilities. The tetrad also seems most likely to add value to activities one and two of Rogers’ stages of innovation. These are (1) identification of consumer needs and (2) supporting product development research. Anticipating the effects of the end product at the earlier stages of development focuses on the near future vs. long range forecasting which would inherently contain more error and variation.

**Limitations**

The one obvious limitation of the study is its reliance on a convenience sample vs. a projectable random sample of organizations. Realistically it would have been nearly impossible to randomly select participants from the business environment and expect to execute this study. The convenience sample simply means that the study does not contain statistical inference capabilities. However, the study participants are of a quality, size and nature that make it possible to project generalization of the research within the business sector. This is primarily possible because the diversity of the organizations and the consistency of results and high value placed on the tetrad by the study participants. It would be greatly unexpected to find an organization that would not learn and profit from the knowledge generated by using the tetrad.
This study makes no claim that McLuhan’s tetrad is superior to other forms of ideation. There are numerous brainstorming techniques; some were discussed in this thesis: Delphi, scenario, mapping, morphology matrix, gap analysis to mention a few. Nearly any technique can be altered to study future effects. But, like the tetrad, each methodology is usually recognized for a specific strength; for example, Delphi leads to a consensus. As a researcher, searching for truth and knowledge, you choose the tool most likely to fit your purpose. No one qualitative research methodology is generally better than another; the tetrad is just another tool, recognized for its tendency to reveal future innovation effects.

As outlined in the introduction, it is the position of this thesis that it is important to help organizations think about the future. The tetrad can be marketed as a device to help organizations develop a “futuring” competency in product development that may not now exist. Thus the tetrad is not only a tool to channel future thinking, but a tool to internally promote the importance of focusing on the future as a corporate proficiency. Inherent to the tetrad is its marketability as a branded method to focus on the future. A brand is nothing more than attaching meaning to a name; in the case of the tetrad we have an intriguing, mysterious, near mythic name that could easily connote an instrument to channel future thinking. Of the above outlined methods, it is the only one developed just for that purpose. The graphic double mobius representation of the tetrad and the relationships between the four words are only focused on one outcome, future effects. The most candid way to look at the tetrad is that it is a focused research tool that simply addresses the qualitative aspects of future effects.
Suggestions for further studies

As pointed out in the discussion, there seem to be five areas of possible improvement to be made in order to capitalize on the operationalized tetrad. These are:

(1) An investigation into a fundamental fifth question that would add value to the tetrad process. From the time that I first saw the tetrad questions, I have been intrigued with the idea of improving it with one or more questions. This may not be possible, but it needs to be investigated. One possibility incorporates Hegel’s dialectic: thesis, antithesis and synthesis. McLuhan seemed to treat the tetrad in black and white terms, enhanced or obsolesced, retrieved or reversed. The idea of synthesis placed in the center of the graphic tetrad appeals to a progression of change (acceptance/rejection) vs. overnight enhancement or obsolescence.

(2) Research that tests the tetrad from a consumer perspective vs. internalized product development groups. There would appear to be a need to run a tetrad scenario with both insiders to a technology and outside consumers. This would bring in a consumer perspective to future effects expectations. Learning is accomplished by comparing results of consumer tetrad predictions along side internal experts, a technique commonly used for studying segmented focus groups.

(3) Research that smoothly adds the Delphi technique onto the tetrad process to arrive at a single consensus future for effects and innovation. Essentially one would use the tetrad to develop a list of probable future effects. This would be followed by a Delphi technique to determine a consensus of the most likely future. Delphi is also somewhat connected to Hegel’s dialectic, synthesis and consensus being similar processes.
(4) The methodology of adding process for the resonating interval into the tetrad session needs to be studied. I think it can not only be done, but would make a revealing and interesting addition to the operationalization of McLuhan’s tetrad.

(5) McLuhan devised the tetrad to predict and study media technology effects. I saw the concept as an insightful equivalent to product life cycles and decided to apply it to new product development. After studying and using the tetrad over the last eighteen months, I have begun to realize that the tetrad is more fundamental and marketable than I first imagined. I now believe that it has the potential to eventually become an invaluable creative tool for understanding basic change, mega-trends and even decision making. There is clearly great effort yet to be expended to fully develop and utilize the tetrad.

