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Frederick Williams
Dedicated to Barbara Barrows, Allen Mongeau, and Beth Mongeau
FOREWORD

What follows is self-consciously an interdisciplinary endeavor. Although centered on mass communication research, this project has a general relevance to social science. The intent is to discuss the historical, philosophical, and scientific difficulties and future potentials which exist in social research. As such, the text combines issues from social science generally and communication research specifically with the disciplines of history, philosophy, scientific philosophy, and physics. Communication research provides an excellent center in as it borrows broadly from other social science disciplines and in as it displays graphically the growing conceptual difficulties which exist in social research.

The subject is broad and ambitious and at times papers over issues that deserve to be explained in greater detail. If this interdisciplinary dialogue is too dispersed at times, it is because I felt the broader subject was important. I had something to say. In as this project itself encourages a growth towards more interdisciplinary, multi-contextual research, this can perhaps be thought of as a self-referential example. If it lapses at times, it is not at the expense of raising important questions. In terms of the new paradigm espoused, it is hoped that the reader will raise to the unanswered questions (or, forbid, questions answered 'wrongly') and add to the interdisciplinary dialog. We are at a moment of transition for communication research and social science generally. The way in which we confront metamethodological questions today will determine the personality communication and social research assumes in the new millennium.

This project is as much a reaction against the abuse and misuse of social science as it is a discussion of its new potentials. At the time of this writing The Bell Curve by Richard J. Herrnstein and Charles Murray has been number two on the New York Times best seller list for five weeks in a row. This book represents a classic example of the misuse of statistics and misapplication of the scientific method in order to advance a skewed social agenda. The Bell Curve asserts that there is a genetic difference in the intelligence of African-Americans as compared to Caucasians and abuses decontextualized statistical data to prove this point. There is little discussion of the philosophical (not to mention scientific) presumptions which plague the biased assertions made in this work. Although I would not go as far to say this work is sinister, I will say it is misguided in the same way as was Herbert Spencer's project of 'Social Darwinism.' The Bell Curve is a convenient combination of methods and assumptions lent credence by the veneer of veracity which statistics and social science have assumed in our culture. If this project does nothing more than question the misuse of social science as exhibited in The Bell Curve, it has done its job well.

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Scott Mongeau
December 15th, 1994
ABSTRACT


by

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As evidenced in recent literature, mainstream communication effects research is reaching a point of methodological crisis. Traditional experimental science as applied in effects research reflects an outmoded view of social phenomenon as linear, deterministic, reducible, and mechanical. Communication is portrayed in this project as an evolving context for social meaning which is multi-perspectival, complex, and non-linear by nature. 'New paradigm' science is viewed as being closer to this vision of communication. The major sections of this project function to discuss: 1) the historically based philosophical difficulties of the classical scientific method, specifically in their misapplication to communication research as social science, 2) the development of mainstream communication research in as it has maintained an adherence to positivistic views and the failure of these views to adequately characterize communication processes, 3) the awakening of physical science to new concepts of perspective, interconnection, complexity, and non-linearity, 4) through discussion and example, a general metatheoretical, metamethodological perspective for conducting communication research according to the methods and metaphors suggested in the new paradigm shift. The general suggestion is that communication research grow towards an understanding of social phenomenon as: systemic (rather than physical), multi-leveled (rather than two-dimensional), multi-contextual (rather than reductive), and consciously self-reflexive (rather than self-absorbed and ethically detached).
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Bibliography

Vita
0.0. New Concepts of Communication: Mass Communication Research and the Changing Philosophy of Social Science

This chapter is '0' and thus may be regarded as either nothing, or as a significant concept. Just as a warning for the faint of heart: I step out of 'voice' in both this introduction and in the conclusion. You see, it is all part of a self-referential experiment. This project is itself all about 'making oneself known,' in a manner of speaking, and in making one's manner of speaking known. In this sense, the introduction and conclusion seek to introduce the researcher as part of the text: me, Scott Allen Mongeau, a Master's candidate at the University of Texas at Austin, white, 23 years old, male, American, middle-class, 'liberal,' university educated . . . But then I am stepping out of bounds, aren't I? This isn't allowed, talking about oneself, especially in an academic thesis, is it? So stop me . . . but the curtain is already pulled. And who cares? Who is here to stop me?

The point of this project is that we, as communication researchers and social scientists, must care. The point is that the old method of research, the one where the social researcher hid conveniently beyond the curtain of 'objectivity,' is drawing to a close. ‘Pay no attention to that man behind the curtain!’ the Wizard of OZ said when Toto revealed his machinations. We must show proper reverence to the floating head apparition of the Wizard-cum-professor (and the Wizard of OZ really was just an old, wily professor from Kansas, you know). But it is really too late, of course. The curtain has been pulled. We can push the gas bellows, and rotate the fire jets, but people know, they know about us: we behind the curtain. It may not seem so, but the opening is already underway, and it means that our ways of knowing, the smoke and mirrors and bellows, are open for inspection. The curtain has been pulled and it can not be closed again, at least not without everyone knowing that the Wizard of OZ is just a real person after all.

Again, the days of the curtain of 'objectivity' are over, and they must needs be over. There are pressures at work on communication research, pressures which will fragment the field if it does not become a lot more honest about its goals and methods rather quickly. So, this: this flagrant disregard for rules and practices, shamefully introducing myself. The illusion is broken. I have introduced myself, and perhaps rather rudely for so formal a project as this. But so it is done. The curtain has been pulled. You can see me and will throughout, if you wish. However, I will sit now and begin my piece, if only for the sake of getting some work done in this place. Again, this chapter is '0' and thus may be regarded as either nothing, or as a significant concept.

Mass communication studies as a realm of theory and research occupies a unique, centralized position among the social sciences. The effects of large scale communication technologies, their use in mediating symbolic exchange and social meaning, can be transected, dissected, and 'introspected' through a broad range of methods. As the use of technical communication at once embodies substantial structures (involving physical beings and technology in space) and relational processes (involving vague exchanges of social meaning through time), research can occur from a number of perspectives. As communication is social phenomenon, the study of these technical systems has relevance to sociological, anthropological, and psychological (not to mention demographic, economic, and interpersonal) frames of reference.

Previously mainstream effects research has been ruled primarily by the methods of reductive, deterministic experimental science. However, the search for ultimate models and basic truths espoused by such a project has resulted in a field unable to adequately contextualize the broad situations and frames of relevance which mark communication technology. There is ferment in the field and it is threatening fragmentation. Like an immune system gone haywire, the guiding ethic of post-positivism is fragmenting the field from within for its own failure: a failure to adequately reduce phenomenon that is inherently marked by hazy definitions, processes of change and transformation, and multi-layered complexity.

There are pressures at work on the field of communication research: a conflict of ideals, ideas, and idioms. The British philosopher and mathematician Alfred North Whitehead once noted, in Science and the Modern World, that "a clash of doctrines is not a disaster, it is an opportunity." So too does this

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project set out on a positive note in the face of conflict: yes, communication research has much 'opportunity' to which to look forward. Indeed, if one were to measure opportunity through conflict, the summer and fall 1993 two issue special of the Journal of Communication, "The Future of the Field - Between Fragmentation and Cohesion," would imply that there are a blinding array of opportunities available to communication research as a field. I am speaking, of course, moreso with tongue in cheek than hand to heart; there is a problem in the field. There, it is said: there is a problem in the field of communication, there is confusion and conflict which threatens fragmentation.

There is ferment in the field of communication research. This word, ferment, literally means that yeast is brewing and that a tasty ale is just around the corner. This word can also mean 'agitation and unrest,' in the sense that, if one were not careful, the golden mead could turn rancid. So, what is it we are fermenting, ale or a rancid cocktail? Well, that depends on the larger point of view one might take on this 'ferment,' whether one sees the glass as half empty or half full. Under the strict view of experimental, deterministic science, all hell is breaking loose. Researchers no longer are keeping to the grand quest, the search for a basic, fundamental understanding of media effects.

It is the center which is missing; the old methods of experimental science used in effects research are increasingly being criticized for narrow-mindedness. There is a breach of confidence in the belief that the strict use of experimental empirical science can fundamentally determine the social effects of media content. We have reached a stage where complexity is plain, but the methods with which to untangle this skein are not generally agreed upon. Everyone has a panacea in mind: here, towards multi-contextual social content analysis! There, towards neo-Marxist post-structuralism! But few will admit a center anymore. Those who do are at risk of being labeled either arrogant, or foolish, or both.

This project sees ferment in a different way. This perspective concerns a newer perspective, one which has grown in the physical sciences and is starting to emerge in the social sciences: a 'new paradigm.' It is to this which the title refers: "Towards a New Paradigm of Society, Science, and Space." Under this view, the ferment is a necessary process of turbulence occurring on the road to a more mature, self-conscious discipline. Whereas the old paradigm concerned itself with a method (the method of experimental science used to uncover a singular social truth) the new paradigm concerns itself with metatheory (that is, the larger meaning of theory as it is conscious of and applied to itself). In this view, there can be a number of ways or perspectives for viewing technical communication processes. There can be a number of levels from which and to which communication systems can be studied. Hence, the descriptive, if a bit daunting, sub-title to this project: "A Multi-leveled, Metatheoretical Context For Mass Communication Systems Research." Through the process of fermentation, the new paradigm seeks to distill a larger sensibility of cohesion: one in which researchers become increasingly aware of the self-reflexive nature of our subject matter, as well as of the inherent limitations of social research generally. The curtain has been pulled, and we must now face the limitations of a world in which we are all 'merely human' after all.

This thesis seeks to investigate the significance of the 'new paradigm' to communication research. In seeking a new paradigm metatheoretical context for communication research, this project will: A) discuss how changing theoretical foundations in the physical sciences are and potentially will effect the conduct of social science, specifically communication theory and research, and B) propose, within the context of these changing notions of physical science, a metatheoretical, metamethodological framework for composing communication theory and conducting communication research.

It is asserted that the traditional methods and goals of linear, Newtonian, positivistic science are in many ways incompatible with the complex, non-linear nature of social communication. New paradigm advances in the physical sciences and growing in the social sciences can do much to relax the predictive and causal expectations put on communication research, as well as to offer more adaptive, dynamic methodologies. By better understanding the meaning of new paradigm concepts in the sciences and their relation to social science, researchers will be better able to formulate strategies which increase our understanding of the complexity and patterns inherent in the process of communication. As such, this project concerns itself with an examination of the evolving philosophy of science as relevant to social science, communication theory and research in particular.

In proposing to 'open the curtain' and develop more self-reflexive, self-aware methods, this investigation necessarily asserts that communication research must both broaden its horizons and reduce the grand expectations of positivistic science. The challenge is to construct a meaningful and coherent
frame for conducting research which allows for richness of perspective, yet which does not sacrifice meaning, results, or systematic procedures. The metamethodological proposition of this project allows for such a framework, but only if communication researchers themselves agree to critically examine the questions raised here. In a sense, the purpose is to create a more forgiving system of theory, a more self cognizant system of social investigation. This system graphically portrays its initial assumptions, its goals, its processes, its biases, and explains its motivations and levels of analysis.

The conflict herein raised, between formalized, reductive goals and broader, metaphysical frames of understanding can be said to be a historical conflict. It is the conflict between the methods of reductionism / dissection and expansive understanding. Experimental social science traditionally has concerned itself with the former, yet examines phenomenon which arguably is moreso characterized by the latter. In Against the Current Isaiah Berlin frames this classical conflict as occurring between:

The specific and unique versus the repetitive and the universal, the concrete versus rest, the inner versus the outer, quality versus quantity, culture-bound versus timeless principles, mental strife versus the possibility (and desirability) of peace, order, final harmony and the satisfaction of all rational human wishes - these are some of the aspects of the contrast.2

Traditionally this has been framed as science in general versus philosophy and the humanities. However, the assertion of the new paradigm here is that science itself is growing in its capacity to deal with more general, transformative, qualitative entities.

The larger implication of this project is that the study of communication should be a project which admits for rich discussion, moral and political conflict, philosophical theorization, multiple contexts and meaning, as well as frames for investigating processes of change and transformation. Equally, a self-conscious, mature social science should eschew the rigid positions of the 'isms' along with their stifling quest for grand theory and final truths: reductionism, empiricism, numericism, determinism, and positivism. Most importantly, communication theory and research should act to both initiate and mediate discussions in the public sphere on the relationship between media communication and social, cultural, and political processes. The purpose of social inquiry should be a search for metaphors, a seeking after ways of describing meaning in life through exploring both language and evolving social concepts.

The quest for 'truth' or 'fact' is a project that sets us to look for something final, perfect, fundamental, and thus, unquestionably alien. In social theory and research, instead of a tireless crusade to cast the unfamiliar in the permanent language of numbers and machines, the familiar world should be recontextualized continually as a dialogue on the very impermanence and richness of meaning inherent in life and communication. Perhaps the single greatest advantage of new paradigm understandings of systems behavior will be the formation of a more flexible and permeable connection between social science and natural science in which each contributes to the other.

There is a clear and present danger in over-extending any metaphor, and the popularity of such terms as 'new paradigm' and 'chaos science' impels caution. Many social theorists have begun applying 'chaos' to theoretical notions of post-modernity or critical theory without a fundamental understanding of the strictly scientific meaning of this theory. The danger is to abuse new science as old science is abused: to use science in order to justify grand social theory. As Loye and Eisler have so eloquently liberated this angst:

For isn't this the old ogre of positivist reductionism on an incredibly sweeping scale? Won't this idea of boldly and directly using the concepts of natural science to guide social theoretical development only further entrench us in the old problem of non-normative models? Won't we be inviting back problems like those of social Darwinism, or more recently 'computerism', where concepts that work or are true for a 'lower' level are used to falsify matters at a 'higher' level?3

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Well, honestly I would not have begun this project if I thought this were true. If anything, I believe the new paradigm is founded uniquely on a self-critical foundation which consciously rejects attempts at fundamental answers, grand theory, covering laws, or ultimate explanation. The new paradigm as outlined here is aware of the limitations of human knowledge and extends its efforts in developing a comfort with this state, rather than in chasing the ghost of final answers.

A dangerous misinterpretation of the goal of this project is that it is a quest for 'grand theory,' for some broad and uniting spirit with which to unite science with social science or even social science with itself. On the contrary, the goal here is merely to provide a list of key concepts becoming apparent in the evolution of physical science and to relate these concepts to a list of suggested guidelines for carrying out communication research. In these terms, the goal is markedly against any notion of theoretical closure or finality. The purpose here is more so to relax the rigid burden put on the back of social science: the fruitless quest for grand theory and a unified science of human behavior (or communication effects). This is possible mainly because new paradigm physics (i.e.: relativity, quantum physics, cybernetics, thermodynamics and non-linear dynamics) has the potential to relax the rigid designs of positivism, determinism, and Newtonian dynamics which still heavily guide experimental social inquiry. The central issue here is not to come up with a deterministic understanding of social dynamics, but instead to achieve a richer understanding of all the possible variables that can spring from the complexity of social interaction, to characterize social life at a level of relevance and complexity closer to that of individual richness.

Some have charged that so-called new paradigm theories are but a fad, that popularized interpretations of 'chaos theory' are a passing trend and have been over-applied and over-extended to theoretical and philosophical issues well outside the jurisdiction of physical systems. Perhaps there has been over-eagerness to develop beyond positivism on the part of some theorists. This, however, does not mean that physics will just 'go away.' What has been observed in physics in the last century is more than just a new way of viewing subatomic particles, it is a fundamental rethinking of what 'reality' entails, how to study it, and the very limitations researchers have in being human. Similarly, new paradigm physics makes observations about systems dynamics in general, about the interaction of matter and energy (be these objects, biological life, or information). New paradigm physics observes that, beyond metaphors, to a certain degree all systems in the universe have common similarities in the way they utilize and process energy. In this sense, examining physical systems for their application to social systems is more so a project of investigating correspondence rather than of exploring metaphors.

This thesis will discuss the relations between science, social science, philosophy, and mass communication theory. The first chapter will examine the historical and conceptual relationship between philosophy, science, and social science. It examines the difficulties and inconsistencies encountered in utilizing the scientific method as the only valid tool for social inquiry. Criticisms of social science are examined along side the unique challenges which exist in studying social phenomenon. The conclusion to this section asserts that science is experiencing a shift in its outlook that potentially can benefit the way in which researchers view social systems, particularly the complex, multi-layered systems central to communication research.

The second section examines the history of communication research, specifically in as it maintains an adherence to Newtonian and positivistic ideals of science. It is asserted that the methods and goals of mass communication research were at one time more concerned with issues of politics and social welfare than of mechanical models of effects. The broad employment of strict experimental science methods was formalized following World War II and has progressed since then. There is a sense of fragmentation today in that the methods of empirical science have proven inadequate to characterizing the complexity and multiple contexts inherent in communication phenomenon. Communication research has been criticized outside the field for failing to achieve a grand theory of effects. It is asserted that these criticisms come mainly from the perspective of positivistic science and its own failure to characterize communication.

The third section of this project begins with the assertion that the natural sciences are undergoing a shift in their method and philosophy of inquiry. The nature of a 'paradigm shift' is examined and compared to current circumstances. This section argues that a shift away from deterministic, mechanistic viewpoints in science is taking place, and that mass communication studies as a social science can potentially benefit. Four major scientific theories of the last century, relativity, quantum theory, thermodynamics, and non-linear dynamics, will be examined as to how they metaphorically and substantially suggest improved methods for analyzing social systems by raising issues of relativity,
uncertainty, feedback, pattern, and complexity. Each major theory is related to a set of key concepts that have both metaphoric and/or concrete applications to the study of social systems / communication phenomenon.

The final section acts as a summary and conclusion in asserting that the paradigmatic evolution of physical science contains potential benefits for the formation of communication theory and the conduct of communication research. In particular, key concepts in the previous section are related to general metatheoretical suggestions for conducting communication research. The general suggestion is that communication research grow away from positivism and post-positivism towards an understanding of social phenomenon as: systemic (rather than physical), multi-leveled (rather than two-dimensional), multi-contextual (rather than reductive), and consciously self-reflexive (rather than self-absorbed and ethically detached). Applied examples of these metatheoretical concepts are related to gatekeeping and knowledge gap research. The project concludes with suggestions for the expansion of this line of research.

With this summary, I will close and thus begin. In what follows, it is important to keep the larger question in mind: what does it mean to know ourselves? This question lies at the base of science as well as social science. It is, fundamentally, a question of philosophy, and thus unanswerable. Leonard Krimerman observes in The Nature and Scope of Social Science that the very nature of social science is based on philosophical issues. He states that the great unanswerable question of social science asks "the epistemological question of whether and to what extent, if any, social scientists can obtain knowledge of human conduct, especially if they confine themselves to the methods and concepts characteristic of physical science." This project suggests we explore the question of social science both inside and outside physical science in order to gain a greater understanding of the process of knowing in general.

Unanswerable questions make some people very nervous, especially scientists, both of the natural and social sort. However, this is precisely what the new paradigm of science is attempting to understand: how we can be more comfortable with and insightful about unanswerable questions. In his recent philosophical, fictional and non-fictional book Lila (in which the 'curtain' is thrown open), Robert Pirsig asks out loud:

'Just exactly how independent is science, in fact, from society?' The answer it gives is, 'not at all.' A science in which social patterns are of no account is as unreal and absurd as a society in which biological patterns are of no account. It's an impossibility. If society enters nowhere into the business of scientific discovery then where does a scientific hypothesis come from? If the observer is totally objective and records only what he observes, then where does he observe a hypothesis? Atoms don't carry hypotheses about themselves around as part of their luggage. As long as you assume an exclusive subject-object, mind-matter science, that whole question is an inescapable black hole.

In what follows, I will explore, but not answer, where hypothesis come from, what they 'mean,' and how best to pursue them in media communication research. This discussion is contingent on one point: that one is willing to look beyond the 'subject-object' paradigm. See you at the conclusion (4.4., which is a number with value). P.S.: Please wait until then until you decide what '0' means.

1.0. The Method of Empiricism and the Spirit of Rationality: A Historical / Conceptual Context for Communication Studies as a Social Science

Beyond ancient systems of magic and before the advent of formal scientific understandings of matter, mind, and perception, the primary methods of speculating about human existence in the natural world were through religion and philosophy. The study of society and human nature in the broad sense has been the goal at times of each of these projects of belief. However, it is mainly with the application of science to the study of society, as with the application of science to the study of the physical world, that practical results have led to the formation of a concerted, methodical, and prolific discipline organized

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under the rubric of the scientific method. It is the scientific method, as employed in social inquiry, which
patterns and guides the field of communication research today.

This section offers a foundation for a discussion and criticism of the historical relationship
between science and mass communication research as a social science. The philosophical roots of the
scientific method are examined in brief from its origins up to the current proposed ‘paradigm shift.’ While
it is not the purpose of this project to offer a comprehensive history of natural science, the topic is
significant here to the degree that many of the philosophical difficulties raised in mass communication
research today find their roots deep in the conceptual history of science. Mass communication studies is
examined in as it is guided by traditional ideals of social science, which itself contains strains of earlier
scientific philosophy. From here a criticism of the scientific method is engaged and the limitations of
social / communication inquiry are discussed. It is asserted that the effectiveness and relevance of social
science has been atrophied by an adherence to mechanical, physicalized, linear concepts of social
interaction. The historical roots of social science are seen as being patterned after rigid views of physical
space conforming to the paradigm of positivism and reductive Newtonian science.

The material here seeks to develop a parallel discussion of the criticisms leveled at mass
communication research as a social science, its perceived shortcomings. An attempt is made to display
the irony of how centering on the scientific method in communication research results in its own perceived
shortcomings. It is asserted that physics and natural science has evolved beyond the deterministic
philosophy prevalent in the methods and goals of social science. The resulting implication is that there
needs to be a reinterpretation of the metatheoretical methods and goals of communication research
according to standards outside the traditional paradigm of scientific empiricism dominant in social
science. What has been called the new paradigm of science provides a critical space for re-examining
these methods and goals. The main tenants of new paradigm science relevant to mass communication
research, its conceptual advances over the linear, Newtonian vision of social geography, will be examined
in chapter 3.0.

1.1. The Roots of the First Philosophy:
Catholic Rationalism Versus Newtonian Empiricistic Physics

The historical evolution of the method of science as was ultimately applied to social research has
been a long and turbulent one. Through this process, the scientific method still silently reflects many of
the strands of philosophy and systems of belief which contributed to its birth. Communication effects
research, in utilizing many tenets of scientific empiricism in its methodology, thus contains philosophical
assumptions and predispositions about the world and humanity. A brief historical analysis of the
evolution of social science leading up to communication studies as a field can in this way serve as a
conceptual tool to critique the paradigmatic assumptions and philosophical presumptions existent in
communication research. This section briefly traces the growth of philosophy into science and the
subsequent conflict between Western religion and empiricism. The intent is to point out the
preconceptions existing in science as were later applied to communication research.

As is typical for a brief overview of the conceptual evolution of Western science, this one begins
in ancient Greece. The philosophy, mathematics, and primitive science employed by the great thinkers of
the Golden Age of Greece are significant to the degree that they profoundly influenced the development
of culture and the arts in Europe over a millennium later. Ancient Greece, and the Pax Rommana to a
lesser degree, became cultural icons to the founders of the Renaissance and leaders of the
Enlightenment, points of reference to a mythical utopian society. The writings, philosophy, and culture of
the Golden Age became later foundations for a progressive spirit intending to improve human knowledge
and culture. The philosophical and literary writings of the ancient Greeks were quite significant in later
influencing the growth and composition of Western government, philosophy, and science, as well as in
the construction of a social science. Communication studies itself finds roots in classical writings on
rhetoric, the first major attempt to codify human communication as a discipline of study.

Plato (427-347 BC) and Aristotle (384-322 BC) in particular embodied the flowering of philosophy
and the spirit of natural inquiry at this time in Greece. Plato, through his dialogues, composed a
philosophy which conceived of the world as drawing from a pattern of ideal forms in its individual
movements. In this sense, all individual action was seen as a fragment of a perfect state of being. All
government was a decomposition from an ultimate state, a reflection on the utopian society. As posed in
The Republic, the ultimate society was envisioned as being led by an enlightened, selfless class of
philosophers who ruled with clarity and justice. Plato is notable for his assertion that ideal states in government, society, and individual human nature could be discovered through the right method, and that these states should be progressively sought after through the questioning of forms. This notion contains the spirit of prescriptive progressivism, which later influences the path of communication research in the prosocial intent of early social science.

For Plato, the inquiry into nature and the nature of humanity was a gradual uncovering of ultimate concepts such as truth, justice, and beauty, which were achievable through a methodical process of questioning known as dialectic. By this method of progressive questioning towards the ultimate nature of a spirit or object, he believed all the principles of science and mathematics could be derived. He believed that a master science could be discovered, a universal methodology through which all disciplines could be studied. This concept mirrors the system of belief surrounding the scientific method even today: that science is the ultimate path to truth.

Aristotle, Plato’s student, also formed an important base for the growth of science through his inquiries into the natural world. His contribution to social theory in his philosophical and political writings is also significant. Aristotle at first dissented radically from his mentor in proclaiming that the nature of all things derived uniquely from themselves, instead of from ideal forms. He believed that each thing in itself was a primary substance and fit into general categories. Species and genera could be grouped according to the classification of similarities among individual substances This extended into a belief that because there was no single ultimate similarity between things, there was no universal method of inquiry between the various disciplines and sciences.

In the Metaphysics, however, he recants in proposing a notion of a ‘First Philosophy.’ His concept is that a fundamental discipline is possible through the study of categories as states of being (i.e.: quantities, qualities, and relations) related to substance. He also proposes that forms are defined by composite categories / attributes of substances, which themselves are definable through inquiry and which can not be destroyed. In this sense, he believes that through a study of categories, or attributes, which are perceivable by sense, a fundamental methodology in the study of all disciplines is possible.

In his ethical writings such as Nicomachean Ethics, Aristotle proposes that happiness is a state of virtue between extreme states of being. In the study of human nature, Aristotle believes that there is an ideal form of virtue possible. Notably, in The Art of Rhetoric and Poetics, he outlines the methods of persuasion in communication, proposing general categories of arguments and appeals to opinion. This comprehensive, influential outline for persuasive communication is itself the foundation for the field of rhetoric in communication studies. The discipline of rhetoric later was the partial basis for the study of mass communication. Although a work investigating philosophical topics, its method of dissection encourages linearity and rational analysis.

Aristotle contributed to science in that he encourages the study of individual attributes which then proceed to similarities (in distinction to Plato's fragmentation from ideal forms), forming a foundation for a system of scientific classification. He also ends up supporting the notion of a fundamental method of study among disciplines in offering that the attributes of substances are universal. This extends to a belief about humans, and thus to social science, in that he supports the notion of balanced, ideal states between universal extremes (as bravery is ideal between foolishness and cowardice). His support of fundamental states later in his writings led to his espousing the theory of the Unmoved Mover, a concept of there being a primary cause from which all other causes developed. This theory provides a basis for the idea of causal determinism, the idea that every action in the world has a mechanical and regular reaction.

Aristotle provided support for the study of physics in proposing that substances can be studied through a fundamental method by observing their attributes. This empirical spirit holds that an understanding of the natural world was possible uniquely through observation by the senses. Epicurus (341-270 BC) espoused this belief clearly in his writings and philosophy. His teachings embody Epicureanism, the idea that sensory experience is incontestable and is the basis for all judgment about the world. Holding that pain and pleasure were the measures of good and bad, he stood in marked contrast to the idealism and rational skepticism prevalent in Greece at the time. This classical conflict between empiricism and idealist rationalism is significant later.

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Other Greek minds influenced Western thought in literature, science, and architecture. Most notably here, the composition of a formal system of geometry was instituted. Pythagorus of Samos (500-580 BC) discovered one of the most elementary theorems of geometry, the Pythagorean Theorem. Euclid (330-275 BC) is credited with composing the first comprehensive texts on plane and solid figures. Archimedes (287-212 BC) calculated the value of pi and was noted for his studies of physics and several inventions. Geometry is later significant to composing science in that this system of inquiry about the natural world, the formation of laws supported by proofs, was influential in forming the scientific method, which rests on the idea of logically contextualizing empirical observation in theory.

The decline of Greece followed the rise of the Roman Empire and a second expansion of culture and knowledge. Roman philosophy to a degree was derivative of Greek thought, but Rome surpassed Greece in its technological advances, in military conquest, and in the organization of bureaucracy. Marcus Tullius Cicero (106-43 BC), a major Roman political figure and intellectual, represents the spirit of the Pax Romana in his works on the methods of rhetoric and in his progressive political speeches. Cicero’s writings later influenced the study of rhetoric.

Notable during the growth of Rome were signs that a system of scientific inquiry was being realized. The poet Titus Lucretius Carus (99-55 BC) composed a poem, De Rerum Natura (On the Nature of Things), which contained the idea that all of nature is composed of matter and motion, that knowledge is gained by the rational interpretation of sensory experience, and that reducing complex phenomenon to their constituent parts is the best method of natural study. This work additionally contained advanced observations about atomic theory, movement in a vacuum, the light characteristics of color, as well as observations about genetics. The Greek scientist Ptolemy (A.D. 90-168) advanced a concept of the universe and planetary motion in *Almagest*. In addition to advocating the use of empirical observation and theoretical modeling in natural inquiry, he also wrote several works on geometry, geography, and optics.

From these examples it is possible to see that strong notions of a scientific methodology were already being implemented during classical and Roman times. The great thinkers of the period knew that both standardized methods of sensory observation and rational processes of theoretical contextualization were needed to advance knowledge in studying the natural world. Overcoming the strong influences of religion and superstition in interpreting the world was difficult. Having a fundamental stance on the primacy of sensory observation dismissed any reliance on instinct, tradition, or myth. Using a rational, reductive method in constructing theory about sensory data cast away the reliance on superstition or intangible causes. It was not until our century that philosophers began reflecting on how deeply bias plays a role in the construction of theory and in the way we observe the world. The scientific method as it was developing in ancient times, however, did not have the opportunity to expand. The fall of the Roman Empire, generally dated with the sack of Rome by Alaric in 410, followed with a period in which growth in culture and the arts was markedly slowed.

The period known as the Middle Ages between the fall of Rome (fifth century) to the beginnings of the Renaissance (thirteenth to the fifteenth century) has traditionally been characterized as a time of stagnation and decline. Much historical reinterpretation has shown that literature, the arts, and even some degree of primitive science still existed in the West at this time. The monasteries mainly preserved the flame of knowledge as institutions of research, art, and writing, and notably as repositories for the great books of the ancient and Christian world. Engineering, mechanics, agriculture, and architecture experienced a flowering from the eleventh to the thirteenth centuries. Roger Bacon (1215-1292) emphasized the importance of the empirical method as well as the use of mathematics in inquiry about the world.

During the Middle Ages the Christian Church acted as the major source of inquiry into the natural world in the West, selecting or excising that which did or did not serve its purposes. St. Thomas Aquinas (1225-1274) compiled a compendium embodying church doctrine in the form of the *Summa Theologica* (1266-1273). This work particularly popularized the thought and writings of Aristotle, who often brought up issues of early science, the use of reason in studying nature and humanity, and the use of empirical observation in inquiry. Notably, through the concept of ‘natural law,’ this work asserted that there was no

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 distinction between morality and facts. In religious terms, immoral acts were wrong because they violated the natural design of God as creator of a fundamental and self similar universe in the broad sense.

The leadership of the Catholic church through the Middle Ages was seen by its constituency as the official arbiter of natural law; what was natural (physical in terms of behavior and thought as action) about morality was a matter of its divinely guided interpretation. This notion of political and social life, of 'the nature of man,' as having a fundamentally natural base which is discoverable by reasoned inquiry, is significant to the later conceptual fusion of the method of science with social inquiry. The assumption of natural law supports the view that the nature of social interaction rests on universal, clearly defined actions producing regularized reactions which can be judged according to moral precepts (facts).

In natural inquiry, the notion of a rational method and even the spirit of empiricism was supported by the church in as far as it served to support church doctrine. Science as a spirit of technical growth and as a path to knowledge (power) grew under the tutelage of Christianity. Rationalism as a method of thought posed no challenge to church doctrine; minds such as Aquinas had constructed a rigid and self-consistent rational mathematics of religious doctrine to protect the church from any conceptual doubt. Rationality which reasoned outside of church doctrine was automatically heretical and served as grounds for inquisition, censor, and punishment.

It was the method of empiricism, the use of the senses to investigate nature, that eventually challenged Christianity's political hold over the Western world. Empiricism granted the power of truth (and fact) to a force independent of church control: the natural world and the process of perceiving it. Empiricism put the tools and methods of factual inquiry into the hands of the layperson, which allowed church doctrine to be publicly challenged outside of its self consistent rational geometry. Unlike the metaphysical arguments of church doctrine and the imposition of natural law, a statement was 'scientific' if it could be tested by observation or experiment. The facts of science were accessible to the layperson in as far as truth and falsity could be measured beyond a doubt by empirical observation. Notably, in reacting to this growing danger to the power of the church, the Bishop of Paris in 1277 listed 219 Aristotelian propositions, some dealing with issues of empirical observation, that Christians were forbidden to believe as they challenged accepted church doctrine.

The power of empirical inquiry could have been ignored provided it only was used to explore God's creation, the natural world. However, empirical study, notably that of astronomy, directly challenged tenants of the Christian church. Chief among these was the religious belief that the earth was the center of the universe, and that the sun turned about it. Nicolaus Copernicus (1473-1543), a Polish cleric and astronomer, espoused the view that the earth revolved about the sun in his treatise *De Revolutionibus Orbium Caeslestium* (1543). This work initially was accepted by the Christian church until the time of the Protestant Reformation when a more fundamental political stance on the sanctity of scripture was advanced; Copernicus's sun centered system was pronounced heretical by Pope Pius V.

Galileo Galilei (1564-1642), an Italian scientist and inventor of the telescope, pronounced his support for the Copernican view of the universe in *Sidereus Nuncius* (1610), and more vigorously after a warning by the church in *Dialogo Sopra i Due Massimi Sistemi del Mondo* (1632). Galileo's work "conspicuously represented the combination of objective observation and rational theoretical analysis that is now characteristic of the scientific approach to knowledge." Notably, although Galileo accepted that there were areas of religion that did not concern science (such as the location and nature of the soul), he was controversial in asserting that there were areas of the natural world that did not concern the church. By this he believed science should be a secular institution apart from religion, a view that the church opposed as it feared, justifiably as history showed, the loss of its authority. In disagreeing with the Old Testament, which alluded to the sun as turning about the earth, Galileo was brought to the Inquisition, forced to recant, censored, and sent into seclusion.

Galileo's challenge of church doctrine was the sign of many beginning to speak out against the control of the church. The Protestant Reformation in many ways was a harbinger of the great European
Renaissance: the censure of Galileo was the first major casualty in a war between religion and secular paradigms. The Renaissance, generally considered to fall between the fourteenth and late sixteenth centuries, was marked by a flowering of the arts and architecture, literature, science, and philosophy along with a renewed interest in classical civilization. Beginning in Italy, this period was marked by the new spirit of methodical empiricism embodied by such individuals as Galileo, the artist Leonardo da Vinci (1452-1519), and Andreas Vesalius (1514-1564), who pioneered empirical studies of anatomy.

Social theory also found a new awakening in theorists writing from more 'objective' viewpoints. In the realm of social and political analysis, the Florentine statesman and political theorist Niccolò Machiavelli (1469-1527) is notable. His form of political analysis can be regarded as an early type of social science based on rational reflections on human nature. In Discourses on the First Ten Books of Livy (1513-17), he proposed that the experience of the past could provide solutions for the present, which composed a foundation for the formal study of history. In the work The Prince (1513), Machiavelli proposed an objective, professional assessment of how to efficiently manage a state, clearly separating any notion of moral purpose from the business of managing a political entity.

Also notable during this period, the English philosopher Thomas Hobbes (1588-1679) offered a materialist notion of socio-political study in Leviathan (1651). Espousing an early form of empiricism, he held that matter and its motion are the proper subject in the study of philosophy. It was his stance that "organic and inorganic matter obey similar laws of self-assertion and collision respectively. Nature, including the human, is a theater of necessary causes and determined effects." Both Machiavelli and Hobbes contributed to a belief that the study of humanity (as of the the physical world) was an uncovering of lawlike, deterministic regularities inherent in human social interaction, and that understanding these regularities could aid in the manipulation of social behavior. Hobbes in particular espoused the view that social study could be a method of standardized practice similar to the objective empiricism then gaining precedence in the study of the physical world.

Galileo's challenge, along with the foundation of his work on mechanics, led ultimately to the advance of empirical science (and thus to a foundation for a science of humanity) in the form of the English scientist Sir Isaac Newton (1642-1727). Newton was responsible for the great founding propositions of physics: the law of gravitation, the laws of motion, the foundation for calculus, and studies of reflection and light leading to the invention of the reflecting telescope. Newton's major scientific discoveries were published in two works: Philosophiae Naturalis Principia Mathematica (1687) and Opticks (1704).

Newton's view of space was dependent on the idea that motion is mechanical and deterministic according to universal laws, that motion is theoretically reversible, and that although movement is relative to objects and spaces, changes through motion are independent of the environment. In "Newton's Views of Time, Space, and Motion" Ernest Mach notes that Newtonian determinism implied that: "a number of variable quantities may be so related that one set can suffer a change without the others being affected by it. Nature behaves like a machine. The individual parts reciprocally determine one another." Newton proposed a celestial mechanics, a metaphor of the universe which took advantage of the earthly growth in mechanical technology during the early Enlightenment. In Order Out of Chaos Illya Prigogine and Isabelle Stengers comment: "Where do the roots of the Newtonian concept of change lie? It appears to be a synthesis of the science of ideal machines, where motion is transmitted without collision or friction between parts already in contact, and the science of celestial bodies interacting at a distance."

This dissection of the natural world into basic components which relate in lawlike, predictable ways proclaimed the error of subjectivity, opinion, and rationalism in physical observation. Newtonian science suggested the view that the method of objective scientific empiricism was the only valid method


of inquiry into truth. The proposition was that the existence of the physical world, as a machine, existed fundamentally outside of the human mind. Prigogine and Stengers describe Newtonian physics:

"The ambition of Newtonian science was to present a vision of nature that would be universal, deterministic, and objective inasmuch as it contains no reference to the observer, complete inasmuch as it attains a level of description that escapes the clutches of time." 14

In the Newtonian vision, physical change, an aspect of time, was seen as reversible, arbitrary, and irrelevant to the surrounding environment. All parts played out their role according to lawlike interactions with other parts, like balls on a billiard table or parts in a machine. This method was practical, simple, and effective: it predicted the motion of the planets like clockwork. Empirical science became the de rigueur philosophy among persons of learning. It was only a small leap to seeing the patterned actions and interactions of humanity as partaking in the grand mechanical ballet.

The mechanistic vision of nature pioneered by Newton was advanced by the fruitful predictive results it produced; in consequence, deterministic, empirical science as a method of inquiry was supported in seeking fundamental laws undergirding the natural world. The scientific method, in as far as it became a productive technology (in the broad sense of technology), thus aspired increasingly to the status of an Aristotelian First Philosophy. This is significant in that there were those, such as Hobbes, who held that human nature involved interactions and reactions identical to those of the natural world. The increasing popularity of the scientific method formed a connection to the realm of social inquiry. Humanity was seen as physical phenomenon which could be dissected into easily understood mechanical parts.

With social theorists such as Hobbes came the concept that human communities and behavior could be thought of in physical terms. The assertion was that the behavior of society, people's collective actions in the physical world, could be explained, based on empirical observation, by general laws similar to those 'discovered' by Newton. Once making the leap between society and physical space, aspirations for a deterministic understanding of humanity through scientific law could be formed. All that was required was to outline the 'physical attributes' of the human spirit, to define its extensions and characteristics. Plato, Aristotle, and Aquinas had already progressed on this front in encouraging the view that universal traits of the human person existed: dialectical opposites of character and morality which represented the boundaries of possible social expression. Knowing that virtue or vice had certain boundaries allowed social behavior to be posited amongst extremes, to be placed in a conceptual geography. With a social geography mapped, society could be improved and managed, or so the hope was. With theorists such as Machiavelli, persuasion, as it functioned in politics and economics, was thought of as a technique of scientific management which allowed populations to be controlled much as a farmer would physically control a farm.

The success of Newtonian physics inspired rapid associations with a variety of disciplines. The method of empirical observation and the method of physical dissection made it possible to study certain phenomenon with convenience. Phenomenon which did not have a physical manifestation was judged as being irrelevant. Social phenomenon which did not fit into a mechanized model was ignored. Prigogine and Stengers lament this fashionable cohabitation of physics with social study:

"the way in which biological and social evolution has traditionally been interpreted represents a particularly unfortunate use of the concepts and methods borrowed from physics - unfortunate because the area of physics where these concepts and methods are valid was very restricted, and thus the analogies between them and social or economic phenomena are completely unjustified." 15

Part of the difficulty was that Newtonian dynamics was a specialized theory which applied to celestial systems, systems which themselves embodied quite conservative behavior. Planetary motion and

14Ibid., 213.
15Ibid., 207.
gravitation represent conservative interactions in that for the most part they do not involve an exchange or liberation of energy outside of their interacting components. Such conservative reactions, which are 'mechanical' in that they produce very small effects on surrounding systems, are known as closed systems.

As Alvin Toffler remarks in his foreword to *Order Out of Chaos*, science in the Age of the Machine emphasized "stability, order, uniformity, and equilibrium. It concerned itself mostly with closed systems and linear relationships in which small inputs uniformly yield small results." When such a model is applied to social systems (which today are starting to be thought of as inherently unpredictable, dynamic, rapidly evolving 'open systems'), social phenomenon is radically simplified and abstracted. Toffler remarks on the importance of understanding uncertainty, complexity, and change in social systems:

> while some parts of the universe, may operate like machines, these are closed systems, and closed systems, at best, form only a small part of the physical universe. Most phenomena of interest to us are, in fact, open systems, exchanging energy or matter (and, one might add, information) with their environment. Surely biological and social systems are open, which means that the attempt to understand them in mechanistic terms is doomed to failure. This suggests, moreover, that most of reality, instead of being orderly, stable, and equilibrial, is seething and bubbling with change, disorder, and process.

In this spirit, the quest for a mechanistic understanding of humanity seeks to abstract phenomenon for the convenience of methodology, rather than the other way around. In other words, the application of empirical, Newtonian science to social research, on reflection, appears as an attempt to reduce complex phenomenon to simple phenomenon in order to aid the goal of analysis as a goal in itself. Such a process of self-centered abstraction would not be so significant but for the political and practical effects which the revelation of prescriptive 'social law' has and does impress on government and social institutions, as demonstrated in the past in the revelation of natural law by the Catholic church.

Social science still frequently contains a Newtonian bias in its heavy emphasis on the use of the experimental scientific method. Statistics, social modeling, and the operationalization of abstract social concepts are all conducted with a view to uncovering 'mechanical' understandings of fundamental social realities. This fixation on Newtonian law in a time when Newton's theories have largely been proved oversimplified and wrong, is pernicious to social science and communication studies. One begins to understand how the scientific method restricts social science to certain definitions of what is human and what is not by seeing that it contains preconceptions about what is relevant to research and what is not. Those concepts or metaphysical entities that are incapable of being observed physically through some medium or intervening agent are ignored as being unreal or are redefined into abstracted physical metaphors. Empirical science, when confronted by non-empirical phenomenon, seeks to either ignore its validity (i.e.: refuses to admit the value of spiritual or emotional concepts) or to find a method with which to physicalize (redefine) the phenomenon (i.e.: operationalizing abstract concepts such as happiness, interpreting media effects in terms of behavior). By physicalizing social concepts, social science seeks to enforce the notion of there being a fundamental social geography which can be completely mapped but for the effort of cartographers.

In mechanizing dynamic, 'fuzzy' concepts (which on modern reflection seem more typical of social interaction) much is ignored in social explanation. Worse, conclusions about social phenomenon are represented as being a form of 'truth.' That is, empirical observation is manufactured into general laws which are offered as conclusions about the fundamental nature of social reality. Sociology and psychology both to some degree use physical methods of analysis, with the goal being the composition of general behavioral laws. Communication research is no different. The direct-injection model of media effects sought a lawlike understanding of the effects of media messages. Even after this theoretical standpoint was largely devalued, later theories such as two-step flow and uses and gratifications (to be detailed in the next chapter) each sought to offer a definitive understanding of the passage of media

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17 Ibid., xvi-xv.
messages. Likewise, functionalist and structuralist metaphors of media understanding seek to each map the role and behavior of media institutions in society. Such goals are not too distant from seeking a law of gravitation but for the complexity of media organizations and their effects in society.

The danger of ignoring society as an evolving, dynamic, open system is to ignore the role change and uncertainty plays in society and communication. The vision of Newtonian dynamics when misapplied to social science assumes regularized, perfect relationships and the conservation of energy among components in social interaction. Mechanization leads to an idealistic vision of social interaction. Classical Newtonian dynamics assumes that all energy is conserved in an interaction. To see society as a machine is to believe that it always functions in a rational way in order to transmit beneficial or harmful actions directly and efficiently through causal agents. Prigogine and Stengers term such theory, produced by the viewpoint of causal determinism, as 'optimization models.' They comment that optimization models:

ignore both the possibility of radical transformations - that is, transformations that change the definition of a problem and thus the kind of solution sought - and the inertial constraints that may eventually force a system into a disastrous way of functioning. Like doctrines such as Adam Smith's invisible hand or other definitions of progress in terms of maximization or minimization criteria, this gives a reassuring representation of nature as an all-powerful and rational calculator, and of a coherent history characterized by global progress. To restore both inertia and the possibility of unanticipated events - that is, restore the open character of history - we must accept its fundamental uncertainty. 18

Thus the imperative for social science remains to divorce itself from mechanical visions of social interaction and obsessions with forming social law. What is required is a fuller understanding of social complexity that allows for multiple contexts of observation (as opposed to a fundamental social truth), a concentration on games and fuzzy interactions (as opposed to mechanical parts), an understanding of evolution and change (as opposed to an idealist vision of fundamental social forms), and a belief in rapidly shifting patterns as seen in weather (as opposed to a belief in Newtonian gravitation as a metaphor for social interaction).

The practical results of the experimental scientific method, a brute confidence in cumulative trial and error empirical observations, has show itself to be a productive and valuable method in investigating the physical world. Knowledge and technology has grown immeasurably under the method of science. However, the advance of physical technology can be seen partly as social phenomenon resultant from the imposition of a standard method and language in the investigation of the physical world. This method represents the force of progress encouraging the systematic cataloging and dissection of the physical world. It should be viewed as a method of inquiry among others in that it is biased towards a view of nature which reflects a specialized, physicalized, mechanized perspective. This physical method is ill suited to exploring phenomenon that have abstract, conceptual, or multi-layered / complex natures. The scientific method ignores reference to the role of change, trends, intuition, cultural and personal context, and multiple perspectives inherent in human inquiry.

With a growing understanding in physics of the limitations of reductive, Newtonian science, social science should no longer feel beholden to the reputation of science as a 'First Philosophy.' Quantitative social science research, particularly as used in communication effects research, is offered as an uncovering of an immutable, quasi-physical reality. At a time when physics itself is rejecting its own authority to make such claims, it is a form of abuse for social science to use science as a tool to lend theoretical assertions a veneer of veracity.

However, as social theory craves conclusiveness, especially where corporate or institutional agencies are funding research, the scientific method still largely patterns communication research. Modeling is offered in conclusive and deterministic frames more often than not. The goal is that of deterministic understanding; the method is that of empirical observation. The scientific method only speaks the language of empiricism. That which can not be observed is not relevant. Social concepts thus need to be 'physicalized' or operationalized in order to be studied through the scientific method. The

18 Prigogine, 207.
result of the ‘physicalization’ of concepts, as noted by Klaus Krippendorff in his ICA address "On the Ethics of Constructing Communication," ends in the stance that:

no two objects can be thought of occupying the same space within it just as no single object can be conceived to be two different things at the same time. It ultimately follows that the universe affords only one unique explanation and conflicting ones prove biases in perception that need to be corrected at all costs.19

This is the guiding ethic of the empiricist school and a notable problem in social science. By reducing the goal of explanation to one final answer, the rich possibilities of perspective, change, and broad social meaning in general are denied.

Historically, the scientific method advanced social research in many venues. However, in modern communication inquiry the search for grand theory has resulted in a field divided in its methods and goals. To imply that there is but a single method of viewing social phenomenon, as opposed to a number of contexts dependent on uniquely human meanings, has encouraged a harmful spirit of fundamentalism in social science. The next section takes issue with the empirical biases present in social science research.

1.2. Empiricism: Society As Observable Object

Newton's proclamation of the efficacy of empirical science not only transcended church authority, it proposed a view of reality as being fundamentally separate from the perceiving human mind; it was the stance that the scientific method involved the uncovering of absolute physical truth and was not a reflection on multiple / contextual truths. It was also the viewpoint that the universal system was composed of regularized mechanical interactions, and that, through methodical inquiry, these interactions could be predicted and even controlled. In as much as Newton provided a political basis for determinism and the secular sovereignty of the scientific method, he paved a path for the expansion of science into the soul of man, a place once reserved only for the church.

Surrounding and supporting Newton’s advances in the empirical examination of regularities in nature was the formal school of philosophy known as British empiricism. Founded by a group of philosophers including John Locke (1632-1704), George Berkeley (1685-1753), and David Hume (1711-1776), empiricism identified experience as the sole source of knowledge and the basis for philosophical investigation. This school rigidly denied the existence of innate ideas and the possibility of demonstrating the certainty of synthetic propositions. All universals were seen as being reducible to sensory data; rational belief was confined to the direct experience of data in time and space.

From the view of the empiricist school, the objective world as perceived is accepted as the foundation for mind. Mind gains knowledge exclusively from the perception of matter interacting causally in the natural world. Epistemology, the study of how the mind derives knowledge, thus is confined to the study of the physical world and the innate, lawlike structures that exist in it. The world as we know it is accepted as a fundamental representation to be apprehended methodically. John Locke, in An Essay Concerning Human Understanding, clearly articulated this notion that reality is a characteristic of perception:

All ideas come from sensation or reflection. - Let us then suppose the mind to be, as we say, white paper, void of all characters, without any ideas; how comes it to be furnished? Whence has it all the materials of reason and knowledge? To this I answer, in one word, from EXPERIENCE; in that all our knowledge is founded, and from that it ultimately derives itself. Our observation, employed either about external sensible objects, or about the internal operations of our minds, perceived and reflected on by ourselves, is that which supplies our understandings with all the materials of thinking. These two are the fountains of knowledge, from whence all the ideas we have, or can naturally have, do spring.20

19 K. Krippendorff, “On the Ethics of Constructing Communication,” presidential address at the 16th Annual International Communication Association Conference (Honolulu, Hawaii, May 26, 1985), 69, photocopied. Witness the discomfort with the coexistence of, and subsequent efforts to unify, the particle and wave forms of light, which do not lead to conflicting predictions.
This philosophical standpoint broke from the rational spiritualism developed by the Catholic church and the tightly justified geometry developed by its defenders, such as Aquinas. Empiricism held that rational explanation must be grounded in physical fact, which can be established only through observation. The assumption was that there could be a fundamental study of the natural world which transcended metaphysical assumptions, faith, and a priori reasoning. Because of scientific advances such as Newton's, empiricism as a system of belief quickly gained adherents. Empiricism ushered in the Enlightenment and a new vision of the educated individual as being reasoning, observant, and inclined to trust the stark evidence of his senses over all else.

Newton's study of celestial mechanics was simplified by the closed nature of the system it was observing. The music of the spheres was a dance that occurred in isolated silence and which reflected perpetual regularity. Gravitation too could be viewed as a singular event occurring between two bodies (the earth and an earthly body) so linked as to nearly negate any reference to exterior variables. Dynamics, the study of force interacting between objects was similarly situated in that the participants in physical interaction were viewed as participants in a closed, mechanical action.

Significantly, the study of physical objects presupposed a fundamental relationship between theory and observation, a faith in the belief that basic, mechanical rules steadily determined the interaction of variables in the natural world. Prigogine and Stengers remark that:

Modern science is based on the discovery of a new and specific form of communication with nature - that is, on the conviction that nature responds to experimental interrogation . . . Experimentation does not mean merely the faithful observation of facts as they occur, nor the mere search for empirical connections between phenomena, but presupposes a systematic interaction between theoretical concepts and observation.

When applied to social research, this method presupposes a fundamental connection between the proposition of social law and the empirical observation of human nature. The problem for the social researcher was that seldom if ever could any fundamental social law be isolated. The sheer complexity of social interaction meant that historical patterns and social observations could be described, but uncovering regular mechanics was difficult.

Science searches for objective and stable sensory data to corroborate theory. Finding regularities in deterministic causation, a vision of natural law, is the Holy Grail of Newtonian science. However, correlating direct causation is often a difficult project in the 'messy' world of intervening variables, unanticipated effects, and external forces. In the 'real' world of events, physical as well as social phenomenon are often suffused with complex interacting variables and unique causal extensions through both time and space.

For the early empirical scientist, making the leap from the closed system of celestial mechanics and gravitation to that of active and open systems made the quest for conclusive results difficult. It was often difficult to isolate phenomenon under observation from its contextual environment. The invention of the laboratory as a space where physical interactions could be controlled for the purpose of observation was the solution to the problem of intervening variables and uncertainty. The laboratory was a space that reflected the search for idealized, lawlike relations among isolated objects placed in mechanical relationships. All the 'messy' elements which can interfere and obfuscate observation are excised through the design of the laboratory. Empiricism is thus spared the observation of unanticipated or extraneous phenomenon.

In social research, bringing society as an object to the laboratory for empirical observation is obviously impossible. Subjects can be brought to a laboratory, but the fact that humans have thought and motivations extending forwards and backwards in time and into society complicates efforts to reduce uncontrolled elements. Testing a human subject can not be related to testing a physical object, which has no memory aside from its immediate context. Social variables reside in a network of evolving relations intrinsically linked to the context of society itself.

What is possible is to bring the methods of the laboratory to society. This entails attempting to isolate key variables and control them for the purpose of observation. In this way, social concepts can be

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operationalized into quasi-physical objects which can then be observed through the empirical method. However, abstracting laboratory techniques into the realm of society potentially can give the mistaken assumption that the results obtained in social research are somehow related to physical research done in the laboratory. The fact that the scientific method is utilized does not mean that there is a direct relation between physical objects and social concepts. As Fritz Machlup remarks in "Are the Social Sciences Really Inferior?":

There is a third world, between the abstract world of theory and the real unmanipulated world, namely, the artificial world of the experimental laboratory. In this world there is less variability than in the real world and more than in the model world. But this third world does not exist in most of the social sciences (nor in all natural sciences) . . . the mistake is often made of comparing the artificial laboratory world of manipulated nature with the real world of unmanipulated society.21

Empiricism imposes a method of natural inquiry and thus a philosophy of what is defined as ‘natural.’ In relating empirical research to the study of society, it is possible to abuse the laboratory method as an assertion of physical truth. Machlup comments: "The artificial laboratory world in which the experimenter tries to control all conditions as best he can is different from the real world of nature. If a comparison is made, it must be between predictions of events in the real world and in the real social world."22

Social scientists in this century have sought to preserve and uphold the idea that the researcher can make a laboratory of society if only for the right methods and research design. Partly this has been encouraged in the propagation of objectivity as a research goal. It is felt that the researcher can divorce themselves from the experiment, that they can observe physical events as if they were watching a chemical reaction in the laboratory. The promotion and use of such works as Unobtrusive Measures by Webb, Campbell, Schwartz, and Sechrest, and Experimental and Quasi-Experimental Designs for Research by Campbell and Stanley has done much to encourage the myth that the social science experimenter can divorce themselves from the process of experimentation purely by physical invisibility. What is seldom confronted is the great degree to which conceptual presence radically determines the nature and outcomes of social research. From theoretical design to research strategy to the determination of results, the social experimenter imposes a heavy conceptual bias in social science research.

It is perhaps most telling that in the study of physics itself, a growing understanding of the complexity and dynamic change inherent in the real physical world is being realized. Scientists are beginning to realize that in creating the laboratory as a 'nursery' for empirical observation, much of what is inherent in the natural world is eliminated or disguised. Both in and out of the laboratory, observation is now revealing that empirical sensation is not necessarily the path to a fundamental reality, but rather allows for the selective apprehension of different aspects of matter and energy. In distinction to a fundamental vision of reality, matter and energy are being perceived as constantly changing, moving at different levels of organization, and interconnecting in diverse and prolific ways. In this sense, the process of observation in research is based more so on the internal processes of the rational mind relating metaphoric concepts in order to construct selective meaning (as opposed to systematically dissecting a fundamental mechanical reality). In Science and The Modern World, A. N. Whitehead eloquently espouses this viewpoint:

The mind in apprehending also experiences sensations which properly speaking are qualities of the mind alone. These sensations are projected by the mind so as to clothe appropriate bodies in external nature. Thus the bodies are perceived as with qualities which in reality do not belong to them, qualities which in fact are purely the offspring of the mind. Thus nature gets credit which should in truth be reserved for ourselves: the rose for its scent; the nightingale for its song; and the sun for its radiance The poets are entirely mistaken. They should address their lyrics to

22Ibid., 172.
themselves, and should turn them into odes of self-congratulation on the excellency of the human mind. Nature is a dull affair, soundless, scentless, colourless; merely the hurrying of material, endlessly, meaninglessly.\(^{23}\)

The method of empirical science thus should be said to involve a context of uniquely human meaning. The supposition of empiricism, that observation is but the process of uncovering a fundamental nature, ignores the fact that all observation is only relevant in that it has a context in the human mind. The philosophical school of rationalism offers the opposite viewpoint from that of empiricism: the view that it is the thinking mind itself that creates and sustains reality. This notion too has affected the growth of the scientific method and exists in the premises of communication research.

1.3. Rationalism: Constructing a Social Geometry

Empiricism presumed a fundamental physical world which could be understood through standardized, cumulative observation. However, since the time of Greece and the conflict between the idealist and Epicurean schools, there were those who were not inclined to trust so completely the language of the senses. The enduring fact of dreams, imaginings, insanity, and hallucination all have served to show that evidence of the sensual sort is not as fundamental as the empiricists would have one believe. The dissenting experiences of different cultures and religions along with the vagaries of the subjective mind in action displays that there is more than one viable way to contextualize empirical data. Empirical sensation is relevant only when situated within a variable context of associations and distinctions drawn by the observer. Those inclined to a philosophy of reason over that of the senses can be said to realize that the physical world is relevant only in terms of its apprehension by the thinking mind; in the apprehension of physical reality, there can be much disagreement as to meaning.

The position of rationalism springs from a belief that through inquiry into the method of thought, a perfect method for seeing and thinking can be discovered. The formal school of rationalism, active during the 17th century and contemporary to empiricism, held that knowledge is primarily gained by intellectual and deductive means (through forming rational theory and then testing it in observation), as opposed to sensory and inductive means (through using empirical observation to formalize theory). The central tenet of rationalism is that it is possible to understand existence by the process of pure reason alone and that everything is explicable under a single system of deductive knowledge. Foundations for existence are sought in rational proofs extrapolated from fundamental philosophical laws. In these terms, methodologically, rationalism as a tool for pursuing ‘truth’ is more so related to mathematics and geometry than to natural inquiry of the sensual world.

Benedictus Spinoza (1632-1677), Gottfried Wilhelm Leibniz (1646-1716), and René Descartes (1596-1650) were the main proponents for a rationalist system of philosophy. Spinoza viewed all reality as deriving from the infinite substance of God. Physical and a mental events were viewed as elements of one universal divine substance extending its attributes into perfectly rational thought. This unified divine substance was seen as having a fundamental basis that could be explored through the application of rational inquiry. Leibniz proposed that everything was composed of divine will, but took an Aristotelian stance in adding that each object was a unique substance in itself, participating as a reflection on unity. Again, he felt the fundamental method for natural inquiry entailed rational thought.

Spinoza and Leibniz were distinct in proposing that all of existence was composed of a single substance. This view, monism, stands in distinction to that of the most noted rationalist, Descartes, who believed mind and matter to be separate realms. René Descartes (1596-1650), a French philosopher and mathematician radically influenced by the formalizing power of geometry, stands as a primary proponent of rationalism. Descartes first proposed a system of rational proofs for existence in Meditations. His concept of rationalism started off with an assumption of fundamental doubt which called sensory experience into doubt:

A certain evil spirit, not less clever and deceitful than powerful, has bent all his efforts to deceiving me. I will suppose that the sky, the air, the earth, colors, shapes, sounds, and all other objective

things that we see are nothing but illusions and dreams he has used to trick my credulity. I will consider myself as having no hands, no eyes, no flesh, no blood, nor any senses, yet falsely believing that I have all these things. I will remain resolutely attached to this hypothesis; and if I cannot attain the knowledge of any truth by this method, at any rate it is in my power to suspend my judgment. That is why I shall take great care not to accept any falsity among my beliefs and shall prepare my mind so well for all the ruses of this great deceiver that, however powerful and artful he may be, he will never be able to mislead me into anything.  

Descartes proposed to assume nothing, to doubt the evidence of his senses, as empirical data was outside of the mind and could be a dream or delusion. This 'method of doubt' acted to 'zero' all assumptions about the real world, to reduce the human world to the mind, the ability to think. From this level of universal uncertainty, Descartes proposed as the fundamental axiom of truth perhaps the most noted quote in philosophy: "Cogito ergo sum" (I think, therefore I am).  

The cogito-sum represents Descartes foundation for an ensuing discussion on the nature of the mind, body, and God. It was his intention to build up a system of proofs starting from the rational mind, to construct a geometrical framework for the nature of reality. Guided by what he considered to be the flawless language of mathematics, Descartes presumed he could rationally deduce the laws of existence from fundamental givens, to construct an 'a priori' world without the use of experience. After the cogito-sum, appears "sum res cogitans": I am a being whose whole essence or nature is to think, and whose being requires no place and depends on no material thing. This statement is the foundation to Descartes' controversial position of psycho-physical dualism. Dualism involves a notion of matter (the natural world) as being separate from mind (the mental world):  

For Descartes, the world is made up of two incompatible kinds of substance - mind or consciousness (res cogitans), which is unextended and indivisible, and matter (res extensa), which is extended and divisible. It follows that our physical bodies, including our brains, being part of the extended divisible world of matter, can have no part in our existence as thinking beings.  

Psycho-physical dualism represents one of the most contested issues in philosophy. The question under consideration holds at stake the fundamental nature of mind and matter, the nature of existence. Although casting the physical world in doubt, Descartes did not propose that the physical world did not exist. Rather, he held that perception should be treated as a process of the fundamental mind reaching out towards the physical world, with perversions possible in the act of perceiving. Psycho-physical dualism supports a deductive method, the notion that science should be an investigation methodologically proceeding from general premises formulated by the mind towards observation by the body. In this sense, Descartes agreed with Newton's concept that the physical world was fundamental and autonomous, but added that the organization of the rational mind is the key to inquiry.  

The problem with Cartesian psycho-physical dualism is that the method with which the mind participates in the physical world is left rather hazy. Proposing that mental and physical realms are fundamentally divided begs the question of how they interact. Recognizing that all inquiry starts with the thinking mind, one is left to ask how one may overcome the barrier of fundamental doubt separating mind from matter. If all perception is potentially delusion, and we are left only with the fundamentally rational mind, one is led to ask from whence knowledge can arise. There is little support for the assumption that mind and matter are fundamentally separate from each other, or even that the terms of physicality and mental concepts can be so easily distinguished. It would seem that beyond the cogito-sum, knowledge

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25 Ibid., 24.

26 Ibid., 29.

27 Flew, 91.
must ride on a faith in the physical world. The notion of the deluding demon, if its implications are accepted, destroys the validity of perception in human existence.

For human existence to be practically engaged, one must to some degree rely on a faith in perception or experience; this is the empiricist stance and the belief that knowledge progresses through induction. One must forego the challenge of Descartes' demon for there to be any understanding of existence at all. However, in the same respect, the rationalist notion of the mind as the creator of knowledge is significant. Rationalist belief that it is through the thinking mind alone that any possibility of knowledge exists can not be ignored. Natural inquiry can be said to proceed by a process of deduction, where theories about existence guide the process and perception of inquiry. It is through the thinking mind alone that knowledge, the context and container of experience, has any relevance at all.

The scientific method itself proposes a theory of epistemology. In offering a proposition for how to best pursue knowledge, science acts to define boundaries for knowledge. Knowledge for science is defined as not only that which can be observed, but also that which can be critically examined in a rational, comparative context. Ostensibly purely empirical, the scientific method involves distinctly rationalist projects: the process of abstract modeling, the formation of theory, the operationalization of abstract concepts into variables, the offering of research hypothesis, and the contextualization and interpretation of scientific results.

Scientific method relies on empiricism in the measurement of 'fact,' yet its process also relies on a code of rationality which specifies a method of physical inquiry and a context for experimental results (a deductive as well as an inductive approach). Assumptions of the scientific method, the idea of a fundamentally rational method with a strict, singular logic, the seeking after fundamental answers, and the belief in the hidden existence of universal laws, all resemble the mathematical notion of geometric proof. The process and goals of theory and the contextualization of results in scientific inquiry can thus be seen as a outgrowth of the philosophical school of rationalism as well as a verification of the efficacy of empiricism. Mental and physical realms can be seen as mutually interdependent in the process of constructing scientific meaning; deductive and inductive processes both play a role in the growth of scientific knowledge.

The role of rationalist thought in the growth of science is traditionally downplayed or seen as adversarial due to its anti-empiricist stance. The assertion here, however, is that the rationalist ethic has contributed significantly to the growth of science in several respects. For one, its philosophical proposition of fundamental doubt acted to clear bias and predisposition from the process of empirical inquiry. In another respect, the mathematical rigor of rationalism, based on the system of geometrical proof so admired by Descartes, provided a process for linking theory and empirical data in a logical framework. The notion of psycho-physical dualism is also significant, the idea that the physical world and the world of the mind are irreducibly separate. Although empiricism as a source of knowledge was held in doubt by the rationalists because of this, the notion of a fundamental physical world separate from the mind in many ways acted to verify the empiricist project and acted to advance the scientific method.

It is significant that the contribution of the philosophical current of rationalism to the growth of science is often downplayed. Rationalism, as an epistemological proposition, survives in science through its role in the deductive process, in its crucial contribution to the process of theory formation and research design, and in the interpretation of experimental results. However, strictly speaking, deterministic science denies that any formal method exists in science aside from the strictly logical, progressive investigation of a fundamental empirical reality (the inductive method). To admit that a theoretical or philosophical system (a deductive process) is in place which influences the nature, process, and results of scientific inquiry would be to expose this system to criticism. In admitting that there is a process and logic, a system of interpretation beyond a 'geographic' exploration of the fundamental physical world, science is vulnerable to debate over the context in which empirical observation is posited.

As was realized in Christian doctrine as well as in geometry, any self-consistent logic is completely valid within its own premises. Yet a logical system of geometry is vulnerable to attacks on its validity from alternate systems of logic which challenge its fundamental precepts. In "Non-Euclidean Geometries and the Non-Euclidean World" Henri Poincare points out the basis for rationalist systems of proof:

Every conclusion supposes premises; these premises themselves either are self-evident and need no demonstration, or can be established only by relying upon other propositions, and since
we can not go back thus to infinity, every deductive science, and in particular geometry, must rest on a certain number of undemonstrable axioms.  

Rational, deductive logical systems are valid only in that they are self consistent, in that they defer to their own fundamental premises. All arguments not applying to the particular rational, logical systems of geometry are cast away either as being invalid or are redefined to the benefit of the host logic. Rationalist systems of logic thus seek to defend their fundamental premises by claiming ignorance of challenging phenomenon or by redefining the challenging phenomenon. Empirical science is similar in that it either seeks to ignore or to redefine (physicalize) metaphysical or conceptual phenomenon.

Maintaining the sanctity of a rational system’s foundation, its undemonstrable theoretical premises, is paramount to keeping the system intact. As the Catholic church was challenged by the independent logic of empiricism and as Euclidean geometry ultimately was challenged by notions of curved space in this century, so does science expose itself when it allows that rationalism guides its progress in the process of constructing meaning from observation. In the formation of models, theories, variables, hypothesis, and conclusions, empirical data is contextualized in rational explanation. In these terms, rational conclusion in science (and particularly in social science) is open to criticism from different sets of experimental premises. It is possible to explain empirical phenomenon through a number of metaphors or theories which give phenomenon relevance and rational context.

Empirical science recognizes and encouraging the point that explanation can constantly be challenged in seeking the growth of knowledge. However, empiricism directly discourages the view that there can be a number of equally valid explanations for identical phenomenon. This is antithetical to the empiricist notion of a fundamental physical world. As Poincare implies, though, in that science involves deductive, rationalist methods in the process of forging meaning from observation, it allows for a number of equally valid explanations / relationships to be drawn. In that physical observation must be constructed into human meaning for it to be an object of knowledge, different assumptions of meaning are possible among the basic premises drawn in the process of constructing knowledge. That is, rationalist explanation is valid only down to its premises and fundamental laws. Ultimately science must rest on a rational context for observation: theoretical conclusions based on rationalist constructions, which themselves ultimately rest on undemonstrable axioms. Further, beyond providing a method for the rational construction of knowledge, the scientific method itself contains its own undemonstrable rationalist axiom in asserting an intrinsic faith in the premise of Cartesian dualism.

An alternate theory of epistemology from that of empiricist science would be to overtly recognize the role of the human mind in constructing a framework of relevance and context from empirical data. The process of constructing meaning is a rationalist project of proof, a goal of geometry, not empiricism. Thus, if scientific proof is partly a rationalist process, scientific conclusion is always open to different, equally valid explanations from different perspectives, different theories using different variables and different logics for imputing causation. As long as different explanations are justified according to their own internally rationalized premises, they can be viewed as being equally valid to explanations operating from a separate set of premises. Recognizing that science too uses rationalist explanation through deductive processes implies that there is more than one way of viewing the physical world, more than one way of providing ‘answers.’

The process of forming meaning from scientific inquiry involves the construction of metaphors, which by nature are abstractions. This is personified, for example, in the scientific explanation of light as both a particle and a wave, or in the way that both classical dynamics and thermodynamics hold valid yet competing visions of the natural universe. Even Newton’s laws of gravitation have been show to be given to over-simplification and thus to alternate explanation. Similarly, communication researchers are aware yet largely ignore the fact that both psychology and sociology offer valid yet competing methods for explaining social phenomenon. Despite these examples in its midst, empirical science, particularly as applied in social science, stubbornly holds to a belief in fundamental theory.

Science itself contains methodological premises that have no ultimate proof aside from a rationalist faith. The premises of empirical science, reflecting psycho-physical dualism, are that: A) there is a fundamental physical reality, and that B) knowledge proceeds through a singular logical process of

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conceptualizing and contextualizing this reality. These premises, these ‘undemonstrable axioms,’ are open to criticism. There is no way to demonstrate that there are not a number of equally relevant ways to explain and place a value on physical phenomenon, that there is not more than one ‘answer’ to questions about the physical world. Causation can be traced and dispersed back to the prime mover without reaching a final conclusion as to ultimate meaning. Meaning necessarily involves a uniquely human project of contextualization and abstraction.

If all physical phenomenon emerges through sensory data in the mind, as claimed by the empiricists, it can be claimed that physical reality itself is subject to a context of meaning according to associations and distinctions designed thereafter in the process of observation. In forming meaning from this observation, rational process of explanation may be pursued in a number of equally effective ways. Just as geometry and rationalist proofs depend on their initial assumptions, so does empiricist science depend on the premise of a single physical world and a single explanation for action in this world. Empiricist science is challenged by the notion that a number of relevant ‘realities’ can be formed from a single set of empirical observations. Such a viewpoint would not so much destroy the notion of a tangible physical world as it would call into question the premise that there is only a single, rational way of conceptualizing and interacting with this world.

Instead of embracing the deductive method and the role of the thinking, evolving mind in forming theoretical constructs, science eschews any imputation that it is subject to multi-variate mental processes. In maintaining a system of dogma, a system of fundamental proof, rather than in providing a space for the broad evolution of knowledge, empirical science offers a system of geometry that is debatable in its ‘undemonstrable axioms.’ The scientific method incorporates both hidden deductive theoretical process and the debatable premise of psycho-physical dualism into its structure. Instead of confronting their respective philosophical weaknesses, empiricism and rationalism have combined in the scientific method, forgiving each other for their shortcomings.

It is difficult to escape completely reference to ‘undemonstrable axioms’ in any methodological proposition. However, in admitting the validity of multiple contexts of meaning, the project of inventing dogma is damaged. Method that invents and constantly reinvents itself allows for debate and interpretation without forming closure. If science is indeed a project intended to expand human understanding, then a science which admits the ability to find multiple meanings in the empirical world is more so doing justice to any vision of a ‘First Philosophy.’