**Tetrad Diffusion**

There are about three ways in which the results of this study of the tetrad as an ideation tool could be disseminated. On campus, I will try to receive support to train and speak to groups within different units. Topics for tetrad review may include innovation in agriculture, business, engineering and the sciences.

The second level of diffusion involves getting articles about the tetrad application published. Future-casting and technology prediction have enough news appeal to receive attention in academic journals and even trade magazines.

The third avenue for tetrad diffusion involves consulting and the more formal development of a book, pamphlet and/or seminar materials targeted to strategists, planners, and trend researchers within the business and government sectors.
REFERENCES


Technological Forecasting and Social Change, 73, 22.


APPENDIX A

Open-ended Qualitative responses

G – Graduate student, cell phone
E – John Deere, genetic engineering
D – John Deere, global positioning
B — Leo Burnett, e-paper
I – Innovation growers, no trans-fat soybeans
J – Jacobson Companies 57 foot trailers

#3d. Any additional comments about effects ability to predict product needs?

G- I think its’ highly useful and now having done the 4 step process myself it appears to be vital. It makes me wonder how we did this before the tetrad came along?

G- Very useful to study the effects they have on people.

G- Can be spurious

G- Think the tetrad is a good model to develop new ideas, theories, products, etc.

E- Interesting concept and something I have never seen before

E- One should not fear the “obsolete” portion of the tetrad. We are afraid of putting people out of work. Consider it from an opposite point, you may be freeing people up to innovate and explore!

E- Need to talk about how to drive research of unknown, so group has more real information to drive their long term view.

E- It seems like the process really works when considering hindsight, but how do we really know what will happen in the future. Speculation will always be speculation.

E- Very interesting approach for product development planning.

E- Other factors may change things, these factors may be harder to predict

D- Very interesting

D- Can come up with opposing outcomes to same issue --- how to decisively resolve?

D- Still a question ball (?) Boils down to asking the “right” questions.
I- Great process to get one thinking about beyond what is in front of them.

I- The demand changes so quickly that we need to predict the changes in trends to meet these changes.

B- I think it makes for more ethical development. Understanding the full ramifications of “innovation” or “change.”

- Too often we focus on & get excited about what technology can do especially in the short run for new product development! By focusing on effects, especially bigger, long term effects, companies would truly be more innovative & hopefully display a conscience.

B- The consumer perspective is fundamentally missing

#4c. Any additional comments about how the four terms describe future effects?

G- Very structured. Sometimes innovations can just fall out the sky. That is, can be random.

G- Very well -- but there are always other considerations & I would not limit myself to only those four categories.

G- The four steps are very filled out and give the type of results I would look for as a researcher.

D- I am open to other terms

D- Not sure you wouldn’t come to the same conclusions with other approaches

D- Is there something missing?

E- Enables past, present, and future ideas to blend together into “optimized” ideas

E- Four questions are effective; could use more method to answer

E- They do well, but to finish the discussion, the gaps question needs to be answered.

B- I hate to call anything fully conclusive as it often immediately stagnates thinking.

B- I liked thinking about additional industries that would be created as a result of changes.
B- Likelihood of adoption consumer behavior. Possibly add a consumer probability – consumer behavior—might affect the outcome

B- Not sure. Seems to be pretty comprehensive but would want to spend more time exploring.

B- What was interesting was the interplay between obsolescence & retrieval. helped to re-define how things might change or re-emerge

#5. Do you feel you will use the tetrad set of questions in the future?

G- It is a useful device, but it depends on what you are studying.

G- There are always some differences between theory and practice

G- Interesting for group dynamics

G- I really like and appreciate today’s class you brought in. It really helped us to understand the tetrad theory very well. Frankly, before today, I still did not get the exact meaning of the theory. I think the method is very useful and practical.

G- I thought it provided a frame to increase any future brainstorming session on media and the future.

G- Because I’m always thinking in the future and the incomes of great ideas.

G- I think it’s a fundamental to understand and predict the future.

G- It’s a good tool especially with heterogeneous groups

G- Allows for better organization of brainstorming activities. I am surprised that this theory can fit into business related topics so well.

G- Possibly

G- I think the tetrad addresses aspects people don’t often consider. We usually think about what a new product can do for us but not about what it will obsolesce, not about what it is reviving from the past, etc.

G- It’s a good idea to have a (pointer - ? or director - ?) to know where to go, and that way everybody can bring something to the discussion, ideas, etc.