There are evolving and multi-variate ways of viewing the world. With the advent of the theory of relativity, a concept of curved space has challenged Euclidean concepts of three dimensional geometry. Similarly, with growing understandings of social interaction, new methods of social research have come to challenge the scientific geometry previously ruling the perception of social inquiry. In communication research during the 1940’s the ‘direct injection’ theory of effects was challenged to give rise to studies of mediation in the interpretation of messages. However, the scientific method is still used with the attitude that some fundamental understanding of media effects and use can be achieved. As a social science, mainstream American mass communication research refuses to admit that multiple logics are possible in the interpretation of social behavior. Such a rigid stance has resulted in a field that sees its many and often conflicting theories as a sign of fragmentation rather than as rich text offering multiple viewpoints.

Mass communication research needs to re-examine the role theory formation and explanation plays in social science. Science should not be regarded as a way to lend theoretical propositions validity, but rather a method of exploring the nature of complex connections in social systems. Explaining mass communication phenomenon can have a number of meanings depending on the relations and distinctions which are drawn in the research. A scientific observation could be made that, for instance, IQ is inversely proportional to television viewing frequency according to a comparative analysis of intelligence and viewing durations. This correlation in part is contingent on the method for measuring or operationalizing intelligence as well as television watching, each of which can be framed in a number of ways. Once these ‘physical’ observations are made, imputing causation depends on a demonstration of a codependent relationship between the two. The correlation is dependent on a demonstrated statistical connection between the operationalized variables, which can be manipulated in a number of ways. Once this is demonstrated, the fact that intelligence can be related to socioeconomic background, genetic heritage, or even nutrition, opens the possibility that a relation between IQ and viewing time may be spurious. Intervening variables can be inserted in a number of ways to shift the meaning of the research and the results. Thus television viewing frequency might become merely the sign of a lack of entertainment options. IQ could be linked to television viewing through research, but to assume
significant causation because of statistical correlation simplifies the complex factors of meaning which surround social phenomenon. In constructing meaning, communication research as a social science is foremost a process of philosophical theorization and only then a space for observation.

The premise of an empirical science encourages a fruitless quest for fundamental social states. To assert that one final reason exists for television viewing habits is to assume that there is a fundamental basis behind the complex relationships of social phenomenon. The design of research itself, however, is situated in a frame of rationalized relationships that have relevance only according to specific sets of axiomatic assumptions. In the case of television viewing, assumptions about the relationships and abstracted variables involved make it difficult to assume that conclusions are fundamental. The point is that meaning and explanation in scientific research is dependent on rationalized relationships and distinctions drawn by researchers as well as on the meaning associated with the conclusions. Results in social scientific research thus need to be realized as pointing out an aspect of social relationships and not as demonstrating truth. Social science should use empirical observation to form metaphors of explanation and critique, not to construct liturgy.

1.4. The Birth of Positivism and Idealism: Towards a Science of Society

The previous sections have pointed out that empiricism and rationalism are two major epistemological positions which have accompanied the growth of knowledge through human history. Empiricism and rationalism have found a powerful, effective synthesis in the scientific method. However, for all the progress the application of the scientific method has afforded humanity, it has also restricted us to certain fundamental modes of thought and perception. The intent so far has been to point out conceptual difficulties in the basic premises of these epistemological stances, specifically in as they are applied to social/communication research through the scientific method.

There are compelling arguments against the over-extension of empiricism and rationalism as broad epistemological systems. Empiricism assumes that the senses are infallible and that there is an immutable physical world existing as the foundation for existence. Dreams, altered states of perception, and the philosophical proposition of Descartes' demon each display how the senses can be variable in their apprehension of the physical world. The many ways of interpreting meaning from observation and the abstracting process of theory construction each argue against the possibility of realizing a fundamental picture of the physical world. Recent advances in science (i.e.: quantum theory, relativity, chaos theory) also argue against the notion that any single empirically grounded fundamental understanding of the physical world can be achieved.

Natural science was successful to a large extent because it was able to directly correlate empirical sensation with physical objects, to formulate a static vision of the physical world as separate from the psychic world. From basic physics to astronomy and mathematics, the emerging methods of science swept away the "terror, ignorance, and paralysis of all previous history,"29 ultimately producing what became known as the Enlightenment. In philosophy both the rationalism of Descartes, which proposed the primacy of the logical human mind, and the empiricism of Locke, which asserted an intransigent external reality, served to form a foundation for social science. Both these movements created a skepticism in which both the mind and the empirical realm were respectively separated and reduced to fundamental entities, to 'physical' objects. The very fabric of meaning and existence was thus united with the process of empirical verification guided by rational thought.

Once a standard philosophical system and method grounded science, its practical usefulness in natural inquiry became apparent. The spirit surrounding science, a spirit of progress guided by rationality, expanded into a general social belief system, a weltanschauung or worldview. The priest, unable to compete with the secular, practical effectiveness of a system of belief oriented exclusively to the problems of the physical world, markedly began to lose authority to the scientist. Accompanying the growth of science, a general progressive enthusiasm led its proponents to espouse the method of science for application among many different disciplines of inquiry. It is in this spirit, the spirit of the Age of Reason, that human nature, and thus communication, became the purview of science.

This section concentrates on examining how a social science grew from the Western investment in science as a 'First Philosophy.' Progressivism and social utopianism are examined as trends that promoted the growth of social science. The emergence of sociology during the enlightenment and the birth of positivism as a system of philosophy are examined. As a philosophical school situated in the humanities, positivism aided and accompanied the emergence of a science of society. The assumption of positivistic science as applied to social research is that there exists a fundamental physical society separate from the mind, that the nature of this society is mechanical, deterministic, and guided by general laws, and that society can be apprehended only through methodical empirical (inductive) observation.

We have previously discussed the role of Plato (in making morality an inquiry into a fundamental human nature), Aquinas (in proposing that there was a rationalistic and fundamental 'natural law' behind social existence), Hobbes (in proposing the study of social man is based in physical inquiry), and Newton (in hypothesizing that the physical world was united by universal / fundamental laws). These strands of though contributed to a dialogue on the composition of human nature and how best to study it; this dialogue exploded from the late eighteenth to the late nineteenth centuries, leading to the birth of social science.

Isaiah Berlin in Against the Current proposes that the foundation for a science of society draws from of a particular spirit of social rationality that extends at least as far back as Plato. This tradition of rational thought, he asserts, rests on three basic assumptions:

(a) that every genuine question has one true answer and one only: all others being false. Unless this is so, the question cannot be a real question . . . (b) The method which leads to correct solutions to all genuine problems is rational in character; and is, in essence, if not in detailed application, identical in all fields. (c) These solutions, whether or not they are discovered, are true universally, eternally and immutably: true for all times, places and men.30

The content of these premises are detectable in the notion of an Aristotelian 'First Philosophy,' as well as in the precepts guiding rationalism. The advent of the formal school of empiricism during the Enlightenment acted as the practical engine behind this spirit of absolutism. That is, empiricism provided the subject matter, the central reference for notions of a fundamental 'answer,' a fundamental notion of reality. Empiricism, guided by the spirit of rationality, grounded philosophical concepts of reality through the idea of a fundamental, absolute physical world. This fundamental physical reality was then assumed to be the prime material patterning biological and social existence, which thus could be studied by the methods of physical science.

The popularization of the scientific method during the Enlightenment accompanied profound shifts in technology, ideas about the physical world, and theories about human nature and the philosophy of government. In particular, the rapid growth of the Industrial Revolution bolstered an optimistic spirit of social improvement towards utopian goals. The rise of science was advanced by a spirit of progressiveness lent practical effectiveness by a productive, fundamentally rational method for natural inquiry grounded in empiricism. The idea of social progressiveness surrounding the growth of science is significant to understanding the spirit undergirding the birth of social science. The notion that history in general and human communities in specific have the ability to improve steadily is in many respects a relatively recent historical event appearing during the late Renaissance and the early Enlightenment.31

Previously, there existed the belief, similar to that of the ancient Greeks, that history was teleological or cyclical, with no steady goal beyond the cycling of reoccurring events bent to the inherent, unchanging purpose given to all things. There also existed the more pessimistic school of thought found in Plato and the Old Testament, which held that all change was a decline away from a perfect, fundamental state of harmony.

Scott Gordon in The History and Philosophy of Social Science states that the idea of progress consists of: “the conception of the present as superior to the past and the belief that the future will be, or


31This assertion, that the spirit of progressiveness is recent historically, is debatable. Certainly, there have been notable points of growth and decline through from ancient times. However, progress as a general social paradigm combined with a recognized practical application of this spirit, the scientific method, has been unique to the past four centuries.
The spirit of progressiveness was a major point of contention during the seventeenth and eighteenth centuries. The subject of public debates known as 'the ancients versus moderns controversy' or 'the battle of the books,' the belief that social progress was possible and desirable finally gained primacy, in part assisted by the material advances demonstrated by science.33 Whereas the religious afterlife had once been the nexus of social concern, improvements in shelter, sanitation, clothing, and general comfort advanced by technological growth instilled a growing secular interest in improving earthly conditions. In this sense, the enthusiasm for material comfort along with confidence in a fundamental empirical reality can be seen as a re-emergence of the precepts surrounding Epicureanism, the materialist school of ancient Greece that challenged pessimistic Platonic idealism.

The scientific method itself consciously manifests progressiveness as a procedure for inquiry in the natural world. Scientific methodology is based on the cumulative growth of knowledge. In contradistinction to religion, the theories and scientists of the past are ideally treated with skepticism rather than with a spirit of blind faith. In this way, ideally there is a constant, unbiased seeking after improved understandings of the natural world. Once implemented prolifically, scientific procedure provided its own justification in the form of a tremendous growth in technology and knowledge. The scientific method, with roots in Berlin's proposed spirit of rationality, assumed a cumulative growth towards a fundamental understanding of nature and humanity. The spirit was thus progressive and, in some quarters, unabashedly utopian, in that it sought to build a higher and higher edifice reaching forwards to the Holy Grail of a lawlike and deterministic understanding of nature and humanity.

Progress towards an ideal state, the spirit of utopianism, can be said to be one of the prime factors surrounding the emergence of social science. Pictured by Plato, the ideal society was an ultimate state from which humanity, in its ignorance, is constantly degenerating. Long existent in religion as a vision of the afterlife (and of the state of grace from which humanity in its corruption was expelled), paradise was a political concept maintaining faith. Sir Thomas More (1478-1535), an English statesman and writer, in his book Utopia (1516) coined the term of the title, casting it quite literally as 'no place.' The mythology of the perfect society has a basis in most all societies, no matter their level of technical development. It is with the dominant metaphor of any culture that this perfect state is expressed. So too with the advent of science. Long the project of millenarianism, constructing God's heavenly kingdom on earth could now be planned for and conceptualized through the secular advancements afforded by science.

For the new breed of 'social scientists' arising, the efficacy of the scientific method encouraged the aligning of the goals of social analysis with those of science, the intent being to produce mechanical, precise, linear understandings of the nature and effects of social interaction. The motivating end of this method, as asserted by Isaiah Berlin, was for the enlightened man to learn better how to design a practical social architecture "to make men good, that is, sane, rational, tolerant, or, at any rate, less brutish and stupid and cruel; how to enact laws and governments which will promote justice, beauty, freedom and happiness and diminish brutality, fanaticism, oppression, with which the greater part of human history is filled."34 The roots of social science were thus prescriptive, progressive, and guided by a belief in a fundamental human nature.

Among socially minded intellectual reformers of the Enlightenment, the Scottish economist Adam Smith (1723-1790) is notable. In his belief, just as Newton promoted the concept that there were fundamental laws undergirding the physical world so were there universals guiding human nature. In Moral Sentiments (1759) he proposed that humans were guided by a sense of sympathy, a spirit of unity with others. In An Enquiry into the Nature and Causes of the Wealth of Nations (1776) he conceptualized large scale economic behavior to be the result of individuals acting to improve their material welfare; the resulting effect of independent motives producing large scale economic organization is known as the

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32Gordon, 30.

33Much could be said of the conflict between religious conservatism and the spirit of scientific inquiry through the middle ages up until the industrial revolution. However, the purpose here is to concentrate to those aspects of belief that influenced social science, mass communication research specifically. For a more detailed account of the conflict between religious/spiritual doctrine and the growth of science see David C. Lindberg and Ronald L. Numbers, eds. God and Nature (New York: MacMillan, 1986).

34Berlin, 88.
invisible hand.' Smith's theories are significant in that they propose to forge a conceptual link between social behavior and abstract concepts, to link empiricism with causal explanation. Smith viewed the drive to increased wealth and material growth to be beneficial and even desirable in society. The process of progress itself was seen as an ideal state for society, whereas stagnation and decline each brought their own types of misery. In this sense, Smith invested deeply in progress as an intellectual cause, both in his theoretical work and as a general social goal.

Smith's social and economic theory served to advance the notion that society was rightly an object of scientific inquiry, and that by applying the scientific method to social analysis, a progressive vision of change could be pursued. Utilitarianism advanced this view by perceiving the very nature of humanity as being progressive, as being functionally motivated by increasing pleasure and comfort. The school of Utilitarianism developed as a theoretical proposition embodying the fruition of a progressive, secular, scientific vision of human interaction. As outlined in Introduction to the Principles of Morals and Legislation (1789) by Jeremy Bentham (1748-1832) and in Utilitarianism (1861) by John Stewart Mill (1806-1873), this school of thought was significant to the empirical grounding of social studies in that it proposed an entirely secular system of morality. This system of belief resembled the spirit of Epicurianism in proposing that social behavior and institutions were patterned solely after the pursuit of physical pleasure and happiness. It was a progressive vision in that it contained the prosocial prescription that law and social institutions should be instituted with the greatest happiness for the greatest number in mind. Happiness, or utility as it was operationalized, was conceptualized as a variable to play the role in social theory that gravity played in the Newtonian concept of universal motion.35

Humanity was thus physicalized according to the scientific empiricist metaphor.

T. R. Young in "Chaos and Social Change: Metaphysics of the Postmodern" traces the formal 'scientization' of the scholarly study of social dynamics to writings by theoreticians such as Pierre Laplace (1729-1827), Comte de Saint-Simon (1760-1825), August Comte (1798-1857), and Vilfredo Pareto (1848-1923). Laplace offered the method of Newtonian determinism as a 'First Philosophy' applicable to social analysis. Saint-Simon and Comte envisioned the good society as being achievable through social planning, through the rational organization of geography, architecture, social communication, and community design. Pareto, an Italian economist, theorized that the phenomenon of economic exchange involved mechanical laws and thus could be optimized through social management. Each linked the language of science with a concept of social progressiveness, of secular advance through rational organization. Situated in their historical context before and during the Scientific and Industrial Revolutions, social theorists such as these were taken by the efficacy of the scientific method and transformed it into a methodology for social analysis. Expanding the use of science in social inquiry beyond a metaphoric application, the mood of the time encouraged the belief that a strict calculus of social laws could be discovered through the careful, linear scrutiny of the scientific method. Science was perceived as a 'First Philosophy,' a methodology fundamental among a number of disciplines.

Previous to the Enlightenment period of the eighteenth and early nineteenth centuries, inquiry into the nature of humanity and political thought had been mainly the perspective of philosophical inquiry. During the Age of Reason, philosophy, that most humanistic of intellectual disciplines, found itself influenced by the growth of science as well. At one time science was a subset of philosophy, yet in a historically short amount of time the progressive spirit and practical results produced by science soon led to a swallowing of philosophy. The difficulty for the method of philosophy (bent to linguistic challenges, and thus continually evolving and insubstantial), when compared to the method of science (patterned by empiricism and a notion of an intransigent physical reality), lay in the criticism that seldom if ever could anything be agreed on in philosophical inquiry. Science, however, provided that empirical measurement and comparison was a method that left no room for doubting. Positivism, a philosophical perspective proposing empiricism as the only valid method of inquiry, was the answer offered to those no longer satisfied with the unresolved methods offered by traditional philosophy. In this way, philosophical social inquiry was formally made the object of empiricism.

The writings and theory of French positivism mark the formal development of a 'sociology' as a concept of scientific social inquiry. Positivism encompasses the set of beliefs formalized by Auguste Comte in the late nineteenth century, although its conceptual roots can be traced to Bacon, Hume, and

35 Gordon, 250.
the British empiricist school.36 Positivism is based on a belief that the highest state of knowledge is based on the 'positive,' pure fact gained by empirical observation, the formal method of science. This term came as a warning to any philosophers and theologians who attempted metaphysical inquiry beyond first causes and ultimate ends.37 For the Positivist, any question not available to scientific inquiry was to rest as not only unanswerable but irrelevant to the scope of truth. Following in the prosocial footsteps of his mentor Saint-Simon, Comte pioneered a social science in which human needs and behavior were proposed as subjects for strict scientific analysis. It was felt that the very organization of society could be improved through the use of scientific analysis in critiquing social problems.

Emerging amongst the evolution of great social theorists of the French Enlightenment such as Francois Marie Voltaire (1694-1778), Jean Jacques Rousseau (1712-1778), and Charles-Louis de Secondat Montesquieu (1689-1755), Comte and Saint-Simon, in the trend of their countrymen, represented a belief that rationality and scientific thinking could benefit human kind. In espousing the notion of a science of society, this group of socially progressive French intellectuals:

believed that as there was a science of behavior of things, so there could be a science of the behavior of men; that anyone who had grasped the principles of this latter science could, by applying it, realize all the goals to which they were unitedly striving; that all these goals - truth, justice, happiness, freedom, knowledge, virtue, prosperity, physical and mental powers - were bound to one another 'by an indissoluble chain' . . . and that it was possible to bring them all into existence by transforming society in accordance with the infallible principles of the newly discovered scientific truth about social existence.38

Indeed, much of the prosocial, human rights rhetoric of the French Enlightenment advanced the status and power of democratic institutions. Along with this modernist, progressive spirit came a uniquely geometric notion of human communities. The positivists and followers of Saint-Simon believed there was a unique relationship between geography, demographics, urban planning, civil engineering, and the happiness / well being of a citizenry. Notably, a major emphasis was put on communication as a favorable social goal. Comte and Saint-Simon believed railways, roads, transportation technology, and public spaces should be optimized as they would lead to social improvement through increased communication.

'Sociology,' as coined by Comte, grew from these roots as an attempt to analyze and design for the modern utopian village through analytical demographics. This effort produced much in the way of advances in civil technology, yet it also denied the validity of more metaphysical, abstracted methods of analyzing human communities; terms of human emotion and value were not easily justified through the empirical method. Under the auspices of the positivists, any notion outside the purview of scientific empiricism was not only irrelevant, it was also judged as obsolete. The notion that chaos and disorder, emotion and instinct, philosophy and spirituality, or greed and intentioned inequity played any role in the interactions and reactions of a society was strongly disavowed. Comte's heavy empiricist bias in Positivism and Saint-Simon's physicalization of human interaction were methodologies that by nature philosophically precluded any attention to metaphysical and abstract conceptual entities. Positivism as a social movement promoted a standpoint which viewed social research as a process of discovering immutable, solid, 'physical' reality. The process of theorization was thus only a mechanical step in the

36Flew, 283.
37Logical Positivism was later formalized as a central school of beliefs proposed by the Vienna Circle, a group of German philosophers in Vienna during the 1920's and 30's led by Rudolph Carnap (1891-1970). This belief system also rejected metaphysical assumptions and believed that science should rely exclusively on observable. Induction was rejected as a form of inquiry, only directly observable experience was permissible in scientific investigation. They formulated the verifiability principle, which states that only those statements which can be shown to be conclusively true or false (according to the self-consistent, stated method of inquiry applied) are meaningful. As a result, the field of philosophy to them was seen as a critique of language or as a formal analysis of meaning according to formal symbolic logic.
38Berlin, 159-60.
trial and error process of mapping external, 'physical' concepts through the application of rationality to social problems.

Postdating the French positivist school, Émile Durkheim (1858-1917), a French pioneer of sociology, developed the concept of an objective social science in asserting that sociology was the fundamental discipline, the 'First Philosophy.' He felt that science itself must begin from a sociological perspective as science is an aspect of society and culture. This development marks the extent to which the spirit of rationalism combined with empiricism had inflated the ambition of social theorists. The science of society was envisioned as the ideal goal of all human inquiry. Any concept of individualism was submerged under the guiding force of society as a type of collective organism. Durkheim's principle premise was that social facts should be considered as 'things,' and that these social objects have a deterministic effect on the behavior of individuals. From this perspective, social phenomenon was seen as objective, physical, and external to individual action and motivation. Sociology in Durkheim's terms was a type of physics guided by pseudo-Newtonian laws. It was on the conceptual foundation of theories such as Durheim's that the study of social communication developed.

Newtonian empiricism was instituted in social analysis in part through utilitarianism and the French positivists. Rationalism as well developed into a system of social analysis during the Enlightenment. Contemporary to Saint-Simon and Comte, the partial conceptual roots of current social science can be found in German idealism. Whereas the positivists brought empiricism to the end of social analysis, the German idealists developed rationalism into a method of prescriptive social geometry. The strains of idealism during the early to middle part of the nineteenth century contributed to the rationalist notion of a fundamental human nature / consciousness. Idealism radically diverged from the spirit of empiricism in that it proposed the natural world to be filtered through the mind; embracing a spirit of rationality, it asserted that the perceiving, rational mind is the tool with which humans apprehend reality. More generally, the idealists were marked by a belief in a spirit of ideal or ultimate rationality from which individuals draw guidance, a belief in the progressive movement of society, and the basic notion that a rational concept of human society could be discovered through introspection and research.

George Wilhelm Friedrich Hegel (1770-1831) is notable in the German idealist school of thought in proposing a complete, self consistent philosophy of man and nature. His monistic version of idealism is that the mind is the fundamental basis for reality and that rationality is the guiding spirit of existence. Platonic in scope, this viewpoint is fundamentalistic in its assertion that the world of forms is the result of a universal spirit of rationality through which the individual rational mind navigates. The success of his philosophical system rests on his deference to this ultimate state of rationality, the universal 'human spirit,' which guides the evolution of all human acts and perceptions towards an ideal state. On this is constructed a self-consistent monism based on the rational mind as perceiver-cum-creator of the natural world.

In this sense (in rejecting the primacy of sensory data), Hegel can be thought of as anti-empiricist; yet, he achieves similar goals to the empiricist vision of social study in proposing an ultimate state of rationality as being the immutable foundation for social reality. It is notable that Hegel's philosophy is logically perfect as long as its fundamental premises are accepted. Any phenomenon that does not fit into the framework of his theory is either ignored or transformed and reinterpreted according to the self consistent geometry of his beliefs. In this sense, his theory is similar to a science of philosophy, in that science is self consistent within the premise of linear / causal empiricism and in that theory which falls without its purview is either ignored or transformed.

The German social philosopher Karl Marx (1818-1883) drew both from the thought of Hegel, Adam Smith, utilitarianism, and the followers of Saint-Simon in proposing an ideally rational, progressive socio-political treatise. Like Hegel, Marx also presupposes an ultimately rational / just, utopian state guiding human progress, except his fundamental frame of measurement rests on the liberation / revolt of the working class. Like Saint-Simon, Marx offers a pro-social, scientifically realized plan for reforming social ill. Marx's work did much to encourage the breakdown of class boundaries and a decayed form of Marxism became instituted as a social plan in China and the former Soviet Union. However, it should be pointed out that the bastardization of Marx's quasi-scientific notion of social design did not realize a utopian state, but instead instituted repressive bureaucratic governments which often violated the human rights of dissidents. This perhaps presages many of the difficulties and abuses possible in applying the formal methods of science to human communities. The idealism of science largely ignores the volatile and intrinsic components of such 'unreasonable' social attributes as greed, corruption, fear, ignorance, myth, and spirituality. In sociology, psychology, and mass communication research, focusing on
idealized, self-referent models can likewise lead to deformed and dangerous abstractions of social phenomenon.

From Hegel, it is possible to connect to the thought of another German social theorist writing towards the turn of the twentieth century, Max Weber (1864-1920). Weber, regarded as one of the founding fathers of sociology, represented the spirit of rationality guided by empiricism in his analysis of society. Notably, his concept of the ideal type served to later pattern the theory and methods of social science. Basically speaking, the ideal type is proposed as a methodological tool, a generalized conceptual model of society used by researchers to compare to real social situations. The ideal type exists as an observation of regularized social behavior in the "imputation of concrete effects to concrete causes" in social analysis. As in Hegel's thought, the ideal type proposes that the researcher has access to a plane of rationality, a space of ideal forms, from which actual social situations are drawn. The premise is that by comparing the ideal to the actual, the researcher can propose theory founded on universal regularities of human behavior. The metaphor is of placing an ideal, perfect circle over a imperfect, real world circle as a method of comparison.

Weber recognized that ideal types were a heuristic aid which "tell you nothing about the real world, but which throw into relief its deviations from themselves. . . to assist in the detection of disturbing factors, such as habit and tradition, which deflect actual individuals from a rational course of action." From the scientific perspective, the functional role of attributes of human communities such as habit and tradition was ignored and even maligned. The ideal type was used in the context of an idealized, rational vision of society. In other words, the ideal type was ideal to the extent that predispositions and biases of the researcher were operationalized as theoretical tools.

The heavily Platonic notion of ultimate forms proposed by the ideal type, supported by a veneer of scientific rationality, contains a troubling prescriptive element in it. Deviations from humanistic ideal types are seen as abnormal, due to unreason or improper judgment on the part of human actors, and are thus perceived as error in social science research. The notion of the ideal type stands as a major foundation for the premise of objectivity in social research. It proposes that there is a fundamentally rational reality achievable in human interaction, and that empirical observation, the tool of positivistic science, is the method through which this process of rationality can be examined. Yet, the biased process of conceptualizing the ideal type is ignored. It is merely assumed that the scientific researcher has access to a privileged viewpoint over social life. In the process of rationalistic scientific examination, such as that proposed by Weber, ritual, unreason, and tradition are excised as error.

The method of science cast away as extraneous or erroneous those aspects of social dynamics which could not be properly observed and analyzed: "Since they did not conform to the linear Euclidean geometry presumed by modern science, the changes, exceptions, contrarieties, variations and surprises met in the social sciences were pushed aside as error, poor theory, weak technique, observer bias or deviancy." In this sense, the application of the scientific method to society and the philosophy surrounding it can be said to restrict what can be learned about society. Much of the variety, unpredictability, and complexity of what occurs in normal social existence, especially in communication, is excised completely as a subject of knowledge.

It has only been relatively recently that this viewpoint has been challenged. Reformed views of social behavior have supported the standpoint that social 'unreason' potentially plays a crucial role in maintaining stability and forming communities. Communicative phenomenon such as mythmaking and social conflict can be viewed as contributing to the vital functioning of social systems. This comes in part

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40J. W. N. Watkins, "Ideal Types and Historical Explanation," in Readings in the Philosophy of Science, ed. Herbert Feigl and May Brodbeck (New York: Appleton-Century-Crofts, Inc., 1953), 725. Watkins distinguishes Weber's use of both holistic (social level) and individualistic (individual level) ideal types. The individualistic method is deductive in that it begins with idealized concepts of individual interactions that are compared to the actual deviations from the ideal. The holistic method is inductive in beginning with actual historical incidents and working towards an idealized vision of their meaning. Watkins proclaims the individualistic method as being the only valid research tool under his proposal for methodological individualism. This has relevance in section 4.1. in a discussion of the methodological implications of multi-level research.

41Young, 290.
from physical science, which is awakening to the role of unpredictable and unobservable elements in physical systems, and from the reinvigoration of philosophy, which is asserting the right and even importance not to have fundamental ‘truths.’

However, the movement from scientific theory to social theory has traditionally been slow and turbulent. Presently, for the most part, preconceptions of Comtian positivism (empiricism) and German idealism (rationalism) still influence the research methods and expectations of social science, and thus our institutions. In seeking immutable facts, government, industry, and institutions actively encourage a fundamentalistic social science. The result is that humans are still largely viewed as physical objects and statistical fact. Problems of inequity, conflict, ritual, chaos, and spirituality are thought of in social science research purely in two-dimensional, empirical terms. Causation and explanation are sought after within the ‘factual space’ of demographics. This extends beyond conducting research according to systematized methods of observation, and into a prescriptive belief in intransigent social fact and a fundamental human nature.

Historically, the veneer of unassailable rationality which surrounds empirical science lent validity to social theory and research. Couched in the language and methods of empirical science and advanced by the rhetoric of idealist progressivism, social science formed as a discipline based on the notion that society was progressing towards a fundamental state, that humans had access to an ideal form of rationality, and that empirical observation could reveal the causal interactions underlying social reality. The combination of idealist progressivism with Newtonian science through the explanatory logic of Cartesian rationalism ignored methodological inconsistencies born in the fusion of social philosophy with empirical science. Chief among these inconsistencies was that a prosocial vision necessarily implies some reference to values and morality, a system of ethics. The scientific method itself is incapable of appreciating abstract philosophical entities which lie in metaphysical concepts, not in empirical physicality. By forging a link between scientism and ethics, human values necessarily were transformed into their physical and quantitative manifestations (i.e.: wealth, physical comfort, behavioral action, civic planning, and civil engineering). Where values could not be operationalized, the researcher had a license to invent theoretical justifications through science that would support preconceived ethical biases.

Herbert Spencer (1820-1903) in particular represents the reform minded abuse of the scientific method to justify philosophical theory. Influenced strongly by both Charles Darwin’s theory of evolution outlined in *Origin of Species* (1859) and Newtonian physics, Spencer indicated a belief that society could be thought of as a type of evolving collective organism with goals and motives of its own. In this sense, social inequity was explained away as the unfortunate results met in an evolving society organized on the premise of ‘survival of the fittest.’ The rich were justified in their success for having superior characteristics while the poor were cast as defective failures, falling to a position due them as less evolved members of the species. At the time, the premise was accepted for the great regard with which science was viewed. The ethical part of the theory, justifying the upper-class and growing middle-class, was perhaps accepted as it reinforced deeply held classist bigotries and predispositions, along with the divine justification given to upward mobility.

As commented on previously, part of the difficulty of science as applied to society was that it assumed the uncovering of a physical, immutable reality. It is undeniable that creating a standard method for investigating physical nature was historically an outstanding success. Indeed, the application of the scientific method to diverse disciplinary avenues was quite fruitful. Social science benefited by the imposition of a standard method for carrying out study; a method for operationalizing abstract social concepts into empirical variables provided a means for the formal analysis of society. At the same moment, though, the assertion of the scientific method was more than this. The premise of empirical science when applied to social analysis was that something objective and universal was being discovered about human nature, the mind, and society, that physical objects in the social and mental landscape in a sense were being seen and felt with a cartographer’s precise eye for the first time.

This predisposition towards physicalizing social concepts still patterns communication research. In seeking causal models of media functioning and message effects, mass communication studies seeks to provide a physical map reliable in its picture of a definitive social space, absolute in its clear causal connections. The metaphors and descriptions used in communication research themselves betray a physical fixation. Krippendorff notes the preponderance of agricultural or landscape metaphors in scientific dialogue: descriptive terms such as fields, areas, boundaries, productive, fruitless, positions,
approaches, and outlook fill both social and social scientific dialogue. A. Salmond additionally notes the common metaphor that facts are 'natural objects' (i.e.: reflected in the thought of Plato, Hume, Comte, and Durkheim). Indeed, it is difficult to even raise a disciplinary or methodological discussion without employing the entrenched metaphors of conceptual space. In the tradition of empiricism and psycho-physical dualism rests a stance that "common to these metaphors is that a reality exists separately from the scientific observer." In this sense, social science researchers are given a license to offer viewpoints on, to map, a physical world; it is a world that only they are qualified to see.

Communication effects research in particular among the social sciences is still very much guided by empiricist, physicalized preconceptions of science. Social study is still thought of as most valid and accurate when it is conducted according to the typical procedures of the empirical scientific method and justified according to statistics. Communication research, as a discipline mixing methods and concerns between sociology and psychology, is more vulnerable than other social sciences to charges that it is methodologically and conceptually irresolute. Co-opting the method of scientific proof in social inquiry seems to be the popular solution for lacking a central level or area of focus in social analysis.

Communication effects research as a social science mainly embraces a philosophy in which the only relationships valid for study are reproducible (can be replicated under controlled conditions where key variables are conserved between observations), causal (where key relationships can be traced through causes interacting in a direct, conservative way through time), linear (where causes can be clearly reversed backwards or traced forwards through time, in a one dimensional view of history or prediction), rational (where social action is functional), and progressive (where society in its motions continually involves an evolution towards more developed states). The fact that human communication, the effects of technical communication specifically, is not fully represented by these presumptions has resulted in a field which is often conflicted and misguided in its goals, methods, and justifications. In terms of new paradigm reflections on both the physical and social world, human symbolic communication, mass communication in particular, appears as a complex, chaotic, and serendipitous process with multiple realities. The next chapter pursues a historical examination of the philosophy and methods of mass communication research as they reflect the history of social science explained here.

42 Krippendorff, "Ethics of Constructing Communication," 68.


44 Krippendorff, "Ethics of Constructing Communication," 68.
2.0. The Challenge of American Mass Communication Research: 
The Once and Future Conceptual Evolution of a Social Science

Grounded on the historical evolution of the philosophy of social science previously discussed, this section seeks to offer a brief analysis of the birth and growth of mass communication research. The intent is to open a critique into the methods and motivations operating in the discipline. It is hoped that by elucidating the philosophical assumptions operating in mass communication research, methodological inconsistencies can be dealt with constructively. The thrust is towards a discussion of how science (and social science to a lesser degree) has paradigmatically evolved past the conceptual snarls inherent in the antiquated scientific philosophy still employed by effects research.

Mass communication research in America is largely identified with the experimental, empirical study of the effects of communication technology. Communication research seeks to forge a connection between the thoughts and actions of the mass public and communication technology employed as a medium of social communication on a large scale. Although other strands and goals of study are associated with mass communication research, the study of effects is still the dominant paradigm in the field. In this way mass communication research unites with the project of causal social science - an endeavor seeking lawlike understandings of human behavior. As a participant and product of the historical growth of social science, the discipline falls victim to many of the misconceptions surrounding the application of science to the study of social systems. Among these problems are the abuse of the scientific method as a 'First Philosophy,' the problem of generalizing often unique and case specific symbolic / social interactions, and the seeking after fundamental ‘truth value’ states in a complex, multi-layered, constantly evolving social matrix.

More specific to the field, methods of analysis in mass communication research are necessarily indistinct for the fact that communication research involves multi-leveled social phenomenon. Communication research has grown along with social science in its understanding of the many levels and interacting systems which compose society. The difficulty is that each ‘level’ or social perspective can be viewed as a valid viewpoint on the whole of society. Be it individual, small group, social group, cultural, or economic, different parameters can be used to design research methodology, each with their own validity. Assuming that there is one single chain of effects is to simplify an important methodological issue: that social analysis can be carried out in a number of contexts which are valid among their own empirical assumptions and rational arguments.

In the quest to determine causal links between broadcast messages and the thoughts and actions of the mass public, mass communication research involves itself in a scientific endeavor of startling complexity. To assume the scientific method alone can offer a fundamental understanding of effects is dubious. Indeed, the scope of such a project is startling were it not for the various motivations (i.e.: academic, political, institutional, prosocial) given to communication research to manufacture a solid methodological and theoretical base. The intent of this section, in keeping with the previous discussion of social science, is to critique the notion of science as a 'First Philosophy' and to point out that science itself is evolving to new understandings of complexity and multi-leveled effects which can potentially benefit mass communication research.

2.1. From Social Critique to the Scientific Study of Effects: 
Philosophical Advent and Empirical Invention

As an academic field, mass communication research was formally founded during the period of World War II. In forming into a field it chose a certain methodological center and history for itself which reflected an emphasis on experimental effects research connected to wartime propaganda analysis. However, the roots of communication studies flow back further to the turn of the century. During the early part of the twentieth century, the primordial roots of communication research as a field came into existence based on the strands of idealism, positivism, rationalism, empiricism, and prescriptive, progressive, pro-social theory. The thought of both Descartes and Newton had planted seeds that developed into a rationalist, scientific method for social analysis.

During the rise of industrialization and urbanization, the loss of community in the face of a rapidly expanding world became an issue of concern for social theorists. In “Communication Research: A History” Jesse Delia remarks that it is perhaps ironic that progressivism became linked to science and social science. “A major paradox of progressive thought was its effort to recapture community with the
very tools of its destruction - science, technology, and bureaucracy.”

Mass communication research arose partly as a realization of the problems mass communication raised.

The birth of mass communication as a subject of social concern followed the expansion of the press, transportation technology, urbanization, and the growth of leisure during the late nineteenth century. With the growth of an educated and leisured middle class, the ‘mass public,’ its opinions and politics became more so an issue of concern for the American republic. Persuasion, public opinion, public debate, and the language of politics as broadcast in the free press was a subject of concern and often a target for reform. Prior to World War II, three main strands leading up to the formation of mass communication studies as a field can be roughly designated: A) social critique and rhetorical analysis, B) social-psychological research and propaganda studies, and C) institutional and commercially motivated research.

In the area loosely defined as social critique, Walter Lippmann (1889-1974) is notable. Lippmann, a widely known journalist and philosopher at the turn of the century, espoused media studies as a method of social and political critique. Distinct from the ‘scientization’ trend of communication studies at the time, Lippmann offered a philosophical view of media as an important component, and potential deterrent, to political democracy. In the controversial work Public Opinion (1922), Lippmann outlined his concepts of communication. In his assessment, people less assimilate fact from media than they construct a pseudo-environment. By this he means that people only see a small part of the world from media, and that of this selective world they abstract fact through their own preconceptions and biased passions. In “The World Outside and the Pictures in Our Heads,” Lippmann remarks:

> the real environment is altogether too big, too complex, and too fleeting for direct acquaintance. We are not equipped to deal with so much subtlety, so much variety, so many permutations and combinations. And although we have to act in that environment, we have to reconstruct it on a simpler model before we can manage with it.

Because of the difficulties of constructing a full concept of the broad world, he felt people necessarily constructed pseudo-environments. These pseudo-environments were all too frequently given to abstractions and were ruled often by the passions, rather than by reason and reflective critique.

Lippmann felt that due to the tendency for the mass public to fall into a deluded, abstracted vision of the world, it was necessary to the functioning of a democratic society that pure fact be broadcast in some manner. He suggested that an "independent, expert organization for making the unseen facts intelligible to those who have to make the decisions" be instituted in order to preserve the sanctity of democratic leadership. Lippmann was significant in viewing the study of media as an essential component of managing the ‘good society.’ However, his views were controversial in that although he presented ‘reality’ as being largely empirical (based on visions and experience of the pseudo-environment), he left little assessment of how best to appraise fact from fiction, how to distinguish the passions from the real events. Lippmann represented a firm proponent of rational scientism in advocating empirical fact over myths, dreams, delusions, imagination, and unconscious wishes; it did not strike him that these capacities could be an integral and necessary part of social functioning. In this sense, although Lippmann stands in the tradition of philosophical critique, in many respects he represents a seeking after a more formalized, fundamental social scientific understanding of media effects and content.

The study of rhetoric is significant to communication studies in that it presented the first discipline concerned with communication as an object of study in itself, and, during the early parts of the twentieth century, as a vehicle for meaning. The field of rhetorical studies has to some degree been an object of research since before the time of Plato. In Aristotle’s assessment, rhetoric, the study of how to persuade,

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47 Ibid., 486.
is a subset of political science, which itself is the object of ethics, the study of right and wrong.\textsuperscript{48} In ancient Greece, rhetoric was ideally concerned not only with methods of delivery and argument, but with discussions on truth and morality.

In 1914 America, however, rhetoric, a subset of English studies, had been affirmed by the National Council of Teachers of English (NCTE) as being solely the study of elocution and delivery in public speaking. By 1915, seventeen teachers split from this group to form the National Association of Academic Teachers of Public Speaking (NAATPS), which asserted that rhetoric also involved the study of content. The NAATPS subsequently split into the Cornell School of Rhetoric (which centered on the historical study of past rhetoricians) and the Midwest School of Speech (which is notable for asserting that speech content can be studied experimentally).\textsuperscript{49} The Midwest School of Speech was also important in that it significantly broadened the purview of speech studies into analyses of any area where spoken communication took place, and thus into mass communication. The trend exhibited by the Midwest School of Speech personified a greater movement towards examining all facets of public communication through content studies and scientific analysis.

In the transition between social-critique and social-psychological research, the Chicago school of sociology stands as an important primordial ancestor of mass communication research. Composed of a notable group of American academics tied to the University of Chicago, the Chicago school represented a trend towards linking formalistic social scientific methods to social critique. The main personalities in this school thus represent a belief both in the efficacy of empirical science and in the sanctity of the liberal rationalist tradition.

The philosopher, psychologist, and educator John Dewey (1859-1952) was a major figure in the Chicago school and is generally representative of the spirit of American social science research during the early twentieth century. Reformist in his analyses of community, communication, and education, Delia remarks regarding Dewey, he “argued for restoring the consensus-building capacity of mass communication systems through the institution of a free and unfettered press vividly transmitting the products of a reformed social science to provide understanding of the forces that controlled modern life. Science was wed to communication, foresight to participation.”\textsuperscript{50} Dewey represented the awakening of prosocial psychology and sociology to public opinion. As an educator, Dewey perceived the press, and later, film and the radio, as a method of informing and shaping the political and moral beliefs of society. He was acutely aware of the potential of abuse in the misuse of media. He states:

\begin{quote}
The smoothest road to control of political conduct is by control of opinion. As long as interests of pecuniary profit are powerful, and a public has not located and identified itself, those who have this interest will have an unresisted motive for tampering with the springs of political action in all that affects them.\textsuperscript{51}
\end{quote}

In this perspective, Dewey is notable both for citing mass communication sources as being a significant subject for sociology, in that media acts to educate and form moral / political opinions. As related above, the effects of media at this time were perceived as being direct and strong, from the source to the receiver.

Robert Park (1864-1944), a student of Dewey's, was another important contributor to the Chicago school. Working as a professional journalist for several years before re-entering academics and becoming a professor of sociology at the University of Chicago, Park reflected an interest in the press as a functional vehicle of social unity. Park's concept of sociology was highly organic, ecological and Darwinian in many respects. Communication served to bind social groups together, to define them

\begin{itemize}
  \item\textsuperscript{50} Delia, 25.
\end{itemize}
according to other groups for the purpose of survival. The press was functional as an organism: supplying information to a public which naturally selected what was relevant and important. In as much as news seeks to "startle, amuse, or otherwise excite the reader so that it will be remembered and repeated," it stimulates discussion and thus leads to the formation of public opinion.\footnote{Erik Barnouw, ed. \textit{International Encyclopedia of Communications}, Vol. 3. (New York: Oxford University Press, 1989), s.v. "Robert Park."} As opposed to Lippmann, Park saw the function of media as being reflective of the needs of a consuming public. Media analysis for Park then was a question of optimizing the flow and quality (appeal) of mass information.

Charles Cooley (1864-1929) also contributed to the Chicago school in his assessment of communication in society. Cooley offered a view of media communication markedly different from the critical assessment of Lippmann. Like Park, he viewed communication as playing a highly functional role in society. Further, in his assessment, it was communication foremost which could be considered the basis of reality itself. In as much as reality to Cooley was composed of human meaning, communication represented the creation and sustenance of reality through the continual exchange of symbols, signs, and values:

> By communication is here meant the mechanism through which human relations exist and develop - all the symbols of the mind, together with the means of conveying them through space and preserving them in time. It includes the expression of the face, attitude and gesture, the tones of the voice, words, writing, printing, railways, telegraphs, telephones, and whatever else may be the latest achievement in the conquest of space and time. All these taken together, in the intricacy of their actual combination, make up an organic whole corresponding to the organic whole of human thought; and everything in the way of mental growth has an external existence therein. The more closely we consider this mechanism, the more intimate will appear its relation to the inner life of mankind, and nothing will help us to understand the latter than such communication.\footnote{Charles H. Cooley, "The Significance of Communication," in \textit{Public Opinion and Politics}, William Crotty, ed. New York: Holt, Rinehart and Winston, 1970. 643-652. 643.}

From this perspective, mass communication not only appears as a participant in the creator of a social environment, it is itself part and parcel of the composition of this environment. Thus, a critique of democratic mass communication is itself a criticism of the mass public and its reflected thought.

The methodology of the Chicago school notably represented a general trend in American sociology and social research toward applying the scientific method to issues of social theory. Standardized surveys, interviews, field observation, and demographic data were used to confront issues of social concern, the most over-arching being the maintenance and optimization of a political democracy. Communication in particular was emphasized as a significant component of social and political life. The study of media for the Chicago school involved a pro-social examination of the goals and role of media (the press, and to a lesser degree film and radio) in a democratic society. In this sense, the critique of mass communication centered more so on its ideal potentials and less on its contemporary functioning and content.

As an outgrowth of sociology, Chicago school communication research grew from a spirit founded on deterministic, physicalized, and linear notions of society. Also, in the spirit of reform minded journalism, the Chicago school maintained an interest in an appraisal of social life marked by a style of description that attempted to be open, rich, and sensitive. It was, however, the emphasis on objectivity and scientific practice that guided the main research methodology. In this sense, Chicago school research can be seen as an important contributor to the linking of communication theory with scientific research. Delia notes:

> the turn towards standard measures (and particularly toward statistical procedures) . . . reflected evolving goals of the social scientific community. In sociology these goals were promoted by the pragmatic temper and empirical orientation of the Chicago faculty, though their work also exemplified the interpretation of social phenomenon in local context. Unfortunately, in their
repetitive, frequently rote, application, the practices adopted to elevate research and limit capriciousness also restricted judgment and devalued creativity. These interwoven advantages and limitations continue to define major metatheoretical and metamethodological issues in the social sciences.\textsuperscript{54}

The Chicago school thus personified the paradoxical linking of progressivism, a realm of social critique based in philosophical questions of ethics, with the scientific method, a procedure formed to study the mechanical interaction of physical objects. This agenda was carried out primarily through the efforts of liberal rationalism to construct a prosocial rational geometry, which provided a justification for the linking of empirical and statistical studies with issues of social meaning.

Harold Lasswell (1902-1978) is a significant figure in the linking of propaganda studies, an outgrowth of rhetorical analysis, with social scientific methods in order to examine mass communication effects. Lasswell was also connected with the University of Chicago, where he completed his dissertation entitled \textit{Propaganda Technique in the World War}, published in 1927. This study concerned itself with the methods and effects of propaganda used by both sides of conflict in World War I. The work is significant in that it marked a major link between studies of the content of communication and social science methods of effects analysis. The theoretical basis reflected a strong effects vision of media (sometimes known as the 'magic bullet theory' for directly injecting effects into the mind of the public), an emphasis on individual psychology, and a sociological standpoint reflecting Darwinian and ecological metaphors. In his work:

\begin{quote}
Lasswell emphasizes the power of mass political communication to shape national consciousness. It is fair to read Lasswell's work as an undifferentiated and direct-effects conception of mass communication. The viewpoint expressed is reminiscent of the nineteenth-century European conservative tradition that had emphasized a concept of group mind and processes of imitation, suggestion, and, as in LeBon's widely read theory of the crowd, 'irresistible impetuosity.'\textsuperscript{55}
\end{quote}

In this respect, Lasswell reflects a viewpoint of mass communication firmly established by the historical trend which has been traced thus far. A progressive attitude was linked with scientific and pseudo-scientific methods and theories to advance theoretical viewpoints problematic in that they deal with ethical problems both relativistic and contextual in nature.

Later in his career, during the period surrounding World War II, Laswell defined the act of communication as a series of questions: who, says what, in which channel, to whom, with what effect. In his appraisal, communication research involved a number of possible perspectives: one could carry out the analysis of persons reached by the media (audience analysis), or one could examine the impact of media on organizations and groups (effect analysis).\textsuperscript{56} This represents a recognition that the method of mass communication involves different perspectives on a multi-leveled society which can be defined in a number of contextual formats. In both these respects Laswell supported Cooley's concept of a highly functional media. He reflected a vision of public communication patterned by the metaphor of an evolving, adaptive biological organism: a communication organism composing the object and subject of reality. As similar to Lippmann, he believed that a fundamental understanding of symbolic communication (achieved by social science) could lead to efficient methods of social control. He also advocated some type of 'permanent corps of research assistants' in order to better manage the American democratic society. He is reflective of the prosocial and prescriptive scientific rationalist tradition in this way; in his work he acted to promote the survival of the views of mass communication patterned by the Chicago School and Lippmann well into the twentieth century.

\begin{flushright}
\textsuperscript{54}Delia, 35. \\
\textsuperscript{55}Delia, 26. \\
\end{flushright}
Propaganda analysis was an early ancestor of effects analysis in mass communication research. Whereas propaganda analysis was primarily a project for rhetorical studies, the rigorous methods developing in social science at the turn of the century demanded clearer answers than offered by the philosophical conjecture of rhetoric. Effects study in mass communication was remarkable for its increased use of the methods of scientific research along with the implementation of both sociological and psychological theory. The Payne Fund study of the effect of movies on children, conducted from 1929-1932, represents the first formal social science effects study of a mass medium. Movies had become a widely accepted form of mass entertainment by the 1920’s. By the end of this decade, of ninety million movie tickets sold every week, forty million were bought by minors, seventeen million of whom were under the age of fourteen. Much as today, the subject matter of movies centered on common themes: violence and crime, love and sex. As such, much concern was raised over the effects these films would have on young children's development.

Out of a prosocial concern for this public issue, the Payne Fund, a private philanthropic organization, organized a study of the effect of movie viewing on children. A number of researchers were funded to carry out their own studies using a number of diverse methods. The studies used scientific methods as developed by sociology up to this point: quantitative audience analysis, content analysis, and attitude measurement. Elements of the study quantified definite variables such as age, race, and sex. In classifying the content of a selection of films, general themes were designated. The judging of effects was carried out in a number of ways, including survey research, autobiographical essays, case studies, interviews, laboratory observation, and even physiological response (i.e.: as measured by galvanic skin response during films and in sleeping patterns after).

Quantitative and qualitative methods were both employed and often mixed in the Payne Fund Study. The general results obtained from a wide sample of studies indicated that there was a very strong effect on behavior from movies, even to the extent of encouraging juvenile delinquency. The Payne studies as a whole were significant both in centering exclusively on the study of mass communication effects and in the employment of the scientific method as the primary method of proof. In Milestones in Mass Communication Research Shearon Lowrey and Melvin DeFleur comment:

The Payne Fund Studies were clearly the pioneer studies that established the field of media research within the perspectives of science. They anticipated contemporary interest in meaning theory and the influence of models, and focused the new field on such topics as attitude change, the sleeper effect, uses and gratifications, content analysis, modeling influences, and the social construction of reality. They placed an emphasis on quantitative, experimental, and survey methodologies, but they still made use of more qualitative approaches. Above all, the studies shifted the long-standing pattern of concern on the part of communication scholars with propaganda criticism that represented an earlier rhetorical form of analysis. The scientific methods employed in the Payne Fund Study were notable in marking a path away from philosophical critique (in the vein of propaganda analysis) and in forming a precedence for the future study of effects research. However, under modern criticism, it was perhaps the more methodical qualitative reports of this study that offered the greatest richness in assessing the relationship between individuals and movies. Lowrey and DeFleur in particular cite the careful, detailed study of autobiographical essays carried out by the sociologist Herbert Blumer as representing the effectiveness of systematic qualitative analysis.

The Payne Fund Studies set up patterns and methods of mass communication research that survive today. In participating in a larger trend among the social sciences, these studies for the most part indicated a further movement towards empiricism, rational dissection, and progressive social critique. Leon Bramson notes in The Political Context of Sociology that social researchers after World War I were:

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58Lowery, 55.
concerned with making sociology more scientific and less speculative. This affected them at the level of values as well as that of methodology... Together with a belief in progress, which many could not discard completely, the sociologists of the second generation tried to shed the speculative tradition of the great system builders and attempted to ground their science in empirical research.59

The method of quantitative scientific analysis, based in empirical rationalism, was and is regarded by academics and society as being more conclusive and reliable that those studies carried out with qualitative methods. At root, this perception lies in a philosophy of reality (a paradigm or worldview) in Western society which defers to rationalist geometries, Newtonian empiricism, and Cartesian psychophysical dualism as the basis for proof and the 'real.' Qualitative methods, in that they rely on fuzzy terms and concepts, are criticized for lacking a conclusive, physical resoluteness to them. There is a misperception that qualitative methods can not by nature involve detailed, systematic, analytical inquiry to the same degree as quantitative studies. Qualitative methods can be analytical, standardized, and methodical; similarly, quantitative methods can be criticized for employing abstract methods. Each method uses a different type of language to describe the world: the quantitative uses data, numbers, and physical objects, while qualitative analysis uses language, ethical and philosophical concepts, and references to inner states of mind (as the mind participates in the creation of reality).

By operationalizing and quantifying social and psychological variables (concretizing abstract concepts into observable, measurable phenomenon) such as ethical attitudes and emotional states, social science researchers necessarily abstract fuzzy concepts into concrete 'objects.' The process of quantifying variables posits concepts in a physical landscape, a landscape composed itself of a conceptual model created by the researcher. The process of operationalization acts to form conceptual relations and distinctions which artificially solidify what would appear to be (from the standpoint of a professional and public sphere hypnotized by the formalizing power of scientism) a definitive outlook on social 'reality.' As discussed previously, the perception that results from such comparisons liberate physical truth is a misguided project. Physicalizing social concepts in order to demonstrate truth is a tradition falsely encouraged by the reputation of Newtonian physics and self-justified by the insulating logic of rationalism. Operationalizing and quantifying social concepts necessarily involves a process of abstracting philosophical concepts, a process initiated by the researcher. However, as discussed earlier, science deliberately and conveniently eschews any allegation that rational (inductive) processes play a role in scientific proof. Thus, science as abused in social science / communication research fashions itself as a mundane system of physics: a science as any other science, innocuously mapping a steady and deterministic world for the benefit of human knowledge.

It is by no means the charge here that the process of operationalization and quantification is an inherently misguided method of analysis. However, problems arise in the social and professional treatment of numerical data versus theoretical constructions. Mathematics stands as the language of science in the empirical measurement of physics and as the method of proof in geometry and arithmetic. The application of a mathematic vocabulary to empirical measurement presupposes a number of attitudes: the concrete measurement of intransigent objects, steady relationships between objects, fundamental laws determining the actions and reactions of objects, and a single, fundamental answer lying as the result of inquiry into those objects. In these terms, when social and psychological concepts are abstracted / operationalized into mathematical variables, they ostensibly become external, idealized objects with an existence outside the purview of human meaning. As in Cartesian psycho-physical dualism, the social mind (rational meaning) is separated from the social body (empirical fact). In the tradition of empiricism, social objects then are presumed to exist wholly independent of human argument, subjective perception, and philosophical conceptualization. The scientific method when applied to social research allows highly relative, conceptual variables to transform into highly physical, definite research objects merely through the process of abstraction by researchers. The professional communication researcher, as the social scientist, is thus afforded a dangerous liberty in having their philosophical concepts of the world concretized and accepted as physical truth.

2.2. Formalization and Growth:  
Consolidation, Expansion, and the Micro-Macro Link

It is difficult even today to separate quantitative empirical science from pretensions of proof, fact, and truth. During the time of the Payne Fund Study social science was still growing towards a hope that through the method of science, social problems could be clearly defined and resolved. Quantitative results offered clear answers to a post-Enlightenment, post-Industrial Revolution world that firmly believed in the sanctity of science. In both professional and public environs, empirical science, spoken in quantitative tongue, offered conclusive and resolute answers to indistinct and troubling questions. This hunger for answers was particularly apparent in research motivated by the concerns of governmental, entrepreneurial, industrial, and institutional entities. Large bureaucratic organizations, then as now, required clear information to define strategies for dealing with problems. Motivation from such sources thus asked of social research definitive data and conceptual resolution.

The rise of advertising as an institution in particular advanced the strong effects stance of mass communication research. Commercial radio broadly expanded the reach of advertising into the broadcast realm. The proliferation of advertising agencies brought about fierce competition between companies seeking advertising clients. One of the results of this competition was the advent of research within agencies as a strategy of 'scientifically' designating the effectiveness of ads. Delia notes: "Advertisers looked to psychology for principles and techniques that would rationalize the distribution and marketing process and permit them to sustain the claim that they could deliver to industry a predictable group of consumers." Through effects research, advertisers could develop efficient strategies for advertising, firms seeking advertising could seek a specific type of audience, and media sources could develop an understanding of their population.

Advertising services, as well as media sources selling commercial space, held a vested interest in encouraging a 'direct injection' vision of mass communication effects. The motivation for implementing scientific advertising strategies was ostensibly to better inform the public of services and products available. However, under the spate of advertising competition arising after World War I, there was also the implication that advertising needed to persuade the public to choose one widget over the other widget. Effects studies conducted under ad agencies thus sought to find ways to impel action as much as they centered on functional methods of information dispersal. In this sense, advertising took advantage of the progressive, organic outlook of media functionality as advanced by groups such as the Chicago School and shifted it to more self-serving motives of control.

At first the academic study of mass communication systems was slow and even reluctant to approach the application of effects research to commercial interests. However, the great need from advertisers, media, and businesses (as well as the government) to understand their own effects, opportunities, and operation meant that much funding was available in this avenue. In particular, Paul Lazarsfeld (1901-1986) adopted the approach of transforming commercial problems to questions of academic interest. Founding the Princeton Office of Radio Research, later the Bureau of Applied Social Research, he was responsible for instituting the notion of the applied research center to address practical issues for industrial and governmental interests. Working with the Columbia Broadcasting System (CBS), Lazarsfeld implemented a system of ratings to judge the receptivity of audiences to mass communication material. He is also notable in social science generally for patterning the methods of modern survey analysis.

In the application of academic media research to institutional questions, no event has had a greater effect than World War II. The massive effort by the government to marshal over fifteen million Americans in this military effort required the coordination of a vast amount of information and resources. As in World War I, questions of how to inform and motivate the troops as well as the public raised practical issues of public communication, persuasion, propaganda, news functioning, and education through the media of the press, film, and radio. Additionally, the efficient propaganda machine assembled by the fascist governments of the Axis powers raised practical and ethical questions as to how propaganda, political repression and conversion, and even brainwashing operate. Hitler's repressive cult of personality raised political and philosophical questions concerning how such a fervent and radical lapse could have occurred from the liberal democracy of the Weimar republic.

In organizing citizens from a broad range of talents and backgrounds, social scientists and communication researchers found themselves thrust into the role of conducting practical research for the wartime government. The task set to them was how best to manage public and military information
through a variety of media in order to most effectively advance the war effort. Counter propaganda techniques: the advent of off-shore ‘free radio,’ leafleting, dealing with POW’s dedicated to different political views, all begged questions concerning the effect of media communication in persuasion and propaganda. Towards the end of the war, the question of how to restructure or revive media communication in defeated and liberated nations was a pressing issue. This is not to mention the studies of political communication, propaganda, and intelligence inspired by the following cold war.

In all, the management of a complex information bureaucracy such as that instituted by the wartime government required consistent methods and clear, concise information for decision making. In this sense, research into media effects during World War II further encouraged the scientization of social research methods. Survey analysis and standardized testing were further implemented in order to quantify and ‘physicalize’ theoretical concepts so they could be practically manipulated and analyzed. The careful study of the effects on individuals of the “Why We Fight” series by Frank Capra is a major example of communication research occurring during the war. A strong effects vision of media prevailed, with the intent of research either being to assess the persuasive powers or the harmful effects of media.

Delia notes that the World War II research effort was remarkable in giving social researchers a reputation for professionalism and a veneer of scientism. In addition, interpersonal contacts between researchers were promoted, forming ties and ideas for research projects lasting well after the war. At the time of World War II, the government also encouraged the expansion of higher education, which ultimately led to the consolidation of mass communication research as a formal field. The formation of mass communication research as an academic discipline occurred at a time when researchers were concerned specifically with the effects of media communication. As a result, when the field composed itself, it traced its conceptual history back to public opinion studies, propaganda analysis, and institutional research as carried out through the empirical, quantitative methods of social science research. The important historical role of previous concerns of media (i.e: rhetorical analysis, propaganda analysis, public communication, Walter Lippman's brand of social critique, the more philosophically oriented issues of the Chicago School, debates concerning the social role of the press, and dialogue concerning the philosophical nature of public communication in a democratic society) were atrophied in retrospect.

Delia proposes that the coalescence of mass communication research as a field during World War II is significant to the current understanding and perception of mass communication research. The implication is that a general history and informal set of goals was composed which patterned later developments of the field. The organization at the time brought about a fusion of methods and goals encompassing several general premises:

(1) an identification of communication research with the study of the media of mass communication, (2) a presumption that the methods of communication research were the methods of social scientific research, (3) the treatment of communication research as an exclusively American research tradition, and (4) identification of the core concern of communication research as the processes by which communication messages influence audience members.

Mass communication research can be said then to have undergone a centering of methods and philosophy towards an empiricist, rationalist vision of society and communication. The problem of physicalizing social concepts and treating them as intransigent entities was thus compounded greatly. After World War II the result of an increasing concentration on effects research (typically carried out for governmental concerns in the frame of the cold war, or business interests in the frame of the

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60 Lowery, 114-147.
62 Delia, 54-56.
63 Ibid., 21.
advent of television and the further expansion of advertising), and a concomitant emphasis on the scientific method, was a decline in reform centered inquiry. Ostensibly, social improvement was still a goal of research, but more so the improvement of the mechanical methods of communication. Efficiency of communication was a goal in so far as the scientific methodology promoted in the study of media ascribed no intrinsic ethical, moral, or social value to communication beyond an assessment of its effectiveness. Effectiveness itself was defined as those methods of communication which facilitated rational judgments.\(^{64}\) Again, the premises formed during the birth of social science appear: the emphasis on a fundamental rationality being accessible through the methods of empirical science.

The post-war social science research community generally encouraged the increasing use of standard scientific methods. This trend marked an increasing interest in methodological behaviorism as used in psychology (an empirically oriented school of psychology centered on physical behavior) and quantitative research in sociology (centered on statistics, formal research, and the scientization of social behavior in general). These positions encouraged increasing attention to issues of "objectivity, measurement, operational procedure, and the development of theoretical concepts tied closely to research."\(^{65}\) The emphasis was on developing objectivity, and thus a rational, empirical method. As distinguished from the central stance here, that communication itself rests on an evolving, complex matrix of social meaning and context, meant little to researchers who idealized the passage of signals from sender to receiver much in the way a physicist would treat colliding objects.

Significant to the development of post-war mass communication research was a general improvement in the sophistication of social science research methods. With the broadening of the tools of scientific and empirical research another 'layer' of society, so to speak, was observable. Much as the invention of the microscope and the telescope broadened the concept of physical reality, new research tools in social science developed the concept of a physical social reality (this notion again becomes significant in considering the transitions that are presently developing in today's research atmosphere with the advent of the computer as a powerful tool for investigation).

A point of methodological concern in the expansion of social scientific analysis is that, contrary to the microscope and telescope, statistical and empirical research in social science is a theoretical, not a physical project. Linking social meaning to concrete research methods implicates a process of abstraction and relativistic observation, of theory construction and model building. The assertion here is that meaning in social matters is not a fundamental, 'physical' entity, but a process of constructing generalizations and metaphors from relativistic observation grounded in particular historical, cultural, and personal frames of reference. As has been asserted previously, in social matters a number of equally valid rational theoretical assertions can be made in constructing meaning. The enduring ethic of rationalistic empiricism in post-war communication research denied this possibility, and therefore pressed mass communication research towards more detailed, fundamental understandings of the nature of the communication process.

Instead of advancing richer and more insightful observations, post-war communication research sought to extend its powers towards a deeper physicalization of social 'scope' through deeper 'layers' of society. The result was a fragmentation of the direct effects paradigm during the 50's and 60's into a vision of mediated effects abetted by social psychology theory and advanced statistical methods. The scientific method was extended, not atrophied, in examining social phenomenon. The broadening influence of social psychology allowed a view of the functioning of intermediate groups in social processes. An increased understanding of the mediational role of intervening social groups between the individual (psychological) level and the social-organic (sociological) level was advanced.

Notably, the Hawthorne project, a study implemented to examine the effects of environment on worker productivity, acted to break the divide between psychological and sociological frames of reference. The Hawthorne study discovered that in merely being chosen as a research group, the subjects of social testing formed primary group ties which influenced the study results. The group, in being made exceptional by the researchers, steadily increased their productivity despite changes in their environment. As a result of this discovery, a whole field of industrial sociology opened to examine primary group

\(^{64}\)Ibid., 58.

\(^{65}\)Ibid., 23.
interaction and the role of psychology in mediating sociological behavior. This study was significant in that it recognized that there were lower levels of complexity among the sociological mass. These levels were seen as having their own unique dynamics and effects on behavior. The concept of mass communication to the mass of society was thus challenged by the notion of an active and differentiated public composed of interacting communities and groups. This opened a layer of complexity for researchers to examine in more detail.

As a result of these transitions in social science, communication research became aware of how media messages were potentially mediated by social factors between the stages of broadcast and individual meaning construction. The project of direct effects was challenged in this way. As noted by 1960 in The Effects of Mass Communication, Joseph Klapper stated that mass communication "does not ordinarily serve as a necessary or sufficient cause of audience effects, but rather functions through a nexus of mediating factors." This movement of incorporating mediation in media effects accompanied a methodological shift "from a conception of direct, undifferentiated, and powerful effects to an understanding of effects as highly limited because of processes of psychological and social mediation within the audience." Elihu Katz and Paul Lazarfeld's work Personal Influence: The Part Played By People in Mass Communication (1955) in particular was influential in examining the role of social mediation in media effects. This work was conducted as a follow up to a study of the 1940 presidential campaign which indicated that voting behavior was often mediated by influential community leaders and the opinions of household heads. The research sought to examine the role played by influential figures in decision making and social behavior within the small community of Decatur, Illinois. The hypothesis was that small groups are significant to the interpretation of media information, that "ideas flow from radio and print to opinion leaders and from them to less active sections of the population." Known as the two-step flow hypothesis, Katz and Lazarfeld posited that a number of characteristic attributes defined 'opinion leader' types who influenced the interpretation of media messages by others. Among these characteristics were one's socioeconomic status, extent of social contacts, and position in 'life cycle.' The findings supported the view that more educated, gregarious, cosmopolite, wealthy, established, and respected individuals had both a greater grasp of public issues and a disproportionate influence amongst their community peers. The significance of these findings was to fragment the concept of direct effects into a notion of dispersed, mediated effects. In mass communication messages: "the ties between people were seen as the most important factors, rather than the structure of the message stimulus, the perceived characteristics of the communicator, or the psychological make-up of the receiver, in significantly shaping the mass communication process." Delia notes that Personal Influence was doubly significant in that Katz and Lazarfeld offered their own version of the history of mass communication research, which was subsequently accepted, for the most part, as the official version. In their treatment, they "asserted that early traditions of communication research reflected either concern with the media of public communication as instruments of clandestine manipulation or hope for them as the agencies of social integration." In this sense, their appraisal framed the field of mass communication research as a mission of effects research with improved functioning being the critical, prosocial goal.

As far as hoping for media to become agents of social integration, the movement spurred by Personal Influence towards a weaker effects view of mass communication also involved a view of media as more functional and less control oriented. The uses people put media to and the choices they made

67Delia, 21.
69Lowery, 201.
70Delia, 65.
about it were realized as being significant to research. Denis McQuail in *Mass Communication Theory* remarks on the transition from a direct / strong effects vision of media to a mediated / weak effects phase during the 1950's and 1960's:

Initially, researchers began to differentiate possible effects according to social and psychological characteristics; subsequently they introduced variables relating to intervening effects from personal contacts and social environment, and latterly according to types of motive for attending to media.\(^{71}\)

This last stage indicates the realization, from the standpoint of social science that media has a functional position as opposed to a more controlling, dictatorial role. This implies a more integrative, social-centered vision of mass communication's position, an understanding of social processes and the highly practical, mediational role played by media in society.

Gatekeeping research, for one, appeared as an observation of the responsive, integrative role media plays in a society composed of active and reactive individuals. The idea of gatekeeping, as its metaphor suggests, observed the role that key individuals in media leadership positions have in deciding on the behavior of media organizations.\(^{72}\) Originally offered in the context of the process of news production, gatekeepers were decision makers in the press who set agendas and made decisions about the content and direction of media messages. Different roles in the process of news production (i.e.: editor or reporter), were seen as filters where information and messages were refined according to both professional requirements (i.e.: the editor of a commercial newspaper perceiving the desires of the public) and individual personalities (i.e.: the effect of a reporter's individual political and moral views on message composition). The larger implication of this research was that gatekeepers as group leaders of a type played a significant mediational role in the production of messages, similar to the two-step flow observation that the interpretation of messages involves mediation by community leaders. Additionally, gatekeeping theory is notable in observing that media is often reactive and responsive to the needs of the public, that media systems, as they are composed of organizations, have a human face and involve real people interacting in a dynamic environment. In this frame, effects can be seen as limited because media plays out the role of responding to the preconceived needs of an actively seeking / choosing audience.

The concept of a weaker, functional media, reflective of an active public, was also advanced during the 1970's in uses and gratification theory and diffusion of innovation research. The uses and gratification approach offers a description of media communication from the premise that to some degree the audience is composed of individuals actively seeking certain types of content. As stated by Katz et al in "Utilization of Mass Communication by the Individual," uses and gratification seeks an understanding of:

(1) the social and psychological origins of (2) needs, which generate (3) expectations of (4) the mass media or other sources which lead to (5) differential patterns of media exposure (or engagement in other activities), resulting in (6) need gratifications and (7) other consequences, perhaps mostly unintended ones.\(^{73}\)

In this sense, media (notably in a democratic society) becomes a social institution which responds to particular and general needs of the public. Effects are then seen more so as the reinforcement of chosen types of content then they are the modification of thought and behavior.

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\(^{71}\)McQuail, 253.


The development of diffusion of innovation research also matured an understanding of the functional and integrative role communication plays in social processes. In evolving from the 60's, diffusion research graphically displays the transition from a strong, direct effects vision of information dispersal to a more dispersed, socially reflective view. Primarily espoused by Everett Rogers, early writings on diffusion research reflect a strong effects vision of the persuasive power of communication channels such as public information campaigns and mass media. Rogers' first edition of *Diffusion of Innovations* reflects a view of information effects that emphasized "linearity of effect, hierarchy (of status and expertise), social structure . . . reinforcement and feedback." However, Rogers himself observed in "Communication and Development: The Passing of the Dominant Paradigm" that a paradigm shift from linear, direct notions of social processes to a broader concept of mediation and complexity had taken place. He states in the preface to the third edition of *Diffusion of Innovations* that the 1970's witnessed a development of concepts of social change:

One important type of change has been to view the diffusion process in a wider scope and to understand that diffusion is one part of a larger process which begins with a perceived problem or need, through research and development on a possible solution, the decision by a change agency that this innovation should be diffused, and then its diffusion (leading to certain consequences). Such a broader view of the innovation-development process recognizes that many decisions and activities must happen before the beginning of the diffusion of an innovation; often diffusion cannot be very completely understood if these previous phases of the total process are ignored.

Two-step flow, gatekeeping, and diffusion research each display the maturation of social research in integrating ideas of complexity and mediation into inquiry. However, the philosophical currents of empiricism and rationalism as discussed earlier still guided the process of research.

The weaker effects movement of communication research was liberating mainly in that it realized the role that small groups play in the mediation of mass communication messages and functioning. This simple observation, that society is complex and often unpredictable, reached closer parity with the daily actuality of communication processes. If there is any limitation to the weaker effects school, it is specifically in the context of the sphere of deterministic social science, which still encouraged a fundamental view of media processes. The advent of small group analysis in the context of rationalistic, empiricist science had the aspect of discovering more detailed parts in the proposed social machine, so to speak. The emphasis was not on description, but on the revelation of a physical process, an examination of how messages were directly handed down to the individual. Terned the 'structuralist-functionalist' approach by McQuail, the mediated, integrated view of media as represented by such approaches as gatekeeping and diffusion research still contained references to a fundamental, physical, rational social reality, a physical realm which could be discovered and optimized by science. McQuail describes this standpoint as holding that:

Society is to be viewed as a system of linked working parts or subsystems, of which media comprise one, each making an essential contribution. Organized social life requires the continued maintenance of a more or less accurate, consistent and complete picture of parts of society and the social environment. The emphasis is thus on the image of media as . . . ensuring internal integration and order and the capacity to respond to contingencies on the basis of a common and reasonably accurate picture of reality.

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75McQuail, 273.