G- I think this will apply to my life both in school and out. I almost want to start testing it out on my friends and family. It is very open and user friendly.
G- Just wanted to let you know, my entire group agreed that before tonight we didn’t get this tetrad at all. But now we do. So thank you very much!!

G- It functions as an effective brainstorming method to organize. It also allows one to think in a big picture

G- A really good model to follow in brainstorming and another way to discover new things.

E- This depends on the scope of the session

E- It may help develop cause/effect relationships in other areas than new product development and seems to be a “structured” way to “think outside the box”.

E- Reasonable method

E- Most things are given to me. I feel this is only applicable on brainstorming sessions.

E- It is a very good process to allow all participants to review the aspects of a subject. Keeps ideas generating and forces participants to review the whole picture. (action/reaction).

E- Our focus us most often on the shorter term – 2 to 5 years. Not 10 to 25 years

E- Needs increased consideration during our new product development.

D- May try to use this, interesting concept.

D- Would need more understanding of concept

D- Good tool for brainstorming

I- I see applications of this in brainstorming with a client

I- Will help clients see the whole picture to see where the design or new product will take them to in the future – needs and desires

I- I think it is a good approach to brainstorming

I- I think this would be good to do at a future Innovation Growers board meeting.

J- It is a matter of trying to use it a few times until it becomes more natural

J- I believe we do to some degree today. However this makes it more formal & probably more disciplined.
J- Can be applied for all business

B- Think it could really give an interesting frame for my clients who usually stop at “enhance”….many thanks, very cerebrally exciting.

B- Feel there is always room to try new things; new approaches to keeping people engaged & thinking about possibilities.

B- Liked the way it took you to places (in reference to the attributes on the first page) > Illogical, trivial, unreasonable, superfluous, nonsense > places you don’t normally go.
APPENDIX B.

Tetead Power Point Presentation

Slide 1

Predicting future effects

Slide 2

Using McLuhan’s tetrad as focusing tool for discovering the effects of new technology to determine “needs”

Holistic effects, big effects, unintended effects

Slide 3

Marshall and Me

• Marshall McLuhan = genius, 1911-1980
  – Media and technology
  – Printing press, television, the internet
  – The Medium is the message
  – “We become what we behold, we shape the tools shape us”
  – The global village - tetrad
• John Thomas = retired
  – 38 years, Maytag advertising/brand mngt/Mk
  – Teaching and going to school – Iowa State
  – Communications Device McLuhan “resonate”
  – Thesis research: McLuhan’s “TETRAD”
Slide 4

**Effects --** lead to opportunities and other new products

- Traditionally we develop products and solutions for the “here and now”, based on the present and near past… (incremental).
- If it is possible to understand the future, we could develop products for the future.
- The idea is not to be incremental, but instead take “GIANT STEPS” in innovation.
- Having a crystal ball that shows tomorrow’s world means that you can plan and innovate for the future......today!!

Slide 5

**Effects --** lead to opportunities/products

- By understanding probable **social, process or functional effects** brought about by a new innovation, you can create a new world scenar
  - “We shape the tools and the tools shape us”
    - By understanding how a “new tool” will shape a consumer process or function we can identify need-gaps
    - Need-gaps are often identified as “work-a-rounds, they are new product opportunities.
    - By understanding need-gaps, we can anticipate other new product innovations

Slide 6

[Diagram of relationships between Enhance, Obsolete, Retrieve, Reverse]
Slide 7

Tetrad Example

- The invention of the automobile
  - Enhanced human ability to cover great and to some extent carry cargo
  - Obsolesced equestrian/pedestrian travel
    - Collapsed neighborhood/town, inner city
  - Retrieved pioneer freedom of travel
  - Reversed, saturation, extreme
    - Pollution, traffic, global warming, oil War

  New resonating interval – hybrid -

Slide 8

Tetrad as a Paradigm - lateral

- In brainstorming or ideation, a lateral is often a word, concept, idea that makes the group think differently, = laterally
- The Fly
- The tetrad appears to have lateral power that is relevant

Slide 9

Tonight's Exercise - lateral

- Break into three groups 1-2-3
- New technology, E-mail
- Focus on the future, using McLuhan’s four questions.
- You have a guide sheet of Questions
- 1 hour of effects, 30 minutes of needs and needs products followed by a report-out
  - Capture your conclusions/thoughts
  - Think about needs [output] products

»Think BIG
APPENDIX C.