77McQuail, 68.
In this sense, within the confines of a still largely deterministic social science, there was not a liberation of methodology, there was no freeing of the expectations put on communication research to discover grand theory. Rather, the unsatiated drive of determinism sought for a deeper level of reduction towards the final goal of the complete characterization of ‘media motion’: a physical modeling of the mechanistic action media content produces on behavior.

### 2.3. From Retrenchment to Fragmentation: The Waning of a Paradigm

Two-step flow and gatekeeping theory demonstrated the role of social mediation in media effects, while uses and gratification and diffusion of innovations demonstrated the functional role of communication media. As stated previously, while these viewpoints better reflected the complexity of media in society, they still existed within the framework of a social science seeking fundamental answers, an absolute model of media effects. In this sense, once the tools of research strengthened the connection between mediation, function, and effects, there was little to stop the assertion once again that indeed media did act to strongly influence individuals, albeit through channels more complex than previously thought. The mid 70's witnessed a reappearance of a strong effects vision of media. Denis McQuail notes in *Mass Communication Theory*:

The renewal of effect research was marked by a shift of attention towards: long-term change; cognitions rather than attitude and affect; the part played by intervening variables of context, disposition and motivation; collective phenomenon such as climates of opinion, structures of belief, ideologies, cultural patterns and institutional forms of media provision.\(^7^8\)

Social science had become more sophisticated in its outlook and abilities. In the re-emerging prosocial (as well as commercial and institutional) ambition to understand the power of media, researchers started supporting a stronger vision of effects.

In the historical context of the late 60’s, a time of great social upheaval and unrest for the US, the causes of violence and crime were a growing public concern. A greater consciousness of violence and social instability, ironically advanced in part by television news, led to a search for the roots of violence. New hopes and fears arose as a result of the new medium of television and the growing consciousness of its presence and effects. As with the sudden growth of film, public concern turned to the possible dangers of this seemingly powerful new invention, especially in its effects on children. In particular, as in the Payne Fund Studies, the effect of televised depictions of violence and sex were at issue.

In 1968 President Johnson created the Violence Commission, an organization composed of a number of task forces dedicated to examining the causes and effects of violence in society. *Violence and the Media* (1969), a work centering on the relation between mass communication and violence, is the result of one of the groups working in the Violence Commission. The methods used in this report were content analysis studies of the portrayal of violence in media combined with surveys of the actual experiences of violence of US citizens. The intent was to point out connections between these two realms.

Although the methods utilized in *Violence and the Media* were statistical and empirical, the results reported in the study were general in scope. It was implied that there was a strong connection between television and violence, but that this connection was seen as being long-term and indirect, involving patterns of socialization that influenced broad norms and values. Notable was the observation that media depictions have the capacity to both create and reinforce attitudes,\(^7^9\) whereas previous media analysis had emphasized one perspective or the other. The conclusion of the report noted that the portrayal of violence on television should be considered as a major contributing factor in explaining the forms of violence in American society.\(^8^0\)

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\(^7^8\)Ibid., 254.

\(^7^9\)Lowery, 322.

\(^8^0\)Ibid., 317.
Also noted in Violence and the Media was the view that television exaggerated and distorted public perceptions of crime and violence, including the danger of being involved in violence. The study pointed out that most citizens had little direct experience of violence and gained most of their knowledge of violence from observing it in the media. Although eschewing suggestions of censorship, the report criticized media for often being lax in assessing its own effects and responsibilities. As far as positive observations, the report suggested that media could act to reduce violence if it stimulated communication between social groups. This report can be noted for using the methods of empirical research to advance the validity of social critique. This social critique, however, portrayed a biased vision of long-term, indirect effects reflective of the historical trend in mass communication research at the time. The conclusion of strong, indirect effects can also be said to reflect the predispositions of a society in fear of media effects, yet unable to articulate clearly its own relationship with media. The vision of media as a lurking, indirect specter perhaps justified many of the intrinsic assumptions of the government and public, as well as of the mass communication research community.

In 1971, research into the connection between violence and media was greatly expanded with the so-called Surgeon General's Report on Television and Social Behavior, funded by a one million dollar appropriation by Congress. The purview of this report, covering over forty research papers from a number of social scientists, was expansive in its topical and methodological orientation. The studies included examinations of media organizations, interviews with media makers, comparisons with media in other countries, experimental studies of learning and aggression, research into adolescents and aggression, examinations of viewing patterns within families, and inquiry into the relationship between age and viewing effects. In general, results showed that there was an increasing level and consumption of violence on television, and that there was a correlation between watching violent media and the likelihood of violent behavior. However, the exact relation between the two was not conclusively pointed out (i.e.: it was not ruled out that violent tendencies might affect the desire to watch violent media). The researchers themselves commented about the report that the conclusions reached were by no means conclusive.

It is notable that the researchers recognized their own study into the effects of media violence was limited by a narrow focus. They stated that the effects of violence could not be narrowed to singular causes, and that the centering of research limited the meaning of results. This in part reflected a desire for the expansion of grand theory into a broader model of effects, yet in other respects it also betrayed a recognition of the limitations of empirical scientific research in social inquiry. Massive institutional funding still did not produce a clear vision of media effects for mass communication research. The conclusions of this report mark a phase in which researchers began to realize that scientific social research is limited necessarily by empirical science, which requires physicalized relationships restricted and focused in time and space.

In assessing media, the 1970's was marked by an attempt to expand the depth of research of effects into time and space. Researchers, no longer satisfied with the one-dimensionality of research, sought to examine the intricacies of media as it participated in a larger society. As stated above, such a desire set researchers against the inherent limitations of their own chosen methodology of empirical science. It is an ironic conflict in that determinism pushed research towards deeper investigations of effects while restricting the validity of observation in the realm of the directly observable. In investigating communicative complexity, it was necessary to expand the time / space boundaries of research; yet experimental empirical social science was practically limited by the precepts of positivism.

Institutional and public concerns each had deep interests in learning the effects of media, yet were cultured not to accept rhetoric, philosophy, or conjecture as valid critique. The government, in its taxpayer funded media violence studies, wanted a clear statement of the problem and clear solutions. As in Violence and the Media and the Surgeon General's Report on Television and Social Behavior, the desire for conclusive, deterministic cause-effect relations was reflected in the scientific methods used. Comte's prosocial fundamentalism was alive and well in the paradoxical desire for science to solve the problems of the soul. The dominant paradigm operant then, and to a degree still now, demanded

81 Ibid., 354.
82 Ibid., 348.
scientific and quantitative analysis as the only acceptable language for inquiry. Yet, in the Surgeon General's Report, researchers themselves admitted that empiricism had its limits, that there was no easy cure-all available from science. Here was the beginning of a realization that society and media's role in society is a complex and unpredictable phenomenon, not a physical object to be mapped.

Still, the demand for clear theory and models asked of mass communication research its wisdom on deep effects, despite the limits of science. Cultivation theory as espoused by George Gerbner represented an attempt to appraise the long-term, deeply integrative effect of media on social patterning. In specific, Gerber posited that television had become so prevalent in modern American culture that it was a part of our very 'symbolic environment.' 83 In these terms, television effects were seen as participating and shaping our very sense of reality, as opposed to affecting immediate behaviors or thoughts. This theoretical offering in part reflects Walter Lippmann's concept of media as participating in the formation of a collective pseudo-environment, an environment composing necessarily limited and stereotyped representations of reality.

To support a connection between media reality and social attitudes, Gerbner conducted broad based content studies of the general themes and concepts offered on television. The goal was to point out distinctions between the portrayal of American society in the pseudo-environment of television as compared to actual demographic and social data. In particular, television was shown to grossly distort both the risk of violence in society (to offer a vision of a 'mean world') 84 and the average age, race, and level of wealth of citizens (particularly shown to be young, white, and affluent). The cultivation element of the theory came into play in the research hypothesis that those who watch more television will display a proportionate reflection of opinions and beliefs similar to those offered in the biased view of reality offered. As such, cultivation theory reflects a different type of strong effects viewpoint, where effects are deep and widely dispersed among society. The search for a causal connection between thought and behavior, a project rising from deterministic, empirical science, is thus maintained. It is ironic then that the main criticisms of this theory come from the perspective of a social science that seeks definitive relations and clear, deterministic models. By delving into the deep socio-cultural presence of media, cultivation theory has been criticized for the sheer complexity of the connections and vagueness of the variables it seeks to define.

Agenda setting theory is perhaps more specific in pointing out a connection between media content and social reality. As its name suggests, agenda setting refers to the power of the media, particularly news media, to formulate and define issues of public concern. The hypothesis of agenda setting, as coined by M. McCombs and D. Shaw in 1972, is that there is a "correspondence between the order of importance given in the media to 'issues' and the order of significance attached to the same issues by the public and the politicians." 85 Agenda setting thus stands as a theory of effects which puts media in the position of 'steering' the prominence of issues both in the public mind and in the institutional structures which make concrete decisions for society. Mass communication in this vision becomes a subtle but powerful tool which controls less how to think and more what to think about. The main criticism once again comes mainly from the perspective of a deterministic social science which seeks a clearer and more lawlike definition of effects. The charge has been made that there is insufficient evidence for the agenda setting hypothesis and that the main assertion is 'theoretically ambiguous.' 86 It can be said that the question is a chicken and egg paradox, where media plays a role in agenda setting, but its clear effect is impossible to maintain. Such criticisms arise from a deterministic drive towards a clear, scientific understanding of social complexity.

Two other theories of the strong-effects variety, the spiral of silence hypothesis and knowledge gap research, propose perspectives on how media acts to accentuate dominant social concepts or


85 McQuail, 275.

86 Ibid., 276.
communities and atrophy others. Elizabeth Noelle-Neumann, the originator of spiral of silence hypothesis, explicitly marked the re-emergence of a strong effects vision in communication research in her writing.87 The spiral of silence perspective observes that people have a fear of being ostracized in social discourse; as a result, they attempt to reflect a ‘mainstream’ view of public issues and to avoid controversial opinions. As in agenda setting, the press in particular is viewed as playing an important role in defining public issues. By centering on certain issues, contrary beliefs and opinions fall out of the public discourse. People avoid these beliefs and opinions as they fear social censure by others who conform to the media version of consensual reality. As with agenda setting, this hypothesis also is criticized by deterministic social science in offering only part of a chicken-egg relationship. This criticism may be partially self-inflicted, though, as these theories employ the tools of science to offer a fundamental view on the nature of media effects. Spiral of silence thus could be expanded if it proposed to open a critical public dialogue rather than to presume to scientifically report a physical ‘flaw’ in society.

Knowledge gap research reflects a strong effects view on how dominant social communities maintain their position through media. Particularly, knowledge gap theory, as its name suggests, concentrates on class differences in the assimilation of information from mass media sources. The research hypothesis, as proposed by P. J. Tichenor, G. A. Donohue, and C. N. Olien, claims that higher class segments of a population tend to acquire information at a faster rate, which widens the class gap of power and knowledge in a given society.88 Education, which is tied to class, is seen as a key variable in determining receptivity to new information, although motivation has also been operationalized.89 The proposition is not that the poor are uninformed, but rather that the more wealthy have a faster rate of knowledge acquisition.90 Research implies that the media plays a role in the presentation of information, in that if the poor were motivated by more useful information, they could acquire knowledge faster. Again as has been mentioned of the other models briefly outlined here, the one-sided view of media effecting a malleable public can be criticized.

The re-emergence of a strong effects vision during the 1970’s is remarkable for having advanced the methods and concepts with which to delve into the more complex, deeply imbedded relations between media and society. There is a poignant irony inherent in the fact that communication researchers criticize the theories outlined in the return to strong effects overview for being inconclusive in that they extend beyond the reasonable powers of empirical research. It is perhaps fitting that these theories, which place much of their proof in the scientific method, are criticized for their failure to stay within the boundaries and conditions of scientific observation (i.e.: maintain views that can be directly observed, concentrate on the short-term over the long-term, concentrate on the directly observable over the conceptual, and eschew variables with broad, philosophical meaning). In a sense, the failure of the re-emergence of direct effects to create any conclusive results has been because mass communication research beat itself at its own game. In attempting to employ the language of fundamentalism, of grand theory, mass communication theory extended itself outwards into conceptual territory beyond the empirical scope of social science.

It is perhaps telling then that modern research has pulled back to a more neutral perspective on effects. However, this is not to say that the emphasis on deterministic theory has been abolished. Rather, it can be said that media research may be waiting for an expansion of new methods to allow it to advance further the strong effects agenda. The advent of the computer as a research tool is perhaps the harbinger of an expansion towards a newer, deep / indirect effects vision. The purpose here, though, is to criticize this notion of achieving a conclusive understanding of effects as the continuation of a flawed paradigm, a paradigm with roots extending from Saint Simon backwards. In his thesis entitled


90 McQuail, 276.
Mark Bryant comments on the misapplication of the scientific method to communication effects research:

The best sort of predictive statement which the experimental method seems capable of producing
is a weak, ‘under certain circumstances, at certain times, the transmission of a particular
message by means of a certain channel to a particular recipient may have ‘x’ effect.’ Such a
conclusion, however valid, is virtually worthless either to our understanding of communication or
to our ability to manage the process with which we are implicated . . . On the basis of the
foregoing, we must conclude that the dominant paradigm in the study of communication is less a
theoretical construct, capable of generating knowledge and meaning, than a commitment to a
particular methodological procedure of questionable theoretical orientation. The spectacular
success of the experimental method in other disciplines has too long blinded those of us involved
in the study of man. We must come to recognize that the behavior of man and the behavior of
rocks are fundamentally different and must therefore be examined in different ways."91

The dream of achieving a physical, rational, complete understanding of media effects is the same dream
of being able to achieve a deterministic social physics. This goal, simply put, is impossible.

Communication research today stands at a point of juncture. Fractured by criticisms of its
inability to realize a grand model of media functioning, limited in the use of empirical science for research,
communication research stands at a point where it either must admit its limits or reformulate its goals and
methods. It is this latter option that seem to be the most useful in allowing the field to evolve towards a
more socially meaningful project. Whereas in the early days of the Chicago School and Walter Lippmann
communication research had pretenses of participating in the functioning and utility of media, so much of
today's media research has become abstracted and divorced in its esoteric methods from the actual
functioning of media in the everyday world. There perhaps needs to be a retrenchment towards a vision
of mass communication research as involving more philosophical, critically oriented goals, aims which
intend to encourage a public dialogue on the functioning of media in society.

The intent of this project is to offer the proposition that the metatheoretical and
metamethodological foundations of mass communication research need to be re-examined. The
theoretical breadth and methodological goals of the field have become snarled and conflicted. In a recent
article in a special issue of the Journal of Communication entitled "The Future of the Field - Between
Fragmentation and Cohesion," Robert Craig notes:

Conventional definitions of theory have lagged far behind practice; they no longer reflect the
actual range of theoretical work in the field. This is our present state of confusion. We lack even
a coherent vocabulary with which to discuss the great variety of ideas that currently announce
themselves as communication theory. Different lines of theoretical work are premised on
fundamentally different views of theory. The very notion of theory is radically contested. Why are
there now so many communication theories? This development is best understood in the context
of trends that have transformed not only our own discipline but the human sciences generally."92

These trends are the harbinger of a new paradigm of social science which has not yet been accepted into
mass communication research as a field. The gradual integration of this new trend has become painful
for the discipline and is resulting in fragmentation. A meta-methodological, meta-theoretical re-
examination of the underlying commonality between 'so many communication theories' needs to be
undertaken. Under the paradigm of Newtonian, deterministic empirical science and the goals of prosocial
rationalism, this proliferation of theories is an embarrassing litany of self-contradiction, a snarl of
confusion. Under the developing understanding of society espoused here, the many theories of mass

91 Mark Thomas Bryant, "Communication and Mass Communication: A Systems Approach to Human Information
Transactions" (M.A. thesis, University of Texas at Austin, 1979), 16.

92 Robert T. Craig, "Why Are There So Many Communication Theories?" Journal of Communication 43 (Summer 1993):
28.
communication research reflect a rich and varied descriptive text which examines possibilities and characteristics of media without demanding a fundamental physical geography among them.

The re-examination of the goals, methods, and epistemological philosophy of mass communication should be conducted in the context of a society, a social philosophy, and, significantly, a vision of physics and science which themselves have already reflected an evolution towards a new paradigm. Inherent in this evolution, in what can be termed a paradigm shift, is a growing comfort and understanding of complexity, uncertainty, relativism, multiple-truths, and more generalized methods of description and analysis. For social science, the movement is away from a Newtonian vision of society, which sought clear, formulaic laws for describing deterministic, physical action. The new metaphor is away from 'cartography' towards a state of social 'meteorology,' where observation is conducted in terms of short-term assessment, critiques of general trends, and observations of regularities (without intending to construct lawlike relations). The new paradigm contains the ability to integrate multiple possibilities or outlooks on social meaning, the grace to be wrong, and the foresight to apply a number of methods and tools to analyze extremely complicated phenomenon. The next section examines why this transition has not occurred and why it should.

2.4. Caught Between Contingency, Irony, and Solidarity: A Critique of Growing Pains in Modern American Communication Research

The preceding discussion has attempted to display a relation between the historical and conceptual development of philosophy, science, and social science as they have participated in the development of mass communication research. The primary conclusion of this assessment has been that mass communication effects research maintains an misapplication of the scientific method to social phenomenon which reflects certain basic philosophical contradictions. These contradictions, the most basic being that of conflating empiricism with the philosophical project of human values, result in a field which is conflicted between its goals and methods.

Social science, mass communication research in particular, has reached an ironic stage where the goal of a deterministic, causal understanding of communication processes has been blocked by inherent limitations of the scientific method in social inquiry. The method of science has proven inadequate to characterizing philosophical concepts of meaning which inherently exist in communication processes. As Peter Winch maintains in The Idea of Social Science and its Relation to Philosophy, the concepts involved in social explanation are incompatible with those of scientific explanation. His assertion is that social concepts enter into social life itself, whereas scientific concepts only enter into the observers description. By this he implies that social science research in general is intimately bound to the society in which research is being engaged. Methodology and explanation thus by nature must invoke evolving philosophical issues of language, meaning, context, perspective, and complexity. This is especially true in the study of communication.

For communication research, effects research specifically, the implication is that evolving (non-empirical) social meaning is intimately bound to the project of study. Science, as stated previously, is incapable of dealing with metaphysical or subjective notions of meaning, as these can not be regarded empirically. In this sense, the scientific method as the fundamental method of proof necessarily biases certain perspectives on social reality and excises others. Mark Bryant comments:

(The) failure of science in social applications has been variously attributed to the relatively immature state of development of the social sciences, to the extremely complex nature of human behavior, and to the difficulty of measuring the human effects of external causes. What has not been seriously considered is that the experimental method may be conceptually inadequate to the study of man, that the information gained through the application of the experimental method to human behavior does not sufficiently explain that behavior as the behavior of physical objects is explained in the physical sciences. The legitimization of the experimental method as the only means of knowing objectively is the rejection of knowledge not experimentally obtained. It then

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follows that any subject which may not be approached by means of the experimental method is essentially unknowable.\textsuperscript{94}

The rationalized project of Newtonian empirical science as applied to social questions maintains methods and goals which determine a certain philosophical outlook on human reality. This method allows for research to be conducted in a systematic and definitive way, yet it fundamentally denies aspects of meaning inherently connected to the subject matter of communication (i.e.: contextual / social meaning, relative perspectives, metaphysical / philosophical notions of meaning, chaos, error, and noise).

A part of the contradiction of communication research lies in a fetishized attention to the scientific method as the singular path to liberating 'truth' and 'fact' in communicative / social relationships. This use of the scientific method ignores its own philosophical bias and thus abuses the name of science in order to advance philosophical concepts. In abstracting social phenomenon through the process of conceptualization, model building, operationalization, quantitative manipulation, and interpretation, philosophical concepts are formed into testable objects. A necessary process of theoretical abstraction is undertaken which biases research towards a certain philosophical view of social phenomenon. However, this process of abstraction and rationalization is seldom made overtly apparent (i.e.: as a topic of argument) in the explanation of research results. As in physical / natural science, the role rationalism plays in research design and explanation is often discounted in order to center on the creation of empirical reality as an absolute truth fundamentally divorced from the realm of the perceiving mind and social meaning.

It is perhaps ironic then that the tremendous efficacy of the scientific method has led in part to the decomposition of the central tenants of positivism. For one, chasing the ghost of causation ever deeper into the structure of physical systems resulted not in a discovery of the 'prime mover,' but produced rather a realization of interconnection, complexity, and uncertainty in physical systems. Krippendorff notes:

\begin{quote}
The preference for one-way processes . . . leads to a variety of metaphysical extrapolations. When one looks for the causes of causes, causes of causes of causes, and so on, one is easily led to Aristotle's ultimate mover. And when one looks for consequences of consequences, one is naturally led to ultimate purposes to which everything seems to converge.\textsuperscript{95}
\end{quote}

However, the ultimate purposes sought after, universal laws of gravitation, magnetism, electromagnetic forces, etc., were ideals that ultimately wavered under ever deeper scientific examination. Investigating deep causation in this century led ultimately to a recognition of the unbreachable frontiers of human inquiry as well as to a realization of the uncertainty and interconnected complex patterns inherent in natural systems. Investigating final causes was instructive to the degree that it revealed a new vision of reality involving broadly interdependent networked systems, unpredictability, irreversible processes, and decentralized effects in the broader vision of inherently interconnected, mutually effecting phenomenon.

Social science, in its ironic conflict between the desired goal for grand theory and the limitations of the scientific method in designating social relations, has itself come up against the limitations of Newtonian science (notably founded on the study of closed systems). In "Reason in Social Science" Morris R. Cohen reflects on the distinction between physical and social analysis:

\begin{quote}
Any cubic centimeter of hydrogen will for most purposes of physics or biology be as good as another. But observation on one community will not generally be so applicable to another. . . . Reasoning from example in the social realm is intellectually a most hazardous venture. We seldom escape the fallacy of selection, of attributing to the whole class what is true only of our selected instances.\textsuperscript{96}
\end{quote}

\textsuperscript{94}Bryant, 5.

\textsuperscript{95}K. Krippendorff, "On the Ethics of Constructing Communication," presidential address at the 16th Annual International Communication Association Conference (Honolulu, Hawaii, May 26, 1985), 71, potocopied.
When causal determinism as espoused in Newtonian physics is employed as the dominant metaphor in communication research, the drive towards the 'prime mover' results in a rigid, overly-simplified view of communication processes. To say that the purpose of communication research is to determine "who says what in which channel to whom with what effect"\textsuperscript{97} is to excise the intrinsic elements of mutual dialogue, context, memory, history, evolution, feedback, culture, power, and morality which inherently exist in any dialogue. Indeed, the scientific method itself is incapable of dealing with the more metaphysical aspects of these communicative characteristics. As a process linked to physical, observable, and causal processes, philosophical issues of content and context are disregarded.

Any social science which concentrates on the empirical fixation of physics (particularly the Newtonian tradition of physics) encloses itself in a myopic sphere where both the subject of study and the results obtained are reduced to meaningless abstractions. Physics is biased in seeking to construct laws from reductive empirical observations. Speaking in terms of history, Henry Margenau comments in "Physical Versus Historical Reality":

> It may be supposed . . . that history can take on the structure of science by adopting the pattern of physics. If this plausible thesis is accepted it follows that history, like physics, can predict only mass phenomenon such as economic cycles, large scale migrations, periods of cultural activity, and the like. But it will be unable to address itself to those peak events, to the emergence of powerful personalities, which have so decisive an influence on the course of human affairs. A science of history that wishes to bring these critical phenomena within its sphere of prediction must not follow slavishly the pattern of physical science: such a science must strike out on its own along paths hitherto uncharted by existing disciplines.\textsuperscript{98}

This observation is just as applicable to communication studies, where the method of Newtonian physics restrains observation to general processes, patterns, and trends without achieving a deeper frame of understanding.

The suggestion of constructing a new method, or perhaps a new metamethodological frame, for communication research is well taken. R. Evered suggests the development of a new methodology for social research in "Transforming Managerial and Organizational Research: Creating a Science that Works":

> The two domains of science, physical and social, are fundamentally and inherently different in their nature, since the social sciences must deal with the new elements of human action, language, and consciousness. We must therefore develop a new mode of inquiry that is appropriate to the social realm. The epistemology of the physical sciences is too primitive to cope with the complexities of the social realm.\textsuperscript{99}

Newtonian science, in its fixation on closed systems, linear processes, physical objects, and the construction of laws, restrains communication research to a mechanical paradigm in which the most important aspect of communication, meaning, is marginalized.

A major implication of this project is that physics itself has progressed into a new paradigm outlook on the study of nature (as space and time), and that communication research thus need not labor under the outdated expectations and methods of a deterministic, Newtonian vision of the universe. As


\textsuperscript{97}Lasswell, 117.


The founders of modern social science dreamed of a science that would at last provide humanity with a great tool to control its own destiny. Many noted analysts now conclude a central reason for the failure of social science to live up to this dream is because it is still mainly caught within the antinormative paradigms of (more linear, deterministic phases of) scientific development.\textsuperscript{100}

The prosocial dream of a social science as conceived by Comte flounders in a detrimentally antiquated philosophy of inquiry. The goals of social critique are held back by an adherence to a physicalized, fundamental vision of social phenomenon, which seeks ultimate causes, linear relations, and static models of interaction. New paradigm visions of relativism, complexity, unpredictability, and interconnection promise to bring new metaphors and research processes to the social sciences. The characterization of society as inherently complex and unpredictable arrives as a deathblow to the project of Comtian social science, which is grounded on causal determinism and the assumption of the 'physical' existence of general laws. The assertion here is that social relations are not merely or reducibly physical; rather, they embody liquid interactions of meaning within meaning: evolving, unpredictable, multi-faceted contexts. Uniqueness and complexity, under the new paradigm vision, are the nature of rather than the exception in social phenomenon. Research methods need to be rethought in the context of such goals.

The abuse of an outdated, simplified concept of science as popularly used in effects research begs the question of why new methodologies have not taken hold. The possibility exists that this adherence to a consciously outdated conception of the scientific method is itself desirable in that it provides validity to a field dealing with inherently complex / multi-layered and unpredictable phenomenon. This is reflected in criticisms that are leveled at mass communication research. Leon Bramson, in "The American Critique of the Theory of Mass Society: Research in Mass Communications," offers that mass communication research is more an attitude offered as science. It is his contention that communication theory as often as not is ambiguity supported by opinion and slanted interpretations of pseudo-scientific inquiry. The progressive vision of the 'Golden Age' (the motivation of prosocial inquiry) which theorists look forward to (or backward to) in their research, the ideal vision from which critical theory posits its analysis, is itself based on morality and value. In this sense, prescriptive, evaluative theory is a philosophical issue and an extra-scientific issue. Bramson criticizes mass communication research for its pseudo-science implications. He states that the theories of communication researchers are:

world perspectives, not scientific hypotheses. The theorist of mass society prefers to see through a glass darkly. The blend of romanticism, existentialism, Marxism and psychoanalysis which forms the basis of his world-perspective give him a certain shadowy picture. It is, like all-world perspectives, both restrictive and facilitative. It prevents him from seeing some things and allows him to see others. But it is not "based on science."\textsuperscript{101}

Science is all too easily misused in communication research to provide political validity to often abstracted, often personalized and biased theories of effects. Rather than conducting research in the spirit of offering a certain perspective, results are offered as fundamental, as a single answer to a complex question. Newtonian positivistic determinism and psycho-physical determinism is politically advantageous in communication effects research.

This adherence to an outdated and inappropriate use of science could be superseded but for the seemingly self-centered interests of the field as a formal, political academic discipline. Science offers a reputable, tangible method of proof. A more liberalized, interdisciplinary, and philosophical methodology for many perhaps promises greater fragmentation and argument. Additionally, the language of certainty provided by empirical and quantitative analysis speaks to the needs of institutional, political, industrial,


\textsuperscript{101}Bramson, 118.
and entrepreneurial interests who provide projects and questions for the field. In this sense, maintaining an adherence to quantitative empiricism in effects research is politically and monetarily advantageous. As baldly stated concerning the fragmentation of the field in a recent article by Joli Jensen "The Consequence of Vocabularies":

Why does all this matter? Who cares if what we're up to is a field or a discipline or an area of inquiry, or if we can agree on certain theories or procedures? Well, we care because the answers to these questions shape our livelihood - not only what we do, but how we are perceived by others. Having a coherent field with coherent paradigms, disciplinary legitimacy, and methodological certainty makes our academic life infinitely easier - we can teach by transmitting doctrine; do research by extending or filling in extant lines of inquiry; revamp curricula, hire colleagues, give tenure, and justify our existence to colleagues and administrators in unambiguous terms.102

Science offers coherency, legitimacy, and certainty, albeit at the cost of realism. Newtonian empirical science and Cartesian rationalism are the perfect methodological defense structures for an intellectual project examining often indistinct subject matter.

Under the spirit of positivism and post-positivism, any phenomenon which is incapable of being experienced is immediately suspect as it cannot be communally corroborated and measured. Such doctrine certainly simplifies the project of social exploration: without such a wall, social theorizing would be given to a quagmire of conflicting theoretical propositions. But, in light of new concepts in the physical sciences, it seems that natural science itself is growing in a recognition of multiple frames of inquiry. In this spirit, there is little justification for clinging to a Newtonian, deterministic notion of scientific proof except for self-oriented methodological and political interests.

The public and professional sanctification of science (empiricism), as covertly justified by proof (rationality), ensures that social research is regarded as an actual discovering of 'geographic' relationships in social space. Instead, however, what is actually undertaken in the application of science to social theory is a methodical analysis of formalized philosophical concepts constructed in the process of theorization and research design. In his writings, Klaus Krippendorff particularly encourages a self-conscious awareness of such metatheoretical processes inherent in the conduct of communication research:

It is the observers who draw a distinction, wait to see what happens (how the environment, the data, respond), and finally decide whether there is a compelling reason to formulate a dynamic relationship (that is called communication) to account for the difference between the behavior of the whole and of the aggregate of its parts.103

Such a comment points out the central role of the thinking observer in constructing meaning in social research. The scientific method of inquiry is not without merit in itself; it is the perception that the method of empirical science liberates a singular social truth which is contested here. Science should be regarded as one type of language and method among others which can be employed to examine social communicative relationships. Science as applied in communication research needs to be realized as inherently involving processes of philosophical theorization and abstraction, which necessarily implies that research results are interpretive and debatable on conceptual grounds.

Today many involved in communication research are experiencing a disillusionment with the effectiveness of the method of empirical science in investigating uniquely human communicative phenomenon. In part this is fueled by a growing recognition that science itself is an abstraction and given to multiple interpretations. Relativity and quantum physics along with newer interpretations of physical phenomenon such as non-linear dynamics and fuzzy set theory have done much to break down the notion of a fundamental physical or mental world populated by eternal objects or forms. It is in retrospect


that one may ask whether science was so effective for being 'true,' or whether its success can be explained in the imposition of a common political and mechanical standard of inquiry based on measuring macro-level physical objects. The method of science is being realized as less an objective process utilized by the absolutely rational mind in discovering a fundamental world, and more as one tool among others for investigating human meaning among the different theoretical frames possible in a multi-faceted universe.

It is important to note that the process of empirical research in studying behavior, the operationalization of social and psychological concepts, or the use of statistics as a descriptive tool is not being discounted here. Rather, what is being assailed is the mindset or paradigm which surrounds the professional and public perception of scientific research in society: that it is conclusive and points out physical, fundamental aspects of society. The historical / conceptual assessment here has been that the processes of theorization and explanation which subtly surrounds the conduct of empirical social research is much more crucial to method than is generally admitted. As a corollary, it is offered that the project of forming theory and explaining results within a social context has a number of possible methods and meanings, each with a unique utility and validity. In terms of mass communication research, this means that pre-existing research and theory should be viewed in terms of descriptive dialogue and conceptual exploration, rather than as motions towards grand theory. Present research should be conducted with a self-conscious, meta-theoretical knowledge which realizes the limitations of the scientific method in social inquiry. The methods of social scientific research need to be realized as inextricably involving processes of philosophical evaluation and assessment, as offering a discourse on meaning which necessarily contains room for argument, evolution, and different but equal perspectives.

The purpose here so far has been to offer a philosophical account of the pre-, past, and present history of mass communication studies as a field. As such, a certain interpretation of the past and present goals of the field has been offered. The space allowed has not certainly not allowed for an exhaustive critique, but the intent has been perhaps to amplify both the problems and promises inherent in the field. The historical / conceptual commitment has biased both the subject matter, conduct, and results of communication research. From the perspective of social inquiry, this commitment is defined as a paradigmatic outlook on social ‘reality’ which supports: 1) a belief in a fundamental, mechanical, physical, and deterministic ‘truth’ or ‘reality’ as existing at the base of all social thought and behavior, 2) a positivistic outlook which insists on empiricism as the only method with which to investigate phenomenon, 3) an artificial assertion that mind and body are fundamentally separated, 4) a method which uses rational, logical explanation to support insular, unspoken philosophical beliefs, 5) a failure to admit the role of philosophical rationalization in the process of constructing and interpreting social science research (disguises the role of the mind in observation), and 6) a method which is unforgiving of philosophy for its lack of ability to provide black and white assessments of social issues.

In a time when physics itself has evolved into an understanding which transcends the one-dimensional, Newtonian paradigm of ultimate states as observed above, there is no firm reason to continue in the search for a deterministic understanding of media effects. Rather, communication research has the potential to be a responsible critic to both media and the public. Communication studies can be a field which acts to mediate an understanding of the complex relation between technology and citizens through a uniquely self-conscious mixture of philosophical and empirical methods.

The standpoint here has been not to support or disparage any single vision of media effects, but rather to examine the deeper meta-theoretical state of mass communication research as a reflection of social science. Much disagreement currently exists over the confusion of methods and goals in mass communication research as a field. The implication here is that the problem lies in the attitude that a single theory of effects exists to describe the function of media in society. This presupposition is a survival of the scientific method and rationalism, that physical objects have a single state which can be measured in a single way. Rather, the meta-theoretical assertion here, as suggested in the discussion of the early history of social science, is that there can be a number of contextual methods for describing social variables, and that each is valid according to its stated premises. In this sense, communication research can expand - not in developing better methods of analysis, but in developing more self conscious methods of analysis. By this it is meant that researchers should develop methods and offer
results which overtly state the philosophical presuppositions and theoretical biases which guide their research.

In these terms, the project of effects research in the next century should involve the reformulation of the metatheoretical understanding of research. In other words, mass communication studies needs to be more understanding of its own limitations and powers. There needs to be an understanding that the quest for grand social theory has ended, but that the history of communication research can still be invaluable if realized in the right context. This context involves an approach towards the reading of theory which allows for a number of 'realities,' 'perspectives,' or 'truths' to be found in research. The new paradigm of research involves a view of theory itself as a means to understanding, not an end in itself. In these terms, explanation is more so exploratory and philosophical that empiricistic and scientific. Theory and research should be read and conducted from a view of interdisciplinary broad-mindedness, from a view which refuses to accept one final vision as being comprehensive or exhaustive.

The challenges facing communication research involve developing: a more mature understanding of the process of media effects, a research methodology which will allow for a broader understanding of media effects outside the fundamentalistic expectations assumed by Newtonian empiricism and Cartesian rationalism, a concept of scale and method in the context of communication occurring between individual (psychological) and mass (sociological) levels of social organization, and an understanding that progressiveness and social critique need not be linked to fundamentalism in theory. Many fear the potential for fragmentation if the fundamental method of science is denied in effects research. However, the progression from positivist and post-positivist views can occur without sacrificing rigor in inquiry. The implication is of an evolution from linearity to a more systemic view of human interaction, from a Newtonian physics metaphor to one more akin to meteorology. This transition implies a widening of methodological scope, yet not the sacrifice of standards and expectations in the quality of research. This movement represents less a destruction of the post-positivistic paradigm and more an evolution towards a self-conscious frame of inquiry. The ideals of post-positivism survive, yet are reinterpreted, namely in: the recognition of paradigms (but not the recognition of science as the only tradition transcendent paradigm), the recognition that paradigms are evolving and historically situated (but not that the scientific method represents the only basis for valid hermenutical analysis), that studying methodology is to study a way of knowing (but not that the logic of scientific methodology is not necessarily fundamental), and that studying methodology improves the understanding of practice (but not that there is fundamental knowledge behind the understanding). The following four general precepts are offered as metamethodological issues recommended for incorporation in communication research in keeping with an evolution towards the new paradigm:

1) **Communication Processes as a Systemic Social Science**: where social phenomenon are seen as systemic and probabilistic, not physical and deterministic
2) **A Willingness to Explore Multi-leveled Realities**: where it is realized that observation can occur from a number of levels to a number of levels and that interconnection, networks, complexity, and unpredictability characterize social relations
3) **A Recognition That There Are No Fundamental Perspectives**: where the notion that a fundamental perspective is attainable through empirical observation is destroyed and the relativistic observational perspective of the researcher is realized
4) **A Recognition of the Self-reflexivity of Theory**: where it is realized that the conduct of research participates in the subject matter and society in question and that thus theory itself has inherent ethical / normative responsibilities

The next section will provide a brief description of new paradigm physics theories which support the metaphoric and practical application of the above mentioned recommendations.
3.0. Towards a New Paradigm in the Physical and Social Sciences: Relativity, Reflexivity, Interconnection, Irreversibility and Unpredictability

Since the formal institution of the field during the 1940’s, the employment of scientific practices in communication studies has resulted in a wide body of research. Experimental, empirical research has immeasurably broadened the knowledge of media effects and of the social structures which mediate the functioning and reception of media. However, as asserted in the previous sections, this method also necessarily limits social inquiry to certain biased outlooks. Science, in the linear and Newtonian sense, contains many contradictions and conceptual limitations when applied to issues of communication. As evidenced in the recent (summer and fall 1993) special issues of the Journal of Communication entitled “The Future of the Field - Between Fragmentation and Cohesion,” there is a growing point of crisis in the broader metatheoretical and metamethodological understanding of the discipline. Despite an increased apprehension of the complexity of media effects, there is growing discomfort with the broad and, what on the surface might seem as inconclusive, proliferation of theoretical standpoints.

The assertion here is that the limitations of the scientific method in issues of social meaning combined with a lack of compelling alternative methodological propositions has left the field trapped in a moment of irony. The methods of rationalism and empiricism which still exist in social science have reached the limit of their powers in achieving their own deterministic goals. There is a state of discomfort in that the surviving methodology of Newtonian empiricism contains no place for multiple interpretations of social reality, yet scientific social research constantly produces conflicting theories and results. From a First Philosophy there must come one explanation, a covering law, grand theory; no room is left for media effects theories which conflict.

The implication of this project is that the paradigm of science as employed in communication effects research is outmoded. Physical science itself has reached a much broader and deeper understanding of the complexity, uncertainty, and relativism inherent in physical systems. This realization should discharge mainstream communication effects research from its quest for grand theory and fundamental empirical realities. Moreover, communication research could be broadened and improved by investigating both the metaphorical and literal implications of these new methods to social research. The following will briefly examine several of these theories and state their possible relevance to communication research. The intent is not to give an exhaustive description of new paradigm science, but rather to relate a set of key concepts relevant to the subject at hand: the metamethodology of mass communication research as a social science where social science draws from physical science for methods and procedures.

3.1. Shifting Paradigms: Communication Research and the Changing Scope of the Physical Sciences

This project has made the assertion that communication research is methodologically arriving at a point of conceptual juncture, at a paradigm shift. The term paradigm has been invoked numerous times previously. In the broad sense, such a term means merely an example or a model. Thus in scientific / epistemological terms, a paradigm would imply a model for reality. However, in the context of the philosophy of science and social science, this term has a broader meaning attached to it as it participates in a discussion on the nature of science as a realm of human knowledge.

Thomas Kuhn is a notable philosopher of science who has popularized the notion of the paradigm in his book The Structure of Scientific Revolutions. In this landmark text, he defines a paradigm as a general scientific vision for natural investigation which is conceptually compelling in its vision, yet which is open ended enough to allow advance and growth from a group of practitioners.104 A paradigm is ascribed to in that it embodies the full set of beliefs, values, and techniques which are common among a scientific community. In this sense, a scientific paradigm embodies a unified methodology, a definition of what constitutes a scientific problem, the techniques for solving it, and the proper method of explanation.

The role rational conceptual boundaries play in defining the nature of explanation and research have been examined here both in the paradigms of the Catholic church and of Newtonian science. The

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methods through which a paradigm defends itself from dissenting information have been discussed: either by redefining or ignoring information that does not coincide with the paradigm's vision of reality. As Krippendorff states, a paradigm:

contains its own justification. It defines rationality, objectivity; sets conditions of truth by means of rational procedures; and prevents nonobjective and false elements from entering the knowledge generated by this paradigm. Paradigms are self-sealing in the sense that no empirical evidence judged acceptable within a paradigm can challenge its validity.  

The validity of a paradigm can be challenged either when the questions asked no longer can be solved by the subscribed methods of a paradigm (as has been the case in determinism pushing inquiry beyond its own boundaries), or when the 'real' world (which can be a species of historical, cultural, or social interpretation) no longer reflects a parity with the mode of explanation of a paradigm. The Catholic paradigm was ultimately challenged in that observation from the empirical world began to contradict and overwhelm the church's emphasis on intangible, spiritual concepts of explanation. When the 'natural world' as seen by a certain society, culture, or community, fails to respond to a particular method of inquiry, a crisis of faith (be it scientific or religious) occurs:

the driving force behind scientific innovation is the intensely conservative behavior of scientific communities, which stubbornly apply to nature the same techniques, the same concepts, and always end up by encountering an equally stubborn resistance from nature. When nature is eventually seen as refusing to express itself in the accepted language, the crisis explodes with the kind of violence that results from a breach of confidence.

It may be said that modern physics has undergone a re-examination of the precepts of Newtonian science, which has on reflection been seen to be theoretically and practically lacking in comparison to a new evolving vision of the 'real world' of events.

This text has offered a historical overview of the Newtonian paradigm of science, specifically in as it has participated in the composition and growth of both social science and, later, communication research. The traditions of empiricism, rationality, and progressivism have all contributed to the composition of a paradigmatic vision for social science. Central to this paradigm was a definition of the world as being fundamentally physical and deterministic. Empiricism provided a technique for inquiry, but was guided both by rationalism as a form of explanation and progressivism as a mode of relevance and motivation. The central paradigm of social science from the age of Comte up to modern mainstream communication effects research contains notions of linearity, physicality, determinism, and singular logic. In that these beliefs are patterned by the tradition of Newtonian science, this paradigm is being challenged by deeper understandings of complexity, interconnection, perspective, and multiple-logics growing in the sciences.

The transition, or more rightly, conflict, between paradigms occurs when visions of reality battle for supremacy on a stage of philosophical, historical, social, cultural, and professional contexts. The dominant paradigm has the power to redefine and reject challenging concepts offered from a new vision. A new paradigm contains the potential to achieve a closer harmony with more contemporary or insightful visions of natural phenomenon. The conflict between an established paradigm and a new paradigm results in either successful defense or revolutionary change. Krippendorff comments:

Between incommensurable paradigms, communication is, according to Kuhn, either abnormal or revolutionary. It is abnormal if the established paradigm succeeds not only in protecting itself against the challenging paradigm but moreover in rendering the latter irrational, invalid, subjective, unworthy, or silly. Communication is revolutionary if the established paradigm

succumbs, is surpassed or transcended by the challenging paradigm, requiring radical (in the sense of going to its "roots") reformulation and a new consensus on methodology, scientific problems, and solutions.\textsuperscript{107}

In the proposed paradigmatic conflict occurring now, one existing within the social sciences (and progressing amongst the physical sciences), the current chaotic state of methods and goals indicates that a revolutionary transformation is underway.

Since the turn of this century (and the advent of Einstein, quantum physics, and thermodynamics) Newtonian determinism has steadily been challenged as over-simplifying a complex, multi-layered, and evolving natural world. However, to a certain extent social science has been able to distance itself from this challenge. The criticism that physical systems are complex and guided by multiple frames of reference has not overcome the influence of prosocial rationalism and the concomitant insistence on a fundamental social reality that has steadily guided social research. This rationalist, logical, deterministic paradigm guiding social science has sought clear answers existing apart from the conflicting mire of philosophy. The convenient, practical partnership of self-interested institutions asking questions and communication theorists conducting research also acted to maintain the vision of the status-quo. The pecuniary interests of mainstream effects research, as motivated by broad institutional concerns, has a biased interest in maintaining an adherence to scientific determinism as the main language of proof. A strict set of rules and procedures with which to quantify society allows for clear, black and white data. Through this, Comte's ideal of a physical society which can be explained by empirical means survives and disparages metaphysical inquiry into communication as abnormal.

Newtonian physical science found itself challenged by the very method of empiricism which once challenged the authority of the Catholic church. Deeper and more careful explorations of both the atom and of cosmic scale phenomenon have revealed that the ideal of linear determinism is simplistic. Micro-level phenomenon as investigated in quantum physics has revealed a barrier beyond which inquiry is fundamentally uncertain and has discovered the intrinsic effect of humans on research. Macro studies of the behavior of light and gravitational bodies, as in Einstein's theory of relativity, have shown that bodies in space interact in more than three dimensions. Time in the Einsteinian vision is no longer a constant, it is a relative quantity. Thermodynamics offered a systemic perspective on the interaction of particles which transcended the fruitless quest for causal physical reactions in Newtonian dynamics. Closer to the modern age, non-linear dynamics has observed that even simple physical systems contain remarkably complex and unpredictable layers, depending on where one chooses to view a natural system. The implications of these observations are shaking: they portray a natural world patterned by rational human construction as much as by a fundamental world asserting itself. As Fritjof Capra has stated in "The New Vision of Reality":

\begin{quote}
According to contemporary physics, the material world is not a mechanical system made of separate objects, but rather appears as a complex web of relationships. Subatomic particles cannot be understood as isolated, separate entities but must be seen as interconnections, or correlations, in a network of events. The notion of separate objects is an idealization that can be useful but has no fundamental validity.\textsuperscript{108}
\end{quote}

Such as observation strikes similar chords in Krippendorff's observations of communication research as involving a process where the researcher acts to artificially draw distinctions and relations.

The transition from paradigm to paradigm has been portrayed as containing aspects both of chaos and of evolutionary transition. Similarly, in the case of the proposed transition that is occurring in communication research, each of these aspects can be detected. On the one hand, the vast conflict between theories, the general metamethodological confusion of the communication studies field, represents a more turbulent paradigmatic conflict of interests and methods. As Prigogine and Stengers note of Kuhn's view:

\begin{quote}
\textsuperscript{107}Krippendorff, "Ethics of Constructing Communication," 67.
\end{quote}

\begin{quote}
\end{quote}
the transformation of a paradigm appears as a crisis: instead of remaining a silent, almost invisible rule, instead of remaining unspoken, the paradigm is actually questioned. Instead of working in unison, the members of the community begin to ask ‘basic’ questions and challenge the legitimacy of their methods. The group which by training was homogeneous, now diversifies. Different points of view, cultural experiences, and philosophical convictions are now expressed and often play a decisive role in the discovery of a new paradigm. The emergence of the new paradigm further increases the vehemence of the debate. The rival paradigms are put to the test until the academic world determines the victor. With the appearance of a new generation of scientists, silence and unanimity take over again. New textbooks are written, and once again things ‘go without saying.’

In another respect, the transition between paradigms has been slow. Many challenges that were realized in physics over fifty years ago still have not formally integrated themselves into metaphors or tangible methods for mainstream social research. The solid monetary interest communication research has in upholding a strong-effects, linear process vision of communication has maintained the survival of the Newtonian paradigm in social science. In this sense, those aspects of the new paradigm that have found their way into mainstream effects research have come transitionally as new methods with which to explain linear, deterministic processes in greater detail. However, this extension can only attenuate to a point. When the growing force of new paradigm methods reaches a critical point, they will stand as a body against a Newtonian vision of communication processes and uphold a vision of complexity, unpredictability, and interconnection. The turbulence now occurring in communication research in many respects is indicative of a conflict, an ironic conflict, in which the deterministic, Newtonian vision of society is being seen for its inherent shortcomings.

In the primary academic disciplines, the sciences, the social sciences, and the humanities alike, shifts in fundamental philosophies of thought are leading thinkers to the frontier of a new type of knowledge paradigm. Specialist, linear, reductionist, ontological objectivism is swiftly being shown to be an inadequate methodology in a modern world increasingly being characterized as interdisciplinary, complex, interrelating, and chaotically patterned. In academics, this ‘new paradigm’ takes the form of burgeoning interdisciplinary cooperations among previously xenophobic divisions of study, an awakening of the intrinsic capacity for every academic discipline or social concern to inform and draw from every other discipline or concern. As framed by Judy Rogers:

The old or conventional paradigm describes the world as objective, simple and reductionistic, hierarchic, controllable, and mechanical. In the new paradigm, the world is viewed as mutually shaping, perspectual, complex and diverse, heterarchic, holonomic and as changing spontaneously.

The new paradigm for communication research is seen here as embodying an increasing orientation to questions, methods, and explanations which center around a more complex, multi-variate vision of social interconnection. In this perspective, communication effects are seen as being deeply integrated and fundamentally unpredictable, although broadly patterned in the same way that makes weather prediction possible in generalized, short-term observations. Communication is thus moreso seen as a systemic phenomenon, and less as one of lawlike, physical interactions.

In the vein of the weather metaphor, communication can be seen as occurring in a social atmosphere in which effects are broadly interconnected and dispersed throughout the social whole to varying degrees. Communication is partly envisioned as a ‘cybernetic’ act which leads to feedback and responses, effecting the broad system of society in various and complex ways. Social communication in this sense participates in a number of contexts with varying degrees of importance to macro levels and varying degrees of significance to micro levels. Small events have the potential to interconnect to larger

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109 Prigogine, 308.

frames of significance, just as large events may be diffused with little effect on the overall systemic pattern. As such, communicative behavior can be observed and interpreted from a number of levels (or scalar perspectives) to a number of levels. Implicit in this allowance is that because social behavior can occur in a number of frames of relevance and reference, there are a number of equally valid ‘realities’ possible in interpreting effects. A self-conscious concept of research processes similar to Krippendorff’s vision results in a view of theory construction, as well as of explanation, in which the researcher plays an integral role as observer.

The following sections will offer a brief overview of major aspects of the new paradigm from the perspective of physical science. A layperson’s interpretation of potential metaphoric and literal connections to communication research theory and methods will be offered. It is asserted that these theories genuinely represent a paradigm shift in the social sciences in that they potentially have the capacity to deal with the shortcomings that have been cited of social science under the old paradigm. Science is evolving in its capacity to deal with more complex issues, even as it is liberating itself in a tolerance for its own limitations and a realization of its own hidden processes of construction.

3.2. Relativity and Quantum Physics: Perspective, Multiple Realities, Interconnection, and Uncertainty

The first chapter of this project offered a brief overview of the development of science and social science up to the early 1900’s. The linear, deterministic paradigm of Newtonian dynamics largely patterned scientific discourse up until the revolution of Einsteinian physics and quantum theory. Newtonian science perceived the natural world as being fundamentally composed of reducible physical objects interacting in a steady, lawlike manner. Time was seen as an absolute, regular quantity, and the role of the observer in scientific observation was seen as impartial and disconnected.

More detailed empirical observation of both the macro world of cosmic level phenomenon and micro-level sub-atomic phenomenon revealed that the universe did not behave in the mechanical, causal way idealized by positivism or determinism. As a relevant example, the Michelson-Morley experiment of 1887 observed that the speed of light was the same as measured both with the earth’s motion and against it. Such a discovery implied that the speed of light was not cumulative when combined with the speed of objects (where the objects emitted light). This subtly challenged the notion that all components of the universe acted in a mechanistic, causal way to effect the behavior of other objects and phenomenon. This also begged questions of how velocity is measured and how movement is characterized according to space and time.

Albert Einstein (1879-1955), a German-American physicist, in particular was instrumental in destroying notions of absolute time and space. Responding to the challenge of the Michelson-Morley experiment, Einstein composed what is known as the special theory of relativity in 1905. The oft quoted formula \( E = mc^2 \) proposed that matter and energy were equivalent. The theoretical proposition of relativity observed that motion can only be defined in reference to other bodies in space as points of relative reference. The notion of a body at rest thus had no absolute meaning. Contingent on this notion of space was a view of time as fundamentally linked to space as a fourth dimension; time was seen as being relative to space. Time was related to the relative speed of an object, which acted to increase an object’s mass in space. The speed of light was seen as an absolute boundary of speed in space; an object, as matter, could not achieve this speed as it would approach a point of infinite mass. The 1915 general theory of relativity dealt with cases of objects not in uniform motion in space. Gravitation was explained as the result of space being deformed or ‘curved’ by objects with mass. In this sense, gravity was seen as an attribute of space itself and not a wave or particle emitted by physical objects. Einstein’s later work composed an uncompleted attempt to explain gravitation and electromagnetism in a unified field theory.

Einsteinian relativity can be said to be one of the few major revolutionary conceptual forces of this century (Freudian analysis and Marxism could be perhaps included in such a group). The advent of relativity exploded traditional notions of what constituted the real and the methods through which scientists explore nature. Newtonian concepts of nature had reached a point of discord where the prescribed methods of empiricism produced results which disagreed with the picture of the world as absolute, deterministic, and lawlike. Relativity showed that perceived interactions among objects were relative to the situation of the observer. Further, time was realized as being not a fundamental quantity, but a concept united with the relative values of movement and mass. In this sense, any pretension of
there being an absolute and steady existence was exploded. The new universe was complex, involving complex interactions between unique states and positions of reality.

For social science, relativity did not have an effect until well after World War II with the concept of cultural relativism. However, Einstein himself bemoaned the frequent misapplication of the metaphor of 'relativity.' In social analysis, relativism was seen as support for the idea that 'reality' in a social sense was relative to both the researcher's construction as an observer and to the subject of study situated in a certain sphere of cultural and linguistic reality. This, however, is an abstraction of the relativity as espoused by Einstein. He observed that his theory would be better characterized as a theory of 'non-equivalence.' In this sense, relativity means that objects of different speed have different velocities when compared to each other according to a specific relative perspective:

Newton's laws did not assume that the observer was a 'physical being.' Objective description was defined precisely as the absence of any reference to its author. For 'nonphysical' intelligent beings capable of communicating at an infinite velocity, the laws of relativity would be irrelevant. The fact that relativity is based on a constraint that applies only to physically localized observers, to beings who can be in only one place at a time and not everywhere at once, gives this physics a 'human' quality. This does not mean, however, that it is a 'subjective' physics, the result of our preferences and convictions; it remains subject to intrinsic constraints that identify us as part of the physical world we are describing. It is a physics that presupposes an observer situated within the observed world. Our dialogue with nature will be successful only if it is carried on from within nature.111

To say that there is no such thing as a physical reality is to misinterpret the meaning of relativity. Einstein observes that the speed of light is indeed an absolute boundary, and that all velocity in space occurs in reference to this state of absolute speed. The relative or non-equivalent aspect of the theory observes that all observation occurs from a perspective to an objective within certain frames of space, time, and velocity.

In the same respect, in the study of humans, using relativity as a metaphoric guide for social investigation should not ignore the point that there are limits to human expression and reality. Humans have bodies, require food, require air, to some degree are social and sexual beings, and utilize language and communication to form links with both each other and the environment. Cultures may deal with these issues in unique ways, but politically these terms represent physical characteristics that can not be ignored. These are not mathematical constants, but rather statements of the uniquely human universe in which we exist. They are not boundaries that can be drawn; in terms of an absolute, nothing conceivable exists outside of these states of reality. However, it is important to distinguish the notion of boundaries, of an ontological sphere of possibilities, from references to society as being composed of eternal forms, fundamental concepts, or intransigent variables. Patterned relationships exist in social interaction, but these perspectives are relative, fluid, variable, and constantly evolving within the possible events of human expression. Even economics, arguably the most 'precise' of social sciences, is itself composed of terms that are relevant only in a complex of self-referring variables. Each term of value and exchange is itself an expression of abstracted references to the fluctuating social symbolism of money.

Ludwig Wittgenstein, the primary originator of language philosophy, observed in Tractatus Logico-Philosophicus that the limit of expression contained an absolute boundary for human conceptualization. He notes that outside of language, nothing can be said, that: "what we cannot speak about we must pass over in silence."112 Similarly, what cannot be communicated cannot be conceptualized for study as communication. Significantly, then, the study of communication can not occur without a reference to and utilization of communication. In this sense, the study of communication occurs in a relativistic, self-referential framework from the researcher using communication to communicate about communication, a relationship which necessarily involves relative biases and perspective. The communication researcher observes from a perspective on communication to a system

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111Prigogine, 224-5.

of communication, which itself offers a certain relationship of transferred meaning within a larger social context of relevance. Prigogine and Stengers comment on the relativistic role of the researcher in conducting observation:

Scientific description must be consistent with the resources available to an observer who belongs to the world he describes and cannot refer to some being who contemplates the physical world ‘from the outside.’ This is one of the fundamental requirements of relativity theory.113

The significance of the researcher in constructing investigatory methods and in potentially affecting research results also raises concepts from quantum physics. Quantum theory as originally proposed in 1900 by the physicist Max Planck (1858-1947), observed that certain physical properties cannot be measured steadily or continuously. Planck’s constant showed that some values, radiation for example, can only be measured in discrete amounts, termed quanta, in terms of probability over time. Quantum theory was applied by physicists such as Albert Einstein, Werner Karl Heisenberg (1901-1976), and Niels Bohr (1885-1962). Theoretical and instrument based investigation into subatomic dynamics behind quanta revealed a world in which macro conceptions of persistence in time and space were fundamentally challenged.

Quantum physics resulted in a fundamental disagreement with Einstein in its assertion that physical interaction was at base fundamentally unpredictable. Einstein drew his line in the sand by asserting that “God did not play dice with the universe.” The rebuke from the quantum theorist Niels Bohr was “Stop telling God what to do!”114 The experimental data and consistent theory of quantum mechanics showed that at the sub-atomic level, indeterminacy was fundamental. Einstein spent his remaining years trying unsuccessfully to resolve the difficulties of resolving the overlapping yet disagreeing precepts of relativity (which still allowed lawlike relations between phenomenon) and quantum physics (which proposed that uncertainty and chance at some level was intrinsic to physical interactions).

The quantum theorists observed that at the sub-atomic level there was a point beyond which observation (performed indirectly through scientific instruments such as particle accelerators) could not distinguish lawlike behavior in particles. Further, it was determined that the process of observation itself effected the behavior of physical systems. Heisenberg, the German physicist and philosopher, proposed the Heisenberg uncertainty principle, which observed that “in quantum physics, every measurement requires an exchange of energy and disturbs the natural condition of the measured object, and . . . that it is impossible to measure the position and the velocity of atomic particles simultaneously with arbitrary precision.”115 At the extreme micro level, all that could be determined about particles was either their probability of being in a certain location or their velocity, not both. The more that could be determined about a particle’s relative position, the less could be determined about its direction and speed. In this sense, a boundary beyond which deterministic laws could be observed was reached. Any pretense that science, given the time and effort, would be able to determine the linear and causal relations at all levels of matter was abandoned.

Quantum theory was formalized into quantum mechanics by such theorists as the Danish physicist Niels Bohr through the use of quantum concepts to explain the inner structure of the atom. The link between atomic theory and quantum mechanics acted to connect the uncertainty of micro level subatomic quantum interactions to the macro level of supposedly deterministic dynamics. This implied that unpredictable macro level systems could not be reduced or dissected to a point where their behavior would be deterministic. It also showed that supposedly deterministic systems contained elements of uncertainty. Prigogine and Stengers comment:

113Prigogine, 217.


115Krippendorff, “Ethics of Constructing Communication,” 70.
Since we can no longer simultaneously measure position and momentum in quantum theory, classical determinism is breaking down. This was believed to be of no importance for the description of macroscopic objects such as living systems. But the role of fluctuations in nonequilibrium systems shows that this is not the case. Randomness remains essential on the macroscopic level as well.\textsuperscript{116}

The realization that quantum phenomenon extends into the macro realm of physical dynamics certainly devalues any notion that social interactions (which represent much more complex phenomenon than most physical interactions) are at base deterministic or directly predictable.

Quantum theory also offers that there are restrictions to what can be known through empiricism. In that the process of observation effects the observed in quantum physics, a self-referential loop is recognized in the research process: observing the observed through processes of matter or energy necessarily limits the extent to which knowledge about matter or energy can be reduced. Similarly, as has been observed of communication studies, in as researchers are communicative beings observing communication through communication, there is a limit to what can be reduced about communication processes. As offered by Klaus Krippendorff in "An Epistemological Foundation for Communication":

Probably the most important consequence of regarding communication between the observers and the observed to flow both ways is that the properties of observers enter their domain of observation and render the established standards of objectivity and replicability unachievable.\textsuperscript{117}

The effect the researcher has on the act of observation can not be denied in social science. The Hawthorne study observed the effect of the research process on social groups. Yet situated within the drive towards grand theory, the Hawthorne study resulted more in defensive maneuvers to reduce researcher bias than it did to reformulate the fundamental metatheoretical goals of social science research.

As has been discussed, rationalism is employed to defend the deterministic paradigm in social science. Between philosophical conceptualization and the construction of empirical research procedures exists a process in which theory is formalized according to the rational logic of deterministic science. This rational logic is self sustaining in that it defines its own composition and denies that which exists outside its powers. The political and monetary motivations in social science which encourage this viewpoint can not be underestimated. The process of forging philosophical concepts into research variables is known as operationalization. Operationalization involves the researcher constructing a definition of the universe in order to study it empirically; it involves making theoretical distinctions and relations between and amongst phenomenon in order to design research.

Rationalism is intrinsic to the process of operationalizing theoretical concepts. Through operationalization, social scientific research assumes the ability to group general phenomenon of a similar type under abstract variables. Useful in examining patterns in physical phenomenon, this ethic applied to social research leads often to misleading, simplified abstractions of social processes. Hubert M. Blalock, remarks in Methodology For Social Science Research that "it is because of problems involved in replication that the social scientist has special difficulties in resolving the differential between his theoretical and operational languages."\textsuperscript{118} This difficulty involves the conflict between the immutable, empirical conclusiveness traditionally associated with operational language versus the philosophical, nominative indistinctness associated with theoretical language. In formally codifying social concepts, the relative, serendipitous, and multi-layered meanings undergirding social existence are forged into physical reality. Society is made into a fundamental 'space' which researchers are presumed to uncover, to map as a steady geography.

\textsuperscript{116} Prigogine, 178-9.

\textsuperscript{117} Klaus Krippendorff, "An Epistemological Foundation for Communication," Journal of Communication. 34 (Summer 84): 23.

\textsuperscript{118} Hubert M. Blalock, Methodology For Social Science Research, (New York: McGraw Hill, 1968), 17. (italics Blalock's)
Relativity raised a different view of space, a view where perspective is tantamount to identity and in which ideal states of position or motion have no absolute relevance. In quantum theory too, the Newtonian concept of space as causal, linear, and deterministic was challenged. The process of inquiry itself was asserted as entering into the material under study. Such concepts caused a revolution in the physical sciences. However, among the experimental social sciences, the suggestion of 'cultural relativism' or 'viewer created realities' largely were met with a casual indifference or outright skepticism. At base, it might be said that there was a certain fear that a lack of fundamental processes would lead to a decay of disciplinary boundaries among the social sciences. In having gained a measure of respect through the employment of statistical research and survey analysis, social science disciplines, mainstream communication research in particular, were reluctant to part with these formal methods.

When there is no 'right' or 'true' answer in social inquiry, rational constructions have the potential to justify conflicting theoretical propositions equally. This is a danger under the deterministic paradigm, which does not easily permit conflicting results. Under the new paradigm, this is the possibility of a new metatheoretical framework for research. As has been asserted here, a lack of a fundamental perspectives does not mean that sytematization has to be sacrificed in research. If research is allowed to explore concepts and social meaning from a number of perspectives, research can be seen as less a formal calculus and more a language: evolving, multi-layered, and dedicated to exploration over cartography. Time as well becomes largely abstracted and divorced from issues of human context and meaning in the process of operationalization. Time in closed physical systems (such as in ideal Newtonian celestial mechanics) can be regarded as linear and static. The positivistic vision of humans is that people are physical objects moving, interacting, and reacting in fundamental spaces measured according to universal notions of time. The corollary in a deterministic view of communication is that the process of communication is merely a sender transmitting a message to a receiver with some effect occurring (i.e.: as in an object sending an object or energy to an object with some physical reaction occurring). The variables are steady and reactions are assumed to be directly causal. Time in this view can be deterministically traced forwards or backwards by observing the causal, lawlike interaction of physical objects (where, in experimental social research, operationalized variables such as happiness and social relationships such as communicative acts become physicalized as well).

According to the advance of thermodynamics, time is an irreversible process of change. Communication when viewed in this context becomes a process of transformation, rather than a causal, mechanical action. As Prigogine and Stengers comment, "Communication and irreversibility are closely related. Communication is at the base of what probably is the most irreversible process accessible to the human mind, the progressive increase of knowledge." Relativity also proposes that the process of communication is much more complex than portrayed by determinism. In a relativistic view of time, the problem of memory, history, prediction and foresight complicate intrinsically any attempt to achieve a deterministic interpretation of social systems.

Quantum theory proposes also that micro phenomenon do not behave constantly in linear time, but rather behave intermittently through time according to probabilistic criteria. Similarly, social participation in time can be static at times (involving merely the present) or complex and compacted (involving the invocation of memory, history, or abstract references to the future). In assessing humans as a complex of meaning relevant in uniquely subjective terms, time can not be so easily simplified as a linear variable. The Newtonian scientific perspective of causality when applied to humans breaks down as humans are information storing beings that to some degree anticipate and reformulate action and thought according to memory / information storage. Such a process is inherently complex and chaotic / imprecise, and therefore unpredictable. In the study of communication, the problem of time as a complex variable of meaning which involves context, perspective, and history / memory can not be ignored. Krippendorff comments:

119Prigogine, 295.
When communication is present, one should expect that the individuals comprising a social group are at least sometimes influenced in their behavior by what other group members did in the past, so that the joint trajectory of behavior, for example, the course of conversation, is influenced if not determined by more than one communicator at different points in time. If television is a medium of communication - and I have no doubt that it is - then one should expect that the information presented on the screen should at least sometimes be absorbed and transformed by its audience so that its current behavior cannot be explained in full without considering to what it was exposed in the past. The study of communication cannot stop at describing what is said or how something is represented but also must consider the consequences of transmitting information, how it is utilized, what becomes of it, which changes are affected or prevented. If the time dimension is omitted from analysis, then the process character of communication is lost. If references to sender and receiver are omitted in the data, then the mediating character of communication cannot be analyzed.121

Time when made into causal space under the Newtonian paradigm is ignored as a variable with direct research relevance (as it is irrelevant in being uniform and linear). The Newtonian view of time is of objects moving steadily in causal reactions through space. Such a notion inherently ignores the concept of meaning as a project which both transcends and transforms time. Time in the relative sense must be thought of as a crucial variable of transformation which defines social relationships as inherently complex, chaotic, and unpredictable.

The codification of social meaning in terms of geographic space and linear time reflects the liberty assumed by Newtonian physics (historically based on the closed system of celestial mechanics) which asserts that from systematic observation, steady, lawlike relations can be determined among physical phenomenon. In Newton's view (as well as Descartes' and Comte's) both space and time are seen as fundamental quantities separate from meaning, the mind, and society. When these steady, empirical Newtonian views are applied to social inquiry, the spaces in which people live (i.e.: their relative perspective) and their context in time (i.e.: memory, history, future reflection) have no bearing on inquiry. However, in the modern age, physics itself has outgrown such a notion of fundamentalism through new understandings of how relativity and perspective, as well as complexity and unpredictability, play a crucial role in even simple physical phenomenon. For time and space to be so simplified in social science research distorts the inherent complexity of social phenomenon.

3.3. Thermodynamics and Non-linear Dynamics: Towards a Systemic Concept of Irreversibility and Interconnection

Dynamics encompasses the scientific study of force and the forces affecting motion. In using empiricism to study social interaction as a form of physical interaction, experimental social science has been influenced by the methods and concepts of dynamics. Newton's vision of dynamics portrayed natural objects as interacting in a causal, linear, and lawlike manner. Time, as simply the context for causal events, was reversible and linear: it could be traced back perfectly or predicted into the future but for the correct methods of observation. Quantum physics in particular suggested a universe in which time and space were not as 'mechanical' as previously thought. Space was relative to perspective and time was seen as being dependent on situational events.

Thermodynamics stands as another important advance in physics which disagreed with the Newtonian view. Thermodynamics, the study of the behavior of heat, is historically based in the macro-level study of physical systems. In 1811 Baron Jean-Joseph Fourier (1768-1830) proposed a description of the propagation of heat in solids. His theory observed merely that heat flow is proportional to the gradient of temperature. This observation was significant in two respects: it observed dynamics in a macroscopic context (i.e.: large scale and systemic), and it offered that energy changes in physical states were irreversible (i.e.: they could not, given the correct influences, be returned to their exact original conditions). Contrary to the drive of determinism towards atomic level studies of dynamic interactions,

thermodynamics proposed a valid theoretical structure for studying physical systems without reference to micro-level phenomenon (atomic level physics).

The study of thermodynamics has resulted in three laws, which, roughly stated, are that: 1) the sum of the internal energy of a system is changed by the work done on a system and the heat absorbed by it, 2) entropy (the measurement of chaos, randomness, or disorder in a system) tends to naturally increase in closed systems and changes at a constant rate in systems absorbing heat, 3) as temperature reduces to absolute zero, entropy reduces to a constant value. The larger implication of these laws is that the universe, as a closed system itself, is running down in a constant process of entropic decay. These observations have produced a field studying macro-level energy dynamics which refers to physics in terms of exchanges of energy, statistical behavior, and energy as a measurement of irreversible change (which significantly asserts that time is non-linear). Today thermodynamics is found in studies of statistical mechanics (a field of large-scale dynamical inquiry which views interactions as probabilistic, as opposed to lawlike) and quantum thermodynamics (a subatomic level theory of energy exchanges).

Thermodynamics is significant to a paradigmatic shift away from Newtonian dynamics in that it sees the world in terms of statistical energy exchanges, not as a collection of deterministic laws. In this sense, change is a constant process which can not be traced directly backwards or be predicted into the future with accuracy beyond a certain threshold. Prigogine and Stengers comment:

The principles of thermodynamics were new laws forming the basis of a new science that could not be reduced to traditional physics. Both the qualitative diversity of energy and its tendency toward dissipation had to be accepted as new axioms. This was the argument of the 'energeticists' as opposed to the 'atomists,' who refused to abandon what they considered to be the essential mission of physics - to reduce the complexity of natural phenomenon to the simplicity of elementary behavior expressed by the laws of motion.\(^{122}\)

Thermodynamics offered a view of the universe which departed from determinism. With later advances, such as those made by Prigogine and Stengers, the advances of thermodynamics were developed into a realization that time is irreversible, not mechanical and linear.\(^{123}\) This also implied that natural interactions were constantly involved in complex processes of change and evolution. Thermodynamics acted to show that physical systems are more so characterized by complexity and uncertainty than they are by determinism and mechanical action. The concept of irreversibility, as tied to complexity, proposed that there was a boundary beyond which causal investigation was useless:

Thermodynamics remains the science of complex systems; but, from this perspective, the only specific feature of complex systems is that our knowledge of them is limited and that our uncertainty increases with time. Instead of recognizing in irreversibility something that links nature to the observer, the scientist is compelled to admit that nature merely mirrors his ignorance. Nature is silent; irreversibility, far from rooting us in the physical world, is merely the echo of human endeavor and of its limits.\(^{124}\)

Again, as in relativity and quantum theory, there comes an understanding that scientific investigation is limited by the very nature of human observation and knowledge. Such a view resembles more closely the limitations that have been revealed concerning social science: a field limited in its study of complex phenomenon by the fact that observation itself is a social / human process. In suggesting that scientific study can involve statistical, irreversible, evolutionary observations of systems, thermodynamics as a paradigmatic view approaches more closely characteristics typically observed in social systems.

\(^{122}\)Prigogine, 122.

\(^{123}\)Alvin Toffler. foreword. to Order Out of Chaos, by Ilya Prigogine and Isabelle Stengers (New York: Bantam Books, 1984), xii.