Tetrad Session Objective Statement

John C. Thomas
Greenlee School of Journalism &
Communication, Iowa State University

Predicting future effects and needs – jlmc501

Today’s Objective. Apply the tetrad questions to explore E-mail
technology and implications for future effects.

E-mail has been around for a while, it is a technology that most of us use on a
daily basis. In the relatively short period of its use, E-mail practices have already created
social effects. In the future as it matures there will most likely be even greater effects.
“We shape the tools and the tools shape us”. **What are the effects?** Your task is to
predict the future effects of e-mail on society. The effects can be far ranging, both
positive and negative. Consider, for example, the case of the cell phone:

The innovation of the cell phone allows individuals to 1.) connect anywhere at anytime
(*enhancement*) convenience, and improved work flow through timeliness of contact. 2.)
land lines, unsightly poles and supporting service jobs will (*obsolesce*). The cell phone 3.)
brings back, (*retrieve*) a sense of smallness, “global shrink,” reduces cities and corporate
conglomerates back to a small town ease of personal contact perspective. 4.) In (*reversal*)
with high saturation, the cell phone intrudes on our privacy, demands attention 24/7,
distracts drivers causing accidents and death. At this juncture, society approaches a new
round of cell phone innovation and hence a new resonating interval. We are starting to see
remote speakers and microphones attached to the ear and head. The next generation of cell
phones will essentially connect to the body.
Your four E-Mail Effects questions

Every innovation is an improvement over some current device it will make obsolete. Often, some long-lost attribute of a far earlier device/age is returned. Finally, every innovation eventually “runs its course,” over-saturates society and shows its downside in terms of negative consequences! This is depicted graphically on the next page as the life cycle of innovation.

Question #1. In the practice of communication through E-mail, what does e-mailing enlarge, enhance, improve, or make better?

Question #2. What practices, technologies or processes are eroded, degraded, or made obsolete by e-mail?

Question #3. What does the innovation of E-mail bring back that was once lost due to prior innovations or practices?

Question #4. What negative aspect (downside), might be manifested when E-mail exceeds full potential and is pushed beyond the limits of usefulness?
Create a picture for the future, -- centered on E-mail communications, and then consider other innovations that will be needed to operate in that future environment. [use the four questions]

Prompts:

a. what does the future of e-mail communications look like?

b. who will be using e-mail?

c. are all e-mail systems the same?

d. are hard systems gone: file copies and paper letters?

e. what about telephones?

f. is text messaging just e-mail on a phone?

g. in 2050, what might a day be like – (communications)

h. will keyboards always be used?

What are the usage gaps? – What else is needed?

Think of social effects, operational effects, functional effects, and unintended effects -- What happens to relationships??
APPENDIX D.

Sample Ideation Results: E-mail

Synthesis of enhancement question:
1. E-mail allows quick communication at a distance with a single person or group.
2. E-mail is cost efficient and environmentally friendly
3. E-mail is easy to do, allows for organized thoughts, inspires communication
4. E-mail is an “out” for those adverse to face-to-face communication
5. E-mail is easy to file, record, and transfer large files of information

Synthesis of obsolesced question:
1. Hand written letters, paper copies, paper filing will be minimized
2. Handwriting, cursive skills, spelling, and proper grammar are at risk
3. Interpersonal communication and “people skills” will decline
4. Automobile travel and personal visits may decline

Synthesis of retrieval question:
1. Reconnection to old friends, family in today’s mobile society
2. The written letter returns, along with reading habits
3. Brings back some leisure time, through efficiency
4. Brings back unity and identity (comment related to mobile society)
**Synthesis of reversal question (saturation):**

1. Loss of interpersonal skills, politeness, small talk
2. Probably confusion and misinterpretation
3. Cold and impersonal, (non-tech people could be left out of interactions)
4. Loss of privacy and security, uncontrolled spam and e-mails
5. Loss of emotional body language ques in communication
6. Over dependence on technology could lead to global failure of systems

**New product ideas based on needs:**

1. Course to teach new technologies
2. Multi-media e-mail capabilities, text, handwriting, video, sound/music
3. Secure systems, non-hackable, no spam,
4. Need sense stimulation
5. Need more human interaction/personality/visual contact
6. Send a scent, all senses
7. Universal language
8. Young and older market user hardware

**Researcher notes:** Students gravitated to new products that recaptured interaction related to interpersonal communications. E-mail has a lot of positive attributes, now it should be enhanced with personal communication, i.e. (VOIP, visual contact).
Today’s exercise was a “test” to determine the practical value of McLuhan’s tetrad as an ideation tool for predicting the future and evaluating effects that could lead to new product ideas.