\(^{124}\)Prigogine, 239.
The stumbling block in applying thermodynamics as a method or metaphor for the study of social meaning, information exchange, or communication is the idea of entropy as being a constant and inexorable process of decay. The very fact of biological life observes that macro level systems are capable of constantly processing energy and matter to maintain stability and even growth:

A living organism is a self-organizing system; that is, its order in structure and function is not imposed by the environment but is established by the system itself. Self-organizing systems exhibit a certain degree of autonomy; for example, independent of environmental influences, they tend to establish their size according to internal principles of organization. But living systems are not isolated from their environment; on the contrary, they interact with it continually, although this interaction does not determine their organization.125

A theory of physical or energy processes thus must account for the capacity of life (as well as meaning) to maintain self-organization while in some way referring to the universe of entropic decay. In this sense, although thermodynamics advances a concept of complexity and change, it ignores larger issues of stability, regularity, and organization which life, as well as information, constantly displays. Information theory, as originally proposed in 1948 by Claude Shannon, drew from thermodynamics in proposing that information itself is remarkable for the fact that it consciously works against entropy. In this concept, information and communication can be studied in that they statistically work to maintain stability and structure (within their own social frames of reference). Psychologists, linguists, and communication engineers have used this concept to advance studies of cognition as well as of technical communication. However, with the observation that information and communication constantly maintain structure and order against chaos, deterministic concepts of linearity and lawlike mechanics potentially return to explain social meaning.

The second major theory to be viewed in this section is the study of non-linear dynamics, popularly known as chaos theory or chaos science. Non-linear dynamics finds its roots in an attempt by physicists to understand the existence of stable and complex systemic structures (such as life and information) in the face of the second law of thermodynamics, which states that all energy is constantly moving from a higher to a lower state, towards dissipation in heat and the ultimate decomposition of the universe. Through non-linear dynamics, scientists have attempted to explain how complex systems have the capacity to channel energy in efficient and constructive ways against the flow of entropy.

This new theoretical and quantitative system for viewing the world takes a systems perspective in observing physical interactions. Chaos science believes that the dynamic exchanges of energy and matter between complex systems of differing types entails chaotic and unpredictable phenomenon. However, chaos also believes that there is a recognizable general pattern existent in the apparent randomness that occurs when systems interact in a complex way. That is, although the behavior of dynamic interacting systems evidences chaotic phenomenon, general regularities exist in the way that the united systems express coordinating behavior. These patterns are recognizable as 'strange attractors,' or general locus points around which the behavior of a system operates. These are the limiting centers of an operating dynamic system. The way the system expresses its behavior around the 'strange attractor' is heavily dependent on the initial conditions under which the interacting system was set up. This is known as a 'sensitive reliance on initial conditions.' However, chaos theory states that all the possible variables existing at the outset of a system forming can not be detected as this would involve a exhaustive characterization of all particles and energies involved.

The larger implication of non-linear dynamics (and a partial explanation for complex organized systems such as life) is that complex physical systems in a state of rapid energy movement, in turbulence, have a tendency towards 'self-organization.' That is, systems channeling large amounts of energy, be they kinetic, thermal, chemical, or even informational, tend to spontaneously develop complex organized structures, 'dissipative structures,' for channeling energy outwards (out of the system). These structures potentially allow a chaotic system with a high level of entropy to spontaneously develop into complex stable systems which exhibit pattern and regularity. Determining the stable nature of such systems from their initial turbulence is impossible until the system actually settles into a stable pattern.

125 Capra, 140.
The nature of the stable pattern is ‘sensitively reliant’ on the exact initial conditions of the system as it emerges into order. That is, the exact, micro-level conditions prevailing at the outset of the formation of a stable system ultimately can have profound effects on future behavior (i.e.: a subtle characteristic in the initial formation of a system can later become a profound flaw which leads to the decomposition of the system). However, measuring the exact conditions of a complex dynamical system at any moment is regarded as impossible in chaos theory (as is any long-term prediction of dynamical progressions). The significance of micro-level states extends down to the barrier of quantum indeterminacy.

A system channeling energy in far-from-equilibrium conditions is unpredictable and chaotic in its long term variations, but the system as a whole has a definite character constrained by the nature of a ‘strange attractor’: a mean steady state value situated in phase space. A dynamical system in a state of non-equilibrium or ‘chaos’ fluctuates in a steady pattern within the character of the strange attractor. In this sense, phase space as a whole represents all the possible behaviors of a chaotic system, but over a period of time the strange attractor represents the actual characteristic behavior of the system. The attractor thus acts as a variable of stability, constraining the action of a system to a characteristic behavioral trajectory in phase space. Deviations from this attractor mean are temporary, unusual, and return to (are ‘attracted’ to) the central attractor locus.

The significance of non-equilibrium theory is marked by the fact that even simple physical and energy systems display a strange attractor at some level of analysis. Some micro level phenomenon reveal chaos at macro levels, and vice versa. As long as a certain amount of dimensions are encoded into phase space, an attractor can be detected. Such an observation indicates that non-linear systems play an essential role in the great majority of natural phenomenon. According to non-linear physics, this implies that the seeming macro stability of nature thus is the result of non-linear systems embedded in deeper micro systems (as well as potentially existing between and among macro systems). Equilibrium systems of complex organization themselves can be seen as dissipative structures (structures of energy transference) in the grand universal flow of entropy and negentropy (entropy reversing to order). The implication is that to some extent all dynamical behavior refers to states of complexity and chaos at some level. This includes reference to social and communicative systems, where both psychological and social levels of organization have the potential to display order as well as chaos (disorder and randomness). At some level, all social structure ultimately refers to a state where meaning is uncertain, in a state of flow, turbulence, or transition, and therefore can not be determined with certainty.

Two main streams of nonequilibrium theory are apparent: 1) dynamic systems theory, a strict mathematical system of dynamics in physical systems, understood and used exclusively by mathematical experts, and 2) non-linear dynamics theory, a more general theory of systems dynamics, espoused by specialists and generalists alike in a growing variety of disciplines. The first area of chaos science is a precise, quantitative study of dynamics and dynamic systems. The applications are for the most part

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> The strange attractor lives in phase space, one of the most powerful inventions of modern science. Phase space gives a way of turning numbers into pictures, abstracting every bit of essential information from a system of moving parts, mechanical or fluid, and making a flexible road map to all its possibilities. . . . In phase space the complete state of knowledge about a dynamical system at a single instant in time collapses to a point. That point is the dynamical system at that instant. At the next instant, though, the system will have changed, ever so slightly, and so the point moves. The history of the system time can be charted by the moving point, tracing its orbit through phase space with the passage of time.

127 Krippendorff, “Epistemological Foundation,” 27. Here Krippendorff comments on the reflexive nature of communication, displaying communication systems as having ‘strange attractor’ aspects:

> from the point of view of our epistemological unity, observation is not a one-way process but more like a dialogue between the parts of a system that may alternate in assuming the roles of observer and observed and that may become enganged in a conceivably unending sequence of drawing distinctions and formulating relations. From the general theory of a system's equilibria, we know that such circular processes are likely to converge toward a state in which changes become negligible or absent. At that point observers are in harmony with what they believe they observe - which may be nothing but themselves. The state toward which the process of observation converges (i.e., the eigenvalue of the epistemological unity) could be called understanding, but nothing is inherently special about it.
currently in the 'hard' sciences, physics and chemistry. However, the analysis of physical turbulence, structural breakdown, and vibration in dynamic systems theory finds common ground with non-linear dynamics in the use of dynamic systems mathematics.

The fundamental premise of the mathematical analysis of non-linear physical systems is that interacting systems have a 'complex' relationship. That is, interacting systems involve codependent variables which produce unpredictable behaviors. However, interacting systems also exhibit spontaneous order or organization through the complex interaction of chaotic elements (as previously discussed of the spontaneous generation of order from turbulence). Such unified systems exhibit pattern and can be predicted in terms of the general outputs of the system and the behavioral stability of the system. They also have the potential for spontaneous revolutionary change when 'bifurcations' (rapid splits in the behavior of the system) in the rhythms and periods of the system dynamics appear.

Currently chaos science is used mainly to examine dynamic material and energy systems for practical analysis. However, in fields such as those of economics and sociology, chaos theory is beginning to be used to describe the flow of information inherent in dynamic symbolic systems. Chaos science is recognizing that it can deal with symbolic information within dynamic systems as well as it can with matter and energy (in as communication can be regarded as a form of energy exchange). Hal Gregersen and Lee Sailer comment in "Chaos Theory and Its Implications for Social Science Research":

chaos theory shows how it is possible for nearly identical entities embedded in identical environments to exhibit radically different behaviors, even when the underlying systems are extremely simple and completely deterministic. Furthermore, chaos theory arguments are general enough to apply to any type of entity, including individuals, groups, and organizations, and therefore they are relevant to a large domain of social science problems.128

The implication here is that chaos science has much promise as a methodological and metaphoric tool in the field of communication studies. Chaos science holds the promise of being able to offer both a quantitative and a theoretical (qualitative) way of characterizing the flow of symbolic information in human communicative systems.

As was observed here of previous scientific and social scientific growth, the appearance of chaos science can be perceived as a development of research methods and technology. For example, the advent and growth of mass communication research beyond the 'mass' and into more detailed groups of social complexity occurred partly as the result of improved quantitative and qualitative social science research methods. Computers in particular have played a central role in the expansion of scientific inquiry beyond linear, Newtonian understandings of dynamic systems.129 The advent of computers and their capacity for swift, exact mathematical analysis has opened another layer of detail in our understanding of the world. Chaos theory itself largely came about as the result of examining and re-examining regular, linear equations within complex, repeating formulas.

The meteorologist Edward Lorenz is credited with the use of the computer to uncover chaotic systems behavior in his exploration of long-term weather forecasting. It was his hope that through cycling detailed variables in computer weather simulations, long-term predictions of weather patterns could be determined. However, continuing examination produced odd results. It was found that by rounding or slightly shifting a single variable by very small degrees of accuracy in the original equation, large variations in projected behavior could occur in the long run. This led to the observation of chaos science known as 'sensitive reliance on initial conditions.' This indicated that slight variations in the exact measured quantities used in the initial composition of a system (or in the composition of a simulation of a system) had profound effects on the projected behavior. The inherent limitations of measurement in atmospheric phenomenon suggested that because of this sensitivity, completely accurate long-term weather prediction would never be feasible. Further, at points of sensitivity, points of transition, weather patterns showed a sensitivity to even micro-level phenomenon. This concept is illustrated through the notion of the 'butterfly effect,' which proposes that at crucial moments when the atmosphere is at a

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; Esther Dyson, "Physics for Economists," Forbes, 16 October 1989, 266.
sensitive point between different future possibilities, even the flap of a butterfly's wing could have altering
effects that would magnify and ultimately change the course of a hurricane.

The purely mathematical investigation of chaotic phenomenon has also revealed the importance
of initial conditions in influencing systems behavior. In 1975, Cornell university physicist Mitchell
Feigenbaum became interested in the phenomenon of chaotic dynamics after hearing a lecture by the
physicist Steve Smale. Inspired, he began feeding in a set of differential equations into a calculator in
order to explore the mathematical transition from an equilibrium state into a chaotic state. The equations
went through an expected process of ‘period doubling,’ in which a steady state breaks into two
independent states and then breaks again faster and faster until the system becomes a jumble of
possibilities without organization. Feigenbaum set to exploring the quantitative nature of this movement
from steady to chaotic states. Here he discovered a startling phenomenon: the rate of period doubling
displayed a hidden constant ratio. This indicated that there was a geometric convergence inherent in the
process of period doubling: there was a pattern hidden in what on the surface appeared to be totally
random behavior.130

Most importantly, Feigenbaum discovered that the transition to and from chaos was numerically
identical amongst any set of equations examining the movement between order and chaos. The
revolutionary meaning of this was that the individual systems being described in chaos transitions
numerically were irrelevant. When order appeared out of a chaos, the ordered system forgot completely
the attributes of the turbulent phase. Organization emerged when the mathematical constant was
reached, and its personality was based on the initial conditions surrounding its emergence, not on the
character of any previous system. Feigenbaum explained the relevance of this discovery:

The whole tradition of physics is that you isolate the mechanisms and then all the rest flows.
That's completely falling apart. Here you know the right equations but they're just not helpful.
You add up all the microscopic pieces and you find that you cannot extend them to the long term.
They're not what's important in the problem. It completely changes what it means to know
something.131

The project of investigation which involved breaking a system into components and describing it as a
machine wasn't valid under the understanding thinkers such as Feigenbaum uncovered in non-linear
dynamics. Feigenbaum adds: "It's not an academic question any more to ask what's going to happen to a
cloud."132 The process of trying to look at as many parts of the cloud as possible and then feeding the
results into a computer in hopes of predicting its behavior is unrealistic.

Similarly, the hope of trying to understand social dynamics, for example the effects of a certain
television show on a social group, through breaking down component variables (persons, attitudes,
behaviors, etc.) and searching for correlations of effects, is equally hopeless in trying to achieve any type
of deep understanding. Mass communication in particular complicates the notion of linear processes of
effects. Mark Bryant comments at length on the non-linear nature of the mass communication process:

The transmission of any message is non-linear with respect to the inherent limitations of the
communication by means of a technological medium over space and time. The sensory
attenuation, the lack of physical proximity and the consequent artificiality of feedback channels,
and the intent of communicating to large numbers of people at once may have definite effects
upon the content, intent, and means of coding the message in the power of transmission. The
transmission of any message is furthermore non-linear with respect to its functional relationships
within the social organization. Because of the wide variability in configuration among social
organizations, because of the consequent variation in the configuration of the social support

130David Loye, and Raine Eisler, “Chaos and Transformation: Implications of Nonequilibrium Theory for Social Science

131Gleick, 174.

132Gleick, 186.
systems for the mass communications medium, and because of the wide variety of uses to which the transmission of message by means of the mass media is put, there cannot be said to be any linear throughput (sic) of information. The message is subject to considerable pre-selection, interpretation, and modulation as a result of the competing, conflicting, and cooperating interests within and without the mass communications system itself.¹³³

Mass communication in this interpretation can be seen as a system that inherently involves non-linear processes. Chaos science thus appears as an important tool with which to examine the passage, mediation, and turbulent flow of media messages. In that social systems are constantly affected by such messages, an examination of this type appears crucial. Predictive and deterministic effects research no longer appears as an academic question in the new paradigm.

The point observed by non-linear dynamics is that every structure in a complex system, be it 'micro' or 'macro' in nature, potentially can radically alter the behavior of a system at points of turbulence or disorder when the system is reorganizing into a new pattern of behavior.¹³⁴ Likewise, although micro level variations may be negligible in the short term, in the long term, turbulence and breakdown can arise from very small actions. Kenyon DeGreene expands on the relevance of this phenomenon to the behavior of social systems:

Near critical points or regions, this susceptibility is particularly strong. Short-term turbulence can be part of long-term evolution toward new structure. Especially during times of societal or ecological transition or transformation, perturbation of the environment by human actions may lead to the development of new pockets of order, or new autonomous systems, in the environment.¹³⁵

Although much older than studies of non-linear dynamics, the adage 'for want of a nail . . . the kingdom was lost' speaks to the potentially crucial importance of small events. The exact position and behavior of a system at the moment it becomes a system and at every point after that, the precise and exact reality of every component in the system and its interrelation with every other component, uniquely effects the long term behavior of the system. Initial values sampled from a complex system then have profound and continuing effects on the theoretical projection of that system. The project of modeling for prediction is thus bound inherently by the intrinsic limitations of observation.

The problem is that measurement can never be detailed enough to reduce to the mythical fundamental micro level sought by determinism (be it cellular, atomic, or subatomic, individual or psychological in terms of social systems) where all initial variables of a system can be captured. Lorenz realized this, that even if one had an immense computer calculating the interaction of weather variables taken from sensors placed within every square foot in the atmosphere, long term prediction would be frustrated by micro-level variations occurring between the sensors. Murray Gell-Mann comments in The Quark and the Jaguar:

Exactly where a given storm system will pass and when it will drop rain may be arbitrarily sensitive to the details of winds and of the position and physical state of clouds a few days or even a few hours earlier. The slightest imprecision in the meteorologist's knowledge of those data can render a prediction of tomorrow's weather useless for planning a company picnic. Since nothing can ever be measured with perfect accuracy, chaos gives rise to effective indeterminacy at the classical level over and above the indeterminacy in principle of quantum mechanics.¹³⁶

¹³³Bryant, 119.


Classical determinism aspires to the hope that the continuing behavior of the physical world can be characterized by detailed micro-level understandings of systems, that reduction will lead to a characterization of the way each variable in a system mechanically coordinates with every other variable. This hope survives in social science research and mainstream communication effects research. Under the deterministic paradigm, when social investigation reveals that similar systems produce widely different behavior, it is typically assumed that some oversight in investigation has occurred. As Gregersen and Sailer comment:

When entities with similar starting points and environments end up behaving differently, social scientists customarily conclude that they have omitted some important variables, that their measurement is too rough, or that the random or stochastic part of the problem has overwhelmed the patterned part. To improve the research, they try harder to eliminate these three problems in subsequent studies . . . if the relevant states are near the boundary between diverging and nondiverging parts of a chaotic system, the accuracy of such statistical models could be spuriously low. Even if hundreds of very similar entities all diverge, another hundred with nearly identical profiles might not, since the underlying causal laws themselves produce discontinuous behavior.137

Social science models under the frame of causal determinism have little capacity to incorporate chaotic phenomenon. The goal of mechanistic modeling presupposes that all phenomenon can be reduced to directly causal, and thus predictable, elements.

Chaos theory proposes that such goals are fruitless, that the best that can be hoped for is to characterize the possible and probable behavioral patterns of a system based on the analysis of stable attractors. For social science, such a simple yet important distinction takes the burden of long term prediction away. In mass communication studies, one thus can concentrate more fully on examining the regularities and patterns inherent in media effects. Discovering general trends (a process more akin to weather prediction) should be the goal of communication research instead of attempting to determine how specific forms of content are going to alter the long term behavior of broad communities; such a goal is a complex project doomed to failing as much as is attempting to understand the long term behavior of a river based on samples from a single current.

Advances in understanding complex structures through non-linear physics will change not only the process of understanding non-linear systems such as clouds or society, but will alter the objectives and goals of knowing. Chaos science demonstrates that complex systems involved in change and transformation have patterns in their general behavior, but are ultimately unpredictable in the long-term due to the constant 'zeroing' of systems in that they involve chaotic structures. Society at the micro level is filled with such transformations. At the psychological level, decisions from individuals are resolved from an incalculable coagulation of sensory data, memory, mood, and mindset, all of which are often quite explicitly momentary in specific physical and social situations. From this state of individual uncertainty, the daily business of society is shaped. Gatekeeping research is one theory which points out the importance of micro level decision makers in macro level processes. Institutions, governments, organizations, corporations all entail ranges of activity, yet within these steady 'strange-attractors,' long-term fluctuations and dynamics can not be ascertained with any amount of conclusive certainty from one moment to the next.

The tradition of the Newtonian scientific method (aspiring to micro level causal characterizations of mechano-physical dynamics) is proving to be a misleading project when applied to many common 'real world' systems in the process of change and variation. More important for apprehending many of the complex systems that occur in the natural world is an understanding of process, transformation, and the nature and behavior of energy (and informational) exchanges. Feigenbaum notes that of greater significance than a cataloguing of the individual parts of a system is an increased understanding of what he terms ‘scaling structures’ - the methods through which large parts of systems relate to smaller

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137 Gregersen, 793-4.
parts. These structures exist in order to channel energy between micro and macro layers of a system in far-from-equilibrium conditions, in states of chaos.

The Belgian physicist Prigogine has centered his studies on understandings of nonequilibrium states which involve combinations of entropy and negentropy (a process by which energy is built up rather than dissipated). His research offers a synthesis between quantum and thermodynamic understandings of physical systems, which helps to explain how stable self-organizing systems exist in the entropic universe. He offers the observation that ‘dissipative structures’ (systemic structures that act to channel energy away from a physical or energetic system), the process of nucleation, feedback loops (processes where systemic actions are reflected back to the system), and mutual-influences through ‘cross-catalysis’ (the process of internal feedback in the form of energy exchanges) all act to form patterned complex structures in chaotic systems. Imagine as a metaphor for a ‘non-linear’ view of systems dynamics the rapids of a river: fluid is in a state of turbulence, rushing randomly in eddies, whirlpools, rivulets, and choppy waves. If one were to place a small raft in the water, it would not be possible to predict its final destination with any type of accuracy. Sending a number of rafts down the river likely would produce a number of random results. Predicting the outcome of the boats would be impossible because of the way in which small variations in the river, tiny currents, could send the boat off into a completely different set of interactions on the other side of the river. However, one could begin to gain a short term understanding of how micro-structures will immediately effect the boat. One could also begin to understand how the river generally channels energy downstream through different types of micro-structure patterns. David Loye and Raine Eisler comment in "Chaos and Transformation: Implications of Nonequilibrium Theory for Social Science and Society":

While natural scientific ‘chaos’ study has uncovered specific limits for predictability during chaotic or maximally transitional states, it is also discovering new possibilities for improving forecasting within these limits by identifying patterns that foreshadow either impending chaos or potential order out of chaos. This capacity suggests how world problems may be alleviated by using such theory to develop far more effective ‘early warning systems’ for identifying impending food, financial, political, and environmental crises. Even more important, it indicates the potential, now so generally lacking, for identifying productive routes out of such crises.

It is important to note that once a system emerges from a chaotic phase into an ordered one, prediction and patterns can be observed from the formation of a strange attractor. As in the boat example, at the point when the boat emerges from turbulent rapids into a steady current, it emerges into a certain pattern

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138Gleick, 186.
139Prigogine, 187. As Prigogine and Stengers comment here on the significance of nucleation size and dissipative structures in their studies on the micro-level formation of particles:

theoretical studies and numerical simulations show that the critical nucleus size increases with the efficacy of the diffusion mechanisms that link all the regions of systems. In other words, the faster communication takes place within a system, the greater the percentage of unsuccessful fluctuations and thus the more stable the system. This aspect of the critical-size problem means that in such situations the ‘outside world,’ the environment of the fluctuating region, always tends to damp fluctuations. These will be destroyed or amplified according to the effectiveness of the communication between the fluctuating region and the outside world. The critical size is thus determined by the competition between the system’s ‘integrative power’ and the chemical mechanisms amplifying the fluctuation.

Employing this metaphor in a social communication vein, the stability of communicative systems or social groups depends on the degree to which they are in contact with a larger, dampening sphere of social structure. Mass communication which communicates rapidly and prolifically with its social environment can often be seen as stable (i.e.: careful, accepted). Mass communication which is insulated in its own concepts and information is unstable: it has the potential to be revolutionary, but more frequently ‘decomposes’ in that is seen as strange, reactionary, or disconnected.

140Loye, 55; Prigogine, 187.
141Loye, 57.
of behavior that will influence its future course. The short-term path through the river can be understood probabilistically at this point through an understanding of its strange attractor pattern.

The study of non-linear dynamics advances beyond the Newtonian paradigm in a number of ways. The proposition that physical states inherently involve aspects of turbulence and unpredictability is significant. As with relativity and quantum physics, a boundary of human knowledge is asserted, as is a perspective on how to better characterize system dynamics. Commenting on the implications of this science of interconnection, T. R. Young in "Chaos and Social Change: Metaphysics of the Postmodern" states:

The findings of Chaos research alters, irrevocably, the mission of science; rather than a quest for universal laws yielding prediction, uniformity, certainty and stability of findings; Chaos theory elevates variation, change, surprise and unpredictability to the center of the knowledge process. Chaos ushers in a new era in the knowledge process in which human choice between iterations and between equilibrium states preempts the method of successive approximations and the quest for grand theory.142

Chaos science or non-linear dynamics takes its origin from a recognition among a variety of scientific disciplines that the language of Newtonian determinism is invalid in describing physical systems undergoing change. It also recognizes that, at some level, change and the processes of change are much more endemic to the natural world than those of stability. Social science stands to benefit from this perspective in that at some level even stable social phenomenon inherently involves aspects of conflict, uncertainty, transformation, negotiation, and / or turbulence. Chaos provides the tools with which to analyze these processes.

The heir of increasingly developed understandings of complex systems is the same poor sibling of science debilitated by positivistic fundamentalism: the social sciences. Because social phenomenon does not fully coordinate with the linear determinism of the scientific method, much of the complexity, unpredictability, and richness encountered in social systems is ignored as error, bias, or deviance. However, in the new paradigm of perspective, non-linear processes, and deep complexity, the intricate flow of social exchange can be more clearly understood as a species of dynamic interlocking systems behavior. As Young states:

Since chaos research decenters determinism, certainty, coherence, and order from their primacy in science, it is, thus, most compatible with the logics and stances of postmodern art, music, drama, politics, religion and other human activity including sociology and social science generally.143

Chaos allows social science to better incorporate the vagaries of human behavior into quantitative and empirical methods of inquiry. Loye and Eisler offer several potential benefits of non-equilibrium theory to social science:

1. **Benefits of improved forecasting.** whereas an increased understanding of chaotic systems can suggest treatment for chaotic social breakdown as well as preventative measures for increasing social stability
2. **Benefits of improved interventional guides.** whereas the ability to synthesize a vast amount of complex interacting data into non-linear equations and graphs can be a useful tool in analyzing where best to intervene in social chaos
2. **Benefits of participatory rather than authoritarian problem solutions.** whereas an understanding of 'deep structure' can aid in long term, more integrative planning which


incorporates the non-expert members of a population undergoing chaotic breakdown as an active rather than passive agent in reorganization.

3. Benefits of providing a clearer sense of system goal states or prohuman images of the future. whereas the methods and philosophies behind chaos theory can provide a fresh, more integrative, prohuman outlook on the larger goals and self-image of humanity.

These general suggestions highlight how non-equilibrium theory or chaos science specifically addresses short-comings of social science that have traditionally been pointed out under the deterministic paradigm. In these ironic terms, it seems previous problems of social science have been criticisms from the perspective of positivistic science to the methodological short-comings of positivistic science as applied to social phenomenon. The Newtonian paradigm criticizes the Newtonian paradigm for being inadequate in assessing a subject outside its powers.

The promising methodological and analytical benefits of the chaos perspective in particular extend to the mass communication studies discipline. In any field of inquiry attempting to characterize the dynamics of human relationships, communication becomes a fundamental currency for describing social exchange. In a dynamic systems view of economics, psychology, sociology, and political science, communication stands as a fundamental attribute instead of the often indistinct specter haunting the methodological boundaries of these traditionally recognized academic fields. Presently, however, communication studies as a discipline, in particular among the social sciences, suffers from a lack of methodological unity stemming from a general disagreement concerning the definitional foundation of communication processes. Part of this difficulty lies in an uncertainty concerning how to correctly characterize phenomenon so pervasive that it is endemic in some respect to all social functioning. The notion of 'communication effects' appears as an expansive and vague concept with many possible definitions. However, linear science has little room for allowing multiple definitions and theories of communication. Communication studies, under the Newtonian paradigm, thus is in constant disagreement about what the significance of communication is, where communication originates, and what its effects are.

Within the systems perspective of chaos, the communication of information is observed loosely as the dynamic exchange of social meaning. In metaphorically and substantially viewing communication, the frame is systemic rather than mechanistic; the mode is energetic rather than physicalized. Communication can be seen as the basic process of human thought and action, the very form and method of expression for social and cultural behavior. The methodology of chaos science as an analytical and theoretical tool proposes a holistic conceptual foundation for examining dynamic, transforming processes of communication. With the advent of new paradigm concepts such as chaos theory as potentialy unifying systemic foundations for observing social interchange, communication studies stands to potentially inherit its rightful place as a more integral force in the social sciences.


As part of a new, more holistic paradigm in the process of becoming socially and institutionally acceptable, viewpoints such as that of chaos science are still gerrymandering across disciplinary boundaries originally formed under the mechanistic scientific regime. There is quite a deficit in overcoming a formalized system of theoretical organization still very much essential to the understanding of our world, but if aspects of the new paradigm as outlined here are truly a stronger paradigm, it will begin to reinterpret mechanistic views within its own language of change, process, and perspective. It will offer a conceptual system that encompasses and expands former, outmoded paradigms. The process has already begun.

A new understanding of change, transformation, and complexity is growing increasingly crucial to an expanding and diversifying world. Communication research in particular must respond not only to the rapid and turbulent expansion of communication technology, it also is faced with the need to apprehend

144 Loye, 57.
the larger context of transforming social, economic, political, cultural, and psychological loci. Krippendorff comments on the importance of incorporating understandings of change into communication research:

adequate theories of communication must account for a converging process in which properties, relations, and structures emerge rather than are fixed. The uncritical reliance on theories that depict or implicitly assume the world as essentially unchanging not only prohibits the scientific use of communication processes and technology as agents of social change, but also bars the development of an understanding of the dynamic changes that the very process sets in motion.145

The new paradigm offers methods and metaphors with which to examine processes of change and transformation, as well as their concomitant attributes of complexity and unpredictability.

A broad range of disciplines from the sciences to the humanities are participating in a transition from viewpoints patterned after mechanistic determinism to those more typical of non-linear systemic inquiry. Involved in this growth towards the new paradigm is the appearance of a number of theories which incorporate to varying degrees concepts of relativity, perspective, reflexivity, interconnection, irreversibility, and unpredictability. There has been a general trend in academics towards the employment of such interdisciplinary concepts and theoretical standpoints within and between existing disciplines. Viewpoints which deal with general issues of perspective, transformation, and complexity have applications to a range of disciplines.

This space can not offer an exhaustive display of theories and disciplinary advances which support the new paradigm vision. However, by example, three relatively recent interdisciplinary theoretical movements deserve to be mentioned for their relevance to communication research: cybernetics, cognitive science, and fuzzy set analysis. For one, cybernetics, the theoretical study of control processes in electronic, mechanical, biological, and informational systems, has a special connection to communication processes. Originated in 1948 by the American mathematician Norbert Weiner, this theoretical standpoint observes the capacity of integrated systems situated in cause-effect relationships to mutually effect each other through a process called feedback. This involves the output of a system reflecting back as a method of control or correction, as in the typical example of a thermostat being effected by the temperature changes it causes. This also may involve negative feedback, or unintended responses to actions, such as in how a low report of earnings from a company can lead to a plunge in stock values.

The implication of cybernetics is broadly relevant to systems which involve integrated or interconnected processes. Physiological systems, computer systems, robotic controls, political systems, cognitive patterns, and communication processes all have aspects of networked, mutually-effecting components. Klaus Krippendorff in particular is notable for espousing cybernetics as a model which reflects the nature of communication processes. He comments on the reflexive significance of applying cybernetics to study communication systems as cybernetic processes: "The application of cybernetics onto itself is producing a shift in the paradigm of scientific inquiry from ontology to epistemology and is likely to reorient our thinking about communication in fundamental ways."146 Communication processes are themselves feedback mechanisms which constantly adjust, transfer, and transform meaning within social systems at large.

In a broader sense, the very construction of communication theory can be seen as a self-reflexive process. Communication researchers are themselves situated in an environmental context which influences their thought. Krippendorff comments:

Like drawing a distinction, formulating a relation is the creative act of an observer. Although there is no reason to suppose that the relations chosen by an observer exist in reality, the resulting


146 Krippendorff, "Epistemological Foundation," 22.
formulation is not entirely synthetic. It is an observer's response to the environment's response to that observer's original distinction.147

Theory is the result of a researcher reflecting from a certain perspective to a certain problem that has been chosen according to influences of a larger social, cultural, and professional environment. Once a theory itself is broadcast through communication channels (i.e.: books, journals, conferences, popular press, etc.), it additionally has the potential to cause social 'feedback' or response to its observations. For instance, communication theory once reported has the potential not only to shape and effect future academic research, but also to cause change within media institutions themselves.

Systemic feedback in cybernetics raises the issue of interconnection and mutual effects. Phenomenon in dynamic, open systems is interconnected in complex and diverse ways to a broader environment. When a change occurs in one open system, this potentially has broad ranging effects on a number of other systems. The field of cognitive science for one has appeared as an interdisciplinary theory which observes the importance of concepts such as interconnection, networks of effect, and multiple possibilities / logics.

The field of cognitive science involves a cooperation of biophysics, psychology, and epistemology in order to examine problems of computer architecture, design, and programming. It is typical of the new paradigm outlook in assembling the perspectives of a number of disciplines in order to examine complex problems. This interdisciplinary outlook observes common relations between information processing and cognition in biological and mechanical systems. Complex computer functions can be enabled by emulating the interconnected action of networks of neurons in the mind. Similarly, the observation that the mind can break down and facilitate complex problems into easier steps through parallel processing has influenced computer design. Cognitive science has developed an understanding of how multiple logics, different methods for analyzing and processing problems, are used by the mind, and potentially by the computer, to investigate relationships in the outside world from a number of perspectives.

These interdisciplinary observations, as in cybernetics, have a systemic relevance beyond the scope of computer design. Cognitive science observes that there are general patterns through which information and meaning are facilitated in systems generally (i.e.: be they computers, the mind, communities, or a society). In this sense, the interdisciplinary investigation of information and communication carried out by such fields potentially can benefit communication research. For example, the idea of networks, interconnection, and mutual effects as processes of information transmission can metaphorically provide a method for investigating the passage of media messages in mass communication. Morris R. Cohen observes in "Reason in Social Science" the methodological difficulty and potential for viewing social systems as interconnected networks:

In general, social situations are networks in which one cannot change one factor without affecting a great many others. It is, therefore, difficult to determine the specific effects of any one factor. Moreover, social elements seldom admit of simple addition. The behavior of the same individuals in a large group will not in general be the same as their behavior in a smaller group. This makes it difficult to apply the mathematical methods which have proved so fruitful in the natural sciences. For these mathematical methods depend upon our ability to pass from a small number of instances to an indefinitely large number by the process of summation or integration.148

Under the old paradigm, it is difficult to examine social phenomenon in a loose, complex, and multivariate context. Under new paradigm views however, it is possible to analyze social systems as having multiple frames of reference. Parallel processing and the concept of multiple logics admits the possibility that messages indeed have multiple frames of meaning within different informational, social, or cultural enclaves. The investigation of mass communication from such perspectives thus admits concepts of complexity and relative meaning into theory and research.

147 Ibid., 25.

Fuzzy set theory appears as a final example of interdisciplinary theories and fields rising under the new paradigm. Fuzzy set theory, or fuzzy set analysis, appears as an outgrowth of mathematics which observes that logic can be indirect, indistinct, uncertain, or serendipitous, rather than continually linear and reductive. Multiple possibilities or logics are permitted in viewing a central topic or set. The typical concept of a set has distinct boundaries which distinguishes it from other sets. Under the concept of a fuzzy set, as the name implies, the boundaries have looser, less rigid distinctions. In this sense, the definition of a set can be contingent and shifting according to the fluctuating character of the set boundaries.

Michael Smithson remarks in *Fuzzy Set Analysis for Behavioral and Social Sciences*: "In fuzzy set theory . . . an element may belong partially to a set. Fuzzy sets have gradations of set membership and blurred boundaries, and so they resemble at first glance the kinds of categories ordinary people use in natural thought or communication." Fuzzy set analysis observes new paradigm concepts similar to those of cybernetics and cognitive science: that systemic phenomenon in a complex, interconnected world often embody non-linear logics based on multiple frames of reference and competing or evolving futures. Communication, as the complex and continual exchange and transformation of social meaning, has more sympathy for this perspective that for the linear, deterministic, Newtonian view of the old paradigm (which is based on closed systems). Fuzzy set analysis, as a theoretical proponent for new paradigm concepts, offers a more adaptive, full bodied context for social theory formation:

social and behavioral scientists not only study fuzzy phenomenon, but also use concepts and theoretical schema which themselves are fuzzy (even in a non-pejorative sense). Many popular scales, indexes, and measures may be thought of as fuzzy sets denoting such graded concepts as degree of arousal, agreement with a political statement, identification with one's mother, and so forth. These fuzzy sets, in turn, often are embedded in fuzzy hypotheses.

Under the Newtonian paradigm, theorization was followed by a process of operationalization, where much of the speculation, richness, and uncertainty of social philosophy was formalized into rigid physical and mathematical components. Under rising new disciplines and theories such as those of cybernetics, thermodynamics, and cognitive science, the formal methods used to follow up theorization allow for much broader perspectives. Notably, multiple perspectives about and within phenomenon are allowed to exist, whereas positivism and determinism encourage reducible, fundamental answers.

This chapter has offered several examples of scientific advances that transcend the Newtonian, linear paradigm. It is asserted that these theories are involved in the expansion of a new paradigm of thought which has special significance to social science research generally and communication research specifically. The theory of relativity was portrayed as the first major break from the linear, deterministic paradigm. This advance in science admitted that research and 'reality' is based on contextual perspective, constrained within ultimate systemic boundaries. Quantum theory reinforced and expanded the observations of relativity in offering that the very process of research effects the phenomenon under observation. Significantly, quantum physics also determined that there is a boundary to what is knowable; beyond this, phenomenon exists at a state of fundamental uncertainty where there can be spontaneous cause without effect.