Question #1, regarding the four tetrad questions [enhance, obsolete, retrieve, and reverse] as “lateral”s for ideation, would you say they are:

Meaningful ___:___:___:___:___:___:___ : Not meaningful
Not applicable ___:___:___:___:___:___:___ : Applicable
Illogical ___:___:___:___:___:___:___ : Logical
Trivial ___:___:___:___:___:___:___ : Fundamental
Reasonable ___:___:___:___:___:___:___ : Unreasonable
Fascinating ___:___:___:___:___:___:___ : Mundane
Useless ___:___:___:___:___:___:___ : Useful
Intelligent ___:___:___:___:___:___:___ : Unintelligent
Uninspired ___:___:___:___:___:___:___ : Inspired
Complete ___:___:___:___:___:___:___ : Incomplete
Not perceptive ___:___:___:___:___:___:___ : Perceptive
Significant ___:___:___:___:___:___:___ : Insignificant
Insightful ___:___:___:___:___:___:___ : Naïve
Vital ___:___:___:___:___:___:___ : Superfluous
Unexciting ___:___:___:___:___:___:___ : Exciting
Nonsense ___:___:___:___:___:___:___ : Sensible

Question #2, rank the four tetrad questions as to their value in tonight’s ideation session…….(write in 1, 2, 3, or 4)

Enhance ___ Retrieve ___
Obsolete ___ Reversal ___
#3. How do you feel about the idea of trying to predict future effects relative to developing new products? (circle one)

3a. Understanding future effects will be useful for developing new products.
   Strongly agree < 5 4 3 2 1 > Strongly disagree

3b. Innovation effects should always be considered, they help us understand gaps and other new product needs.
   Strongly agree < 5 4 3 2 1 > Strongly disagree

3c. I don’t think we really need to predict future effects, we can get the same information by studying trends.
   Strongly agree < 5 4 3 2 1 > Strongly disagree

3d. Any additional comments about effects ability to predict product needs?-----------------
-----------------------------------------------------------------------------------
-----------------------------------------------------------------------------------
-----------------------------------------------------------------------------------
-----------------------------------------------------------------------------------
-----------------------------------------------------------------------------------

#4. How well do the tetrad questions outline future effects? (circle one)

4a. The questions seem to bring out new lines of thinking, a productive paradigm shift.
   Strongly agree < 5 4 3 2 1 > Strongly disagree

4b. The four questions, (enhance, obsolesce, retrieve, reverse), seem to cover the entire field of possible future effects, I would not add any other questions.
   Strongly agree < 5 4 3 2 1 > Strongly disagree

4c. Any additional comments about how well the four terms describe future effects?-------
-----------------------------------------------------------------------------------
-----------------------------------------------------------------------------------
-----------------------------------------------------------------------------------
-----------------------------------------------------------------------------------
-----------------------------------------------------------------------------------
-----------------------------------------------------------------------------------
-----------------------------------------------------------------------------------
#5. Do you feel that you will use the tetrad set of questions in future brainstorming and ideation sessions? Yes ___ No ___ Don’t Know

Please comment on your response. 

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--------------------------------------------------------------------- 

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#6. Would you like more information on Marshall McLuhan and the tetrad?

There are some subtleties about the tetrad that may help you in future ideation sessions. If you have an interest, write in your e-mail address and I will send you some of the more important excerpts from his book on innovation and the prediction of effects.

(e-mail address)____________

***THANK YOU***
APPENDIX F.

Code sheet for predicting effects

Greenlee School of Journalism & Communication, Iowa State University

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<th>Variable Label</th>
<th>Values</th>
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<tr>
<td>ID #</td>
<td>Respondents ID#</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 1a              | Mean          | Meaningful     | 1 = Not meaningful  
                  |                | 2  
                  |                | 3  
                  |                | 4  
                  |                | 5  
                  |                | 6  
                  |                | 7 = Meaningful 
                  |                | 0 = NA         |
| 1b              | App           | Applicable     | 1 = Not Applicable  
                  |                | 2  
                  |                | 3  
                  |                | 4  
                  |                | 5  
                  |                | 6  
                  |                | 7 = Applicable 
                  |                | 0 = NA         |
| 1c              | Logical       | 14 more bi-polar 
                  | adjectives, last is 
                  | 1 = Illogical 
                  |                | 2  
                  |                | 3  
                  |                | 4  
                  |                | 5  
                  |                | 6  
                  |                | 7 = Sensible 
                  |                | 0 = NA         |
| 1p              |               | Sense          |                           |
| 2a              | Rank          | Enhance        | 1 =  
                  |                | 2= 
                  |                | 3= 
                  |                | 4= 
                  |                | 0 = NA         |
| 2b              |               | Obsolete       |                           |
| 2c              |               | Retreive       |                           |
| 2d              |               | Reversal       |                           |
| 3a              | Useful        | Useful new products 
                  | 1= strongly disagree 
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<td>Do not need</td>
<td>Trends are better</td>
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<td></td>
<td>5</td>
<td>Use</td>
<td>Use in future</td>
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<td></td>
<td>6</td>
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<td>Acid test interest</td>
<td></td>
</tr>
</tbody>
</table>

3 = strongly agree
4 = agree
5 = strongly agree
0 = NA

1 = strongly disagree
2 = disagree
3 = neutral
4 = agree
5 = strongly agree
0 = NA

1 = yes
2 = no
3 = Don’t Know
0 = NA

1 = gave e-mail
2 = did not give
0 = left blank NA
APPENDIX G.

INFORMED CONSENT DOCUMENT

Title of Study: Operationalizing McLuhan’s tetrad to predict innovation effects
Investigator: John C. Thomas

This is a research study. Please take your time in deciding if you would like to participate. Please feel free to ask questions at any time.

INTRODUCTION

The purpose of this study is to understand whether or not McLuhan’s tetrad can add value to the product development process.

You are being invited to participate in this study because your team is exactly the business function that can benefit from the tetrad approach to ideation.

DESCRIPTION OF PROCEDURES

If you agree to participate in this study, your participation will last for 90 minutes.

During the study you may expect the following study procedures to be followed. About 20 minutes will be used to introduce the tetrad concept, followed by ideation breakouts that will last 60 minutes. This will be followed with a 10 minute evaluation session.

“You or any of the participants should feel free to skip any question that you do not wish to answer or that makes you feel uncomfortable.”

RISKS

While participating in this study you may experience the following risks: My objective is to write a thesis on the business value of the tetrad. In doing so, I will hold back the identification of participants (personnel and companies) – unless I receive written approval to include participation in the final draft. Further, you should expect that any competitive sensitive information mentioned during the session would remain wholly within your organization. The intent of the thesis is to write about the tetrad process and not findings of the ideation session.

BENEFITS

If you decide to participate in this study, it is hoped that the information gained will benefit your company and society by developing a better innovation process.

COSTS AND COMPENSATION

You will not be compensated for participating in this study.

PARTICIPANT RIGHTS
Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. If you decide to not participate in the study or leave the study early, it will not result in any penalty or loss of benefits to which you are otherwise entitled.

CONFIDENTIALITY

Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. However, the Institutional Review Board (a committee that reviews and approves human subject research studies) may inspect and/or copy your records for quality assurance and data analysis. These records are not expected to contain private information.

If the results are published, your identity will remain confidential or permission will be sought.

QUESTIONS OR PROBLEMS

You are encouraged to ask questions at any time during this study.

- For further information about the study contact John C. Thomas – ph. 641-831-3005, jcthomas@iastate.edu
- If you have any questions about the rights of research subjects or research-related injury, please contact the IRB Administrator, (515) 294-4566, austimgr@iastate.edu, or Diane Ament, Director, Office of Research Assurances (515) 294-3115, dament@iastate.edu.

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******PARTICIPANT SIGNATURE

Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document and that your questions have been satisfactorily answered. You will receive a copy of the written informed consent prior to your participation in the study.

Participant’s Name (printed) ______________________________ (title)

Participant’s Organization ______________________________

(DEVICE SIGNATURE) (DATE)

INVESTIGATOR STATEMENT

I certify that the participant has been given adequate time to read and learn about the study and all of their questions have been answered. It is my opinion that the participant understands the purpose, risks, benefits and the procedures that will be followed in this study and has voluntarily agreed to participate.

(SIGNATURE OF PERSON OBTAINING INFORMED CONSENT) (DATE)