Thermodynamics exploding the notion that all natural investigation must be reductive, linear, and causal. This perspective observed that the natural world can be viewed as a complex of systems exchanging energy, and that the results of these exchanges are probabilistic rather than directly predictable according to mechanistic causality. Chaos science or non-linear dynamics combined the advances of quantum physics and thermodynamics in observing the interplay of chance and pattern in systemic behavior. Significant to this advance was the observation that even stable systems contain elements of unpredictability and chaos at some level of analysis. In this sense, chaos theory observed that social systems, as containing and participating in both chaos and stability, can not be predicted in the long term. Rather, like the weather, it was suggested that social science should concentrate on observing

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150Ibid., 2.
short-term patterns and methods of encouraging stability, rather than on long term, utopian goals. Cybernetics, cognitive science, and fuzzy set analysis were pointed out as examples of new paradigm theoretical stances with relevance to communication research. They observe that systems can be investigated as interconnected, integrated, complex, and multi-variate entities which incorporate elements such as feedback, parallel processing, and fuzzy definitions.

This section has offered a modest overview of the new paradigm and has connected suggestions for the advance of communication research as a social science. The concluding chapter following will concentrate on distinguishing four major metatheoretical distinctions of the new paradigm which encompass and expand social research beyond the Newtonian, positivistic, and post-positivistic paradigms. Namely, as mentioned at the close of the last chapter, these are that communication/social research should viewed as: systemic (rather than physical), multi-leveled (rather than two-dimensional), multi-contextual (rather than reductive), and consciously self-reflexive (rather than blindly self-absorbed and ethically detached).
4.0. A Reactive Metatheoretical Context for the Conduct of Mass Communication Research: Constructing Mass Communication Theory Within the Conceptual Frame of New Paradigm Understandings of Space, Complexity, and Society

Mainstream communication effects research exists at a crucial point of transformation. The field has reached a point of turbulence where the methods of post-positivism no longer reflect the social and scientific perception of communication phenomenon under investigation. Chaos theory was discussed theoretically in the last chapter for its potential significance to communication research. However, the observations of non-linear theory also can be applied to mass communication studies as an academic field, as a system in itself. As a type of system, the field of mass communication theory is in a state of turbulence where its future, its possibilities, are uncertain. As suggested in non-linear dynamical theory, a system entering a phase of turbulence potentially can stabilize and re-organize into a completely different type of system, or it can fail and dissipate completely. Some from outside the field, members of other, more recognized social science fields, would have the latter. In the competitive world of academics, scarce grant and funding resources are continually sought after. The decomposition of mass communication research would undoubtedly benefit sociology, psychology, and anthropology, not to mention journalism, philosophy, and media production, in as these fields all have an interdisciplinary relevance to the study of media. It remains to those currently in the field to seek the primary option: the reformation and growth of the field into something potentially more powerful, a field potentially more influential. In as the concepts surrounding the new paradigm of science explicitly promise methods with which to better characterize communication processes, the possibility of growth is ripe.

This project has set out thus far to: 1) explain in detail the historically based philosophical difficulties of the classical scientific method, specifically in its application to experimental social inquiry, 2) to display how the scientific method is misapplied to social research, communication research in specific, 3) to trace the historical development of mainstream communication effects research in as it has developed and maintained an adherence to positivistic views of social phenomenon, 4) to display how the criticisms of communication research lie in a failure of Newtonian, linear science to adequately characterize communication phenomenon, and 5) to describe how physical science itself is awakening to new concepts of perspective, interconnection, complexity, non-linearity, and conflict which potentially can aid communication research. This section concludes in offering a general metatheoretical and metamethodological perspective for conducting communication research according to the methods and metaphors liberated by the new paradigm.

The larger implication of this project has been that the study of communication should be a project which admits rich discussion, moral and political conflict, philosophical theorization, multiple contexts and meaning, as well as frames for investigating processes of change and transformation. Equally, a self-conscious, mature social science should eschew the rigid positions of the 'isms' along with their stifling quest for grand theory and final truths: reductionism, empiricism, numericism, determinism, and positivism. Most importantly, communication theory and research should act to both initiate and mediate discussions in the public sphere on the relationship between media communication and social, cultural, and political processes.

The purpose of social inquiry should be to search for metaphors, to seek after ways of describing meaning in life through exploring language. The quest for 'truth' or 'fact' is a project that sets us to look for something final, perfect, fundamental, and thus, unquestionably alien. In theory and research, instead of a tireless crusade to cast the unfamiliar in the permanent language of numbers and machines, the familiar world should be recontextualized continually as a dialogue on the very impermanency and richness of meaning inherent in life and communication. Perhaps the single greatest advantage of new paradigm understandings of systems behavior will be the formation of a more flexible and permeable fusion between social science and natural science in which each contributes to and borrows from the other.

4.1. A Systemic, Multi-leveled Context for Communication Research: Investigating Communication Systems from Different Perspectives

This section discusses two linked aspects of the new paradigm that have been distinguished previously and have been recommended as metatheoretical considerations in mass communication research: 1) taking a 'systemic' perspective in research, and 2) assuming an awareness of
interconnection and multiple levels or perspectives existing within and among communication systems. As has been asserted in the paradigm shift from deterministic Newtonian dynamics and post-positivism to the perspective of interacting 'systems' as personified in thermodynamics and chaos science, the new paradigm views natural and conceptual phenomenon as participating in broad exchanges and transformations of information, energy, and materials. Natural interactions and information exchanges are seen as more typically involving open systems (interconnected, evolving, complex), as opposed to the closed systems (isolated, static, simple) typical of Newtonian science. In the new paradigm, interactions among and between systems are viewed as probabilistic and dispersed rather than as deterministic and causal. The natural world is generally regarded as alive, evolving, shifting, and situated in a larger environment, rather than as mechanical, linear, static, and lawlike.

This project espouses a systems view of communication. Communication is viewed as a dynamic exchange of social meaning with multiple contexts and broadly interconnected effects. The 'systems view,' formally originated during the late 1960's by the German theorist Ludwig von Bertalanffy in general systems theory, employs a biological metaphor in examining the natural world. Systems theory offers that the world is made up of interlocking, co-dependent 'organisms' which exchange matter and information between each other. General systems theory proposes an interdisciplinary method for investigating topics in the social sciences and the humanities which allows for broader distinctions, evolving contexts, and fuzzy definitions. Fritjof Capra comments at length on the general significance of the systems view and its connection to social phenomenon:

The systems view looks at the world in terms of relationships and interaction. Systems are integrated wholes whose properties cannot be reduced to those of smaller units. Instead of concentrating on basic building blocks or basic substances, the systems approach emphasizes basic principles of organization. Examples of systems abound in nature. Every organism - from the smallest bacterium, through the wide range of plants and animals, to humans - is an integrated whole and thus a living system. Cells are living systems, and so are the various tissues and organs of the body, the human brain being the most complex example. But systems are not confined to individual organisms and their parts. The same aspects of wholeness are exhibited by social systems such as a family or a community and by ecosystems that consist of a variety of organisms and inanimate matter in mutual interaction. All these natural systems are wholes whose specific structures arise from the interactions and interdependence of their parts. Systemic properties are destroyed when a system is dissected, either physically or theoretically, into isolated elements. Although we can discern individual parts in any system, the nature of the whole is always different from the mere sum of its parts.151

Mass communication (as social phenomenon) and its functional role in society can also be seen as a type of social and informational system. Such a perspective allows one to see media both for its dynamic functions and for the complex ways in which media institutions act as symbiotic structures in society. In employing the scientific method to dissect media systems under the perspective of mainstream effects research, many of the dynamic processes involved in media functioning are typically ignored. Individual systems are recognized as having a characteristic central 'purpose' or definition around which the system operates. Largely this depends on how one chooses to make relations and draw distinctions according to a particular perspective of the world. The researcher or general observer makes choices about what distinguishes a system from its environment. The implication is that there can be a number of ways to view systems in the natural world. Some systems are more evident than others in distinguishing their operations from a larger environment (i.e.: a definable organism is more apparent as a system than is a vague sub-culture).

In defining a system, the researcher or observer makes distinctions about the system in contrast to a larger environment, points out how the system resists or encourages interactions with the surrounding environment, and defines the inner functioning of the system. For instance, the circulatory system in a human operates around the central definition of providing homeostatic temperature and oxygen content in the body's tissues in return for raw materials to manufacture new blood and circulatory

tissue. The system can be defined functionally or structurally in relation to other systems and organs in the body. The phone system operates in order to serve the public and to generate funds which will keep it going. It is distinct in both its function as a communication medium and as a physical infrastructure. A university system educates people, putting energy into minds and drawing the raw material of funding from individuals and the government. It exists not only by virtue of its physical space, but also through the research and students it produces.

Society in general can be viewed as a vast system or organism, as can the communities, subcultures, political processes, and institutions which participate in a society. Defining boundaries and systemic distinctions within social systems can help researchers to better perceive and study the processes of social dynamics. Mark Bryant comments in his thesis "Communication and Mass Communication: A Systems Approach to Human Information Transactions":

We may view the social organization which exists among humans as itself constituting a system. It exists as a unified non-summative whole of interrelated parts. The perturbation of one part of the social system will have effects upon other parts of the social system. The system is self-stabilizing through negative feedback controls over its constituent members. Social organizations certainly develop and change over time by means of positive feedback, and we may even metaphorically refer to genotypic (language, myth, law) and phenotypic (fads, ad hoc organizations) types of social development.152

Communication in society can be seen as both a broad system in itself and as a medium for energy (information) transmission amongst the structure of social systems. Communication processes, as represented by structures which facilitate dynamic meaning transference, generally represent systemic phenomenon.

Communication structures within society can be characterized as open systems, that is, as systems that constantly exchange information and energy with a larger environment. To solely employ linear, deterministic methods (which are suited to the study of closed physical systems) in communication and mass communication research would be to ignore the broader processes and roles these systemic structures embody. Social communication is situated in a complex of evolving contexts which affect meaning both within and outside the communicative relationship. In his thesis "Communication Modeling: A General Systems Theory Approach," Trescott Smith observes:

Because the process of human communication involves the export of information from transmitter to receiver, its behavior can be expected to follow the guidelines established for open systems. The transmitter/receiver system must be considered an open system for at least two additional reasons: a) The received is assumed to have choice over attending to his inputs from the transmitter; and b) Both participants act within a larger environment from which information is received.153

Both mass communication processes and organizations in a democratic society generally can be perceived as open systems: linked with cultural, political, and economic systems and situated in the context of a greater society.

Within the systems methodology, mass communication phenomenon can be viewed from a number of relative contexts and levels of organization. In realizing that systems can be defined in a number of possible ways, the researcher must be conscious of the variable contexts, patterns, and 'levels' or perspectives which can be used to define mass communication. In current inquiry, an awareness of the importance of context and perspective is sensitizing researchers to what are known as multi-leveled perspectives or micro-macro relationships. Mass communication research, in particular among the social sciences, requires a sensitivity to multi-leveled perspectives, to micro and macro systemic structures, in

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that mass communication by nature is situated in and effects a broad range of social frames. Zhongdang Pan and Jack M. McLeod comment in "Multilevel Analysis in Mass Communication Research":

The basis for developing a multilevel perspective of this field is that mass communication consists of persons in bureaucratic organizations producing diverse messages for multiple consumers with impact on individuals, families and social systems. The very nature of mass communication processes compels multilevel consideration.154

Mass communication researchers are faced with the challenge of not only a multi-leveled context for media, but also of making their biases and logic in this regard apparent (i.e.: in explaining why certain levels and certain functions are more significant than others). Once one understands the central biological metaphor of systems theory, its viewpoint becomes much clearer.

Like modern physics, the systems view is an ecological view. It emphasizes the interrelatedness and interdependence of all phenomena and the dynamic nature of living systems. All structure is seen as a manifestation of underlying processes, and living systems are described as pattern or organization.155

The intent is to see natural processes in the world as living cells exchanging matter and energy with a larger ecosystem. Each level of context surrounding the cell has unique systems which interact and exchange energy in characteristic ways. The cells can interact to form tissues, which become larger systems in the yet larger body:

Living systems tend to form multi-leveled structures of systems within systems. For example, the human body contains organ systems composed of several organs, each organ being made up of tissues, and each tissue made up of cells. All these are living organisms or living systems which consist of smaller parts and, at the same time, act as parts of larger wholes. Living systems, then, exhibit a stratified order, and there are interconnections and interdependencies between all systems levels, each level interacting and communicating with its total environment.156

The human body exists within the larger systems of culture and society, which in turn exist in the natural world. Nature is the composition of the earth system, the biosphere, as a whole. The earth in turn spins in a solar system and galaxy and universe. Likewise, one may reduce from the cell down to organic chemicals, then to atoms, then to sub-atomic particles. Between the lower level of a lepton or gluon and perhaps the higher level of a multi-dimensional multiverse, humans do not yet have the observational or theoretical capacity to see greater or lesser systems, but this is not to imply that they do not exist. The process of defining or framing systems occurs according to the perspective which a viewer exists in or chooses to theoretically assume. A system is conceptually defined once an observer is situated in or chooses frames of reference and relation. In his fictional story "Tlon, Uqubar, Orbis Tertius," which concerns one system of reality being usurped by a more complete one, Jorge Luis Borges wrote that "A system is nothing more than the subordination of all aspects of the universe to any one such aspect."157 In this sense, a specific system is nothing more than a choice to view or dwell in a specific frame of reference, a philosophy of distinctions and relations imposed on the unified universe.

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155 Capra, 140.

156 Capra, 135-148.

At the same moment, the process of drawing distinctions and relations in order to define a system acts to sensitize a viewer to actual distinctions, exchanges, processes, and relations which occur within an interconnected natural world. M. Higashi and T. P. Burns comment in *Theoretical Studies of Ecosystems: The Network Perspective* on the importance of perspectives (or levels of analysis) to drawing systemic distinctions, as well as on the importance of realizing interconnections between levels to forming systemic relations:

The 'identity' of an object depends on the scale by which it is observed. For example, seen through the microscope, the human body is a collection of organisms; seen by the naked eye, it is a corporal unity; seen from a distant point, it is part of a complex system of cultural and material exchange and movement. At one level of observation, skin is a boundary; at another level of observation, is a porous gate between worlds. None of these observations negate the other. Nor are the different scales independent of one another either! Even as high levels of organization serve to constrain lower levels (that's what makes them 'higher'), still perturbations on a lower level can radically influence or disrupt higher levels, especially when there is some kind of systematic change.

In this sense, there is at once a realization that the process of research, of designating systems for analysis, is artificial and substantial. Drawing distinctions necessarily restricts, biases, and distorts one's view of a larger, interconnected unity. However, at the same moment, the process of designating specific systems allows the researcher to observe relations, structures, and processes of exchange which occur within the interconnected universe. The process of designing systems acts to situate the researcher within a certain perspective for examining unity divorced from unity. Conceptualizing this in terms of communication systems, Klaus Krippendorff comments in "An Epistemological Foundation for Communication" that:

Obviously, a process of communication is neither a part of the observed system (it occupies no physical space) nor does it emit information about its existence (in the way a sender might). But it certainly renders observers unable to explain the nature or behavior of one communicator without reference to another. It would follow that communication is that observer-created relational construction which explains what makes a system defy its decomposition (without loss of understanding) into independent parts.

In becoming self-conscious of the process of constructing a systems perspective, the researcher acts to define what they see as essential, or at least meaningful, to the composition of a system. Research, in these terms, seeks useful metaphors for viewing 'unity divorced from unity' moreso than it investigates any fundamental truth or fact.

The field of fractal geometry produces a clear visual metaphor of the concept of multi-leveled analysis in the form of the Mandelbrot set. Discovered by the mathematician Benoît Mandelbrot, this is a self-reflexive mathematical function which when graphed, produces a self-contained but infinitely recursive pattern. The set can be viewed as a whole, but when one begins to view smaller and smaller details, one finds that the set keeps reducing with equal levels of complexity. At each new level one can discover new patterns as well as constantly reoccurring structures characteristic of the system as a whole.

The relevance of the Mandelbrot set is that it displays graphically the concept of existence as being composed of reducing and expanding multi-leveled, interlocking systems. Each system is made of smaller micro systems; each system in turn is composed of larger macro systems. The integration is a totality, a consummate reality, a 'big picture'. However, within the totality, there are differing levels of reality. The local 'reality,' or the immediate perception of existence, depends upon where in the system

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159 Klaus Krippendorff, "An Epistemological Foundation for Communication."

one chooses to 'live' or to 'observe.' In a Mandelbrot set there are differing levels of existence that can be
perceived as compete in themselves. Each part of the reality of the set contains the code and clues for
understanding the larger and smaller systems. The same can be observed for human 'reality': situated in
a specific level and frame of understanding (the individual self), we can, first through social
communication and then through observation and inference, expand our views to micro and macro
frames outside our typical individual frame. The social endeavor of science has allowed us the methods
and tools with which to observe patterns and connections typical of the universal system as a whole. The
unraveling of the web of unified existence proceeds by using the clues and specific language found in this
sub-system: the individual perspective from which everyone observes.

Humans observe reality from a macro level in reality far beyond the quantum level of reality. Quantum existence escapes our conceptual grasp by transcending the causal reality of time and space
as we know it. Effects occur without causes and time ceases to function in a linear context at the level of
quanta. The moments and spaces of movement are indeed so minute at the level of sub-atomic particles
that they practically cease to exist as we conceive of space, time, and movement. By the same
measure, on the universal scale humans are dwarfed by the immense time and distance involved in
galactic movement and stellar life-cycles. We can scarcely comprehend the 'language of the spheres' for
their sheer breadth and timeless.

Yet, sandwiched as we are between layers where our concepts of time and space are irrelevant,
there are a number of sub-systems and super-systems which we observe according to the metaphors
available to us in conceivable time and space. Science is a metaphoric tool which allows us to perceive
the universe by translating the inconceivable into terms which are relevant in our level of reality. We
translate the subatomic and galactic into human metaphors through reaching our mind and tools
(scientific theory and technology) into distant micro and macro systems levels. We investigate the
intricacies of the physical and natural world by translating their systemic behavior into symbolic concepts.
Social science as well must realize its own participation in reaching out to micro and macro levels beyond
the individual, in exploring languages which describe and discuss multi-leveled concepts of social
phenomenon. There is no literal society just as there is no literal self composed of psychological
components: these are metaphors for describing macro and micro systems which compose and
encompass us, but which are also literally divorced from us (in the pure sense of the inescapable 'I').

The human symbolic realm (which entails communication generally) itself depends on life and
matter for its very composition. The symbolic exists by virtue of interlinked living humans who
communicate meaning to one another; life exists through the complex interaction of matter in motion.
Von Bertalanffy conceptualized this notion by proposing that there are different levels in the composition
of human reality. Like a cosmic ziggurat, Bertalanffy theorized that humans sit perched on a symbolic
realm built upon the sub-layers of life and inanimate matter:

<table>
<thead>
<tr>
<th>Levels in Nature:</th>
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</thead>
<tbody>
<tr>
<td>Symbolic</td>
</tr>
<tr>
<td>Living /</td>
</tr>
<tr>
<td>Inanimate /</td>
</tr>
<tr>
<td>REAL&lt;sup&gt;160&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Each of these levels contain their own systems and purposes. We exist in the material and the living, but
find meaning and existence in the symbolic. The symbolic depends on life, which depends on matter.

This theoretical design accounts for the physical, biological, and symbolic as mutually organizing
and informing. The system of the 'real' at once sees humans as being separate from matter, yet
fundamentally composed of matter. Humans are at once symbolic creatures, yet are limited by the
material world. We are at a layer of reality situated between mindless matter and transcendent
symbolism. At different moments we can move towards one level or the other. In starving, one becomes
a purely physical creature constrained by the limitations of matter. Physical reality is the foundation for
reality. In the realm of pure communication, in pure technical mediation (i.e.: virtual reality), one becomes

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a nearly pure symbolic abstraction. Through communication technology we expand upwards to a
hyperreal state, to the symbolic realm.

The composition of the symbolic realm as being tied to yet separate from the world of matter
confronts some interesting dynamics in the communicative flow of information. As in fractal geometry,
united systems contain similar structures. Different levels within systems have unique dynamics, but are
united by common patterns. Information itself composes a separate realm which has relevance in the
material and the living. Information theory proposes that information is in many ways alive itself, flowing
and organizing according to its own laws. Information, the material of the symbolic realm, when viewed in
isolation, appears to have its own laws and agendas, organizing and interrelating as living matter does.
Yet, the symbolic realm is fundamentally composed of the living and the material. How are we to account
for this autonomy that is at once dependence? This challenge represents a question which the
communication researcher must continually mediate, yet never answer: the relationship between
structure and relation, the interaction between the physical / reducible and the energetic / systemic.

There are complex dynamic processes apparent in all levels of communication, be it at the level of
individual thought, dyadic communication, small group communication, organizational communication,
political communication, cultural communication, mass communication, or grand social communication.
Examining the relationships amongst and between these venues requires the communication researcher
to explore them as level specific systems phenomenon. Each communication level is itself a part of social
subsystems and supersystems, while at the same time being independent as relational and structural
frames. Communication involves the dynamic passage of information within systems that are themselves
part of and linked to other types of social / communicative systems. The process of communication is
thus an interaction of complex, multi-purposed variables. Communicative phenomenon within these
levels can be seen variably as relations of meaning and as processes of effect. Therefore, the
exploration of communication must tailor itself to the variables inherent in the specific system it wishes to
explore, while paying attention to the multilayered metacontext (the context of context) of the variables.
As Pan and Mclod comment:

A multilevel perspective conceives of mass communication as a process consisting of both
horizontal relationships of media production and consumption linked by media content and
vertical linkages of macro and micro concepts through social and organizational mechanisms.161

As the communication level becomes more individual, a methodology examining the dynamic
processes of individual human cognition with attention to the medium of social context becomes more
necessary; as the communication process becomes increasingly group oriented, an attention to large
scale social dynamics with a view to the complex possibilities inherent in individual action is key. For
instance, mass communication studies exists as a macro level analysis of human social communication
which contains within it an ultimate relevance in the micro level of the community and the individual.
Mass communication also must be interpreted dynamically with attention to its context in cultural,
historical, political, and social systems. All these contextual system levels, from the sub-systems to the
containing super-systems, interact to characterize a central system recognized by us as a mass
communication system.

Research can be complex or simple depending on how deeply it wishes to describe and
investigate systemic and multi-leveled relations among and outside of communication systems. In
Politics, Self, and Society: A Theme and Variation Heinz Eulau comments on this realization of
complexity:

Complexity, then, is a unit property that can be identified and measured only in terms of the unit's
location in relationship to its subunits and superunits on the micro-macro continuum. Micro does
not ipso facto mean structural simplicity, and macro does not mean complexity. A very small unit,
say a governing triumvirate, can be structurally very complex, as it may be situated in a hierarchy
of superunits whose properties have an impact on its behavior; but another three-person unit may

161Pan, 151.
be structurally simple if its range of entailment on other levels is limited. It is the number of levels on which the investigation is conducted that defines complexity.\textsuperscript{162}

A research design thus is more complete when it allows for an investigation of variables on a number of different levels. This does not mean that communication research should exhaust itself in attempting to trace all the broad and intricate webs of meaning and effect which characterize communication systems. \textit{Rather, communication research should be conscious of interconnection, multiple frames of reference, and perspective, and within these terms, strive to dynamically explain and explore their relevance to the process of communication.} In these terms of the new paradigm, the search for grand theory or ultimate explanations of communication effects is no longer significant or even possible. Due to the multiple layers and perspectives possible in characterizing communicative relationships, the researcher can only act to describe specific viewpoints which are contingent on relative perspectives. In the process of describing their perspective the researcher should explain their own biases in making observations, they should make known their ‘systemic philosophy’ and the extent to which it shapes a broader environment.

Developing an understanding of micro-macro relations in communication research acts to orient research within a larger, more complex and integrated sphere of social connections. In explaining the micro and macro connections of media systems, a researcher orients the reader while at the same moment making their own research more ‘self-conscious,’ more conscious of the meta-meaning and meta-context of research. This is essential if mass communication research is to maintain and strengthen its relevance both to media organizations and society at large. Eulau comments on the self-conscious nature of macro-micro distinctions in social research (with an implicit relevance to communication research):

There is nothing intrinsically micro or macro in a unit. It is not unit properties as such or the degree to which they may be present or absent that makes for a unit's identification at one or another level, but it is the degree to which a unit can be partitioned into subunits or the extent to which it is imbedded in superunits that makes for its designation as micro or macro. The micro-macro continuum thus calls attention to possibly significant data sources at levels of analysis above or below an object unit's own level. For instance, if the individual is the object unit of analysis, thinking in terms of levels calls attention to the social context created by the interaction of individuals and to multiple external environments. Explanation is oriented toward the macro pole of the micro-macro continuum. But explanation may also be sought in terms of psychological, physiological, and possibly even chemical-biological elements. In this case, explanation is oriented toward the micro pole of the micro-macro continuum... How far the investigator wishes to push observation "up and down" the micro-macro continuum depends, of course, on his theory - which subject units he considers relevant or adequate to explain the behavior of the object unit. Whatever the strategy, the micro-macro frame of reference enriches the analytical possibilities of research.\textsuperscript{163}

The development of a ‘multi-leveled consciousness’ in communication research should be made apparent in the report of research. In drawing distinctions and forming relations, the researcher should attempt to make clear their individual philosophy for emphasizing certain levels or relations and atrophying others. Making conscious the frames and biases in multi-leveled systemic communication research is the topic of the next section.

\section*{4.2. Multiple Perspectives and Self-Reflexivity in Communication Research: A Self-Conscious Epistemology of Theory Formation}


\textsuperscript{163}Ibid., 115-6.
This section discusses the new paradigm view that social inquiry should no longer strive to explain ultimate states, but rather should be self-conscious of the biased distinctions and constructions it makes of the natural and symbolic world. A major implication of the new paradigm science theories covered in the previous chapter was that empiricism is no longer a direct route to an understanding of existence, that there is no longer a sense of a fundamental, objective reality in investigating the world. Rather, from relativity to chaos theory, there is a growing recognition that what is 'real' can be contextualized in nearly infinite metaphors and frames of reference, that the very process of inquiry shapes our apprehension of the world. The way in which one chooses to investigate their environment, the methods with which they draw relations and distinctions among all natural or conceptual objects, affects the outcome of research. In other words, the process of theory formation and the methods of research during experimental inquiry are epistemologically relevant to the interpretation of results. Further, the professional researcher should strive to make these constructions apparent.

Under positivism and Newtonian science, empirical sensation was seen as the only valid data in inquiry and the ultimate method of proof. A fundamental physical world was assumed to exist as the foundation of reality. However, along with relativity at the turn of the 20th century came a growing understanding that between theorizing and empirical verification lay a complex conceptual divide. There was a growing understanding that the process of theorizing, having a pre-conceived conceptual stance, could act to shift the contextual meaning and nature of empirical observation. Pierre Duhem (1861-1916), a French physicist and philosopher of science at the turn of the century, recognized this in his work La Théorie Physique: Son Objet, Sa Structure (1906). Here he observed that theory and model building involves an empirical calculus of sorts, but that it does not refer to a concrete reality. Instead, models were seen as psychological aids in contextualizing predictive theories. According to this philosophy, for any accumulation of evidence there can be a number of different theories, all capable of producing reliable predictions. Consequentially, the notion of a single, mechanical reality was devalued and substituted for a view of the natural world as being divisible into nearly infinite symbolic / systemic distinctions. The search for meaning in a broader sense was realized as being a self-referential project: a self-investigation of the ways of perceiving / constructing the world. Von Bertalanffy recognized this concept in systems theory as well:

"perception is not a reflection of "real things" (whatever their metaphysical status), and knowledge not a simple approximation to "truth" or "reality." It is an interaction between knower and known, this dependent on a multiplicity of factors of a biological, psychological, cultural, linguistic, etc., nature. Physics itself tells that there are no ultimate entities like corpuscles or waves, existing independent of the observer. This leads to a "perspective" philosophy for which physics, fully acknowledging its achievements in its own and related fields, is not a monopolistic way of knowledge. Against reductionism and theories declaring that reality is "nothing but" (a heap of physical particles, genes, reflexes, drives, or whatever the case may be), we see science as one of the "perspectives" man with his biological, cultural and linguistic endowment and bondage, has created to deal with the universe he is "thrown in," or rather to which he is adapted owing to evolution and history."164

The physical world in these terms is intimately bound to the symbolic world, where physical objects are given meaning and value. Such a concept strikes at the foundation of Newtonian and Cartesian concepts of the world, which propose the physical as being fundamentally separated from the mind and meaning.

In the natural and physical sciences, the new paradigm philosophy of multiple perspectives to some degree has been legitimated through formal research and theory under the fields described previously. Science thus has gone through a period of self-critique in which it has confronted itself as a type of language which can describe the physical world in a number of ways. As proponents and practitioners of new paradigm science, Prigogine and Stengers remark:

No single theoretical language articulating the variables to which a well-defined value can be attributed can exhaust the physical content of a system. Various possible languages and points

of view about the system may be complementary. They all deal with the same reality, but it is impossible to reduce them to one single description. The irreducible plurality of perspectives on the same reality expresses the impossibility of a divine point of view from which the whole reality is visible.\textsuperscript{165}

Science has matured in its understanding of epistemology as being self-involved, as being limited by uniquely human perspectives and ways of knowing. However, empirically oriented experimental social science, mainstream American communication effects research in particular, has resisted 'softening' its stance of post-positivistic fundamentalism. The fear of methodological and disciplinary decomposition, combined with pecuniary motivations from institutions to provide 'black and white' answers to complex questions, has resulted in the maintenance of outdated, formalistic methodological concepts of science and society.

This project has asserted that the search for grand theory is an outmoded project. It has also pointed out that recourse to multi-perspectival views of complexity does not necessarily mean a decay into meaningless or the sacrifice of systematic methods of investigation in social research. The assertion, rather, is that research needs to make conscious the biases and perspectives of its methods which restrict the broadly unified system of nature to specific frames of reference. This realization should not be viewed as the breakdown of rigor or as an admission of ineptitude, but rather as an opportunity to expand the purview and utility of research as a whole. In becoming more holistic, self-conscious, and specific, social research evolves into a more mature sense of its capacities and strengths.

Communication research should realize that its currency is less statistical and empirical, and moreso 'nominalistic.'\textsuperscript{166} In this sense, the process of research is seen as being intrinsically linked to theory as a type of descriptive language, a language with evolving terms which can be disputed and discussed in the context of social meaning. This is not to ignore that physical and biological entities exist in a substantial sense. Rather it is to assert, as in Bertalanffy's ziggurat of the real, that the symbolic is capable of contextualizing and defining the physical and biological in a number of frames and from a number of perspectives, according to a number of metaphors and terms. The way in which research is conducted is intimately bound to perspective in theory. This means that there are not only a number of ways to approach a substantial problem, but that the way in which research is conducted is open to criticism from a number of theoretical contexts. From the stance of economics, Bruce Caldwell asserts in Beyond Positivism that "just as there exist many tasks for theories to perform, there are also many methods for the evaluation and criticism of theories."\textsuperscript{167}

It is becoming increasingly difficult for social research to uphold the notion that there is any type of fundamental truth or static, physical reality underlying social relation and meaning. Natural science has been evolving beyond the idea of a static, mechanical, and deterministic physical reality for nearly a century, starting with the advent of the theory of relativity. Social research itself is faced constantly with the contradictions which assertions of grand theory raise. The sheer diversity and discord found in social research, communication research in particular, displays the failure of a single methodology or theory to gain hold. Even the most stalwart proponents of the empiricistic method in social science have admitted that research can be carried out and framed in a number of contexts. Donald Campbell and Julian Stanley, long-time proponents for employing the scientific method in experimental social research, have themselves admitted that multi-leveled contexts and differing perspectives are significant to social inquiry:

even though we recognize experimentation as the basic language of proof, as the only decision court for disagreement between rival theories, we should not expect that 'crucial experiments' which pit opposing theories will be likely to have clear-cut outcomes. When one finds, for

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{165}Ilya Prigogine and Isabelle Stengers, \textit{Order Out of Chaos}, with a foreword by Alvin Toffler (New York: Bantam Books, 1984), 225.
\item \textsuperscript{166}Nominalism is a philophical perspective which denies universal concepts in believing that reality is situated in description
\item \textsuperscript{167}Bruce J. Caldwell, \textit{Beyond Positivism: Economic Methodology in the Twentieth Century}, (Boston: George Allen & Unwin, 1982), 2.
\end{itemize}
\end{footnotesize}
example, that competent observers advocate strongly divergent points of view, it seems likely on a priori grounds that both have observed something valid about the natural situation, and that both represent a part of the truth. The stronger the controversy, the more likely this is. Thus we might expect in such cases an experimental outcome with mixed results, or with the balance of truth varying subtly from experiment to experiment. The more mature focus . . . avoids crucial experiments and instead studies dimensional relationships and interactions along many degrees of experimental variables.\textsuperscript{168}

Even the most enthusiastic post-positivistic experimentalists are growing in a recognition of the richness of meaning and interpretation possible in social theory and research. Under such pressure, it is difficult for mainstream American mass communication research to assert that any singular understanding of effects exists.

What is needed is a new paradigm sensitivity to multiple-perspectives, a metamethodological framework beyond post-positivism which admits the limitations as well as the potentials of experimental research. Self-consciousness, a formal 'mutual regard' of conflicting theories in the face of multiple viewpoints is required which does not sacrifice rigor or meaning in research. The challenge which remains is to construct a meaningful and coherent frame for conducting research which allows for richness of perspective, yet which does not sacrifice meaning, the integrity of results, or systematic, coherent procedures. The suggestion here is that by explicitly stating the systemic biases and logic employed in research, a number of conflicting theoretical viewpoints can conflict without necessarily disagreeing.

In terms of the earlier discussion of rationalism: by stating the rationalist logic which defines the parameters for a research methodology, conclusions and results are stated as being contingent on the logical premises of the theoretical foundation. Results in self-conscious research are thus valid and reliable according to their own procedures, rather than according to some abstract concept of a static and fundamental reality. \textit{The quality of research results should thus be judged primarily according to the philosophical cogency of the theoretical foundation for the research design, procedures, and explanations.} A theory can better be appraised and critiqued when the logical framework for research theory and methodology is made clear by the author. The new paradigm drive is thus towards the explicit use of self-conscious metatheoretical metamethodology in experimental social research generally.

Einstein’s theory of relativity and quantum theory formalized the notion of multiple perspectives in the language of science. These theories espoused the view that ‘reality’ depends on perspective / observation, which is defined by the observer and observed interacting as a systemic relationship. This is not to say that any single interaction is ‘real’ or ‘unreal’ depending on one’s position, but rather that the perception of an interaction in part is defined by theobserver’s standpoint in their larger environment. In science, this is a recognition that in observing particles in motion, the interpretation of speed and position is relative to the standpoint of an outside observer, the tools they use for observation, and their biased level of reference in space and time. Quantum theory recognizes that the process of observation can effect the object under observation, and that there is thus a boundary to what is ‘objectively’ knowable.

In social science, the danger is to misinterpret the metaphor of relativity or quantum theory as a statement that all concepts are relative to other concepts and equally meaningless. This is not so. Rather, these theories recognize that the researcher enters into the process of observation, that their relative position influences the way in which results are formulated. The notion that an anthropological study, for example, can proceed objectively is to falsely attribute an objective, ‘Godlike’ position to the researcher. The nature of observation is from one unique viewpoint to another, defined in tension to a larger whole. The assumption that a researcher can carry out objective research by referring to purely physical action or to a Weberian ideal type is misguided. Physical action is relevant only according to social meaning and perspective. Ideal types rely on a specific logic or rationality in their constructions. The ‘ideal’ is itself contingent on a contextual philosophy which offers certain judgments and perspectives, methods of drawing distinctions and formulating relations concerning phenomenon. Rellying on purely empirical methods in social research misses the context of human action as being involved in a complex web of meaning and symbol. For social science, relativity should be a recognition that the researcher

must make themselves and their biases (i.e.: their background and motivations to the degree that these are known) apparent at the outset of a study in order to situate the results in historical, political, cultural, and social frames of reference.

For the communication scholar, this should be no different. Researchers must make apparent their ‘position’ (i.e.: white middle-class male American university professor seeking to examine the effects of violent cartoons on middle-class American children) as a metamethodological comment on the context of their study. In this way, one’s perspective and possible biases are opened for discussion, if not made apparent. Krippendorff emphasizes ‘the self-referential imperative’: “Include yourself as a constituent of your own constructions.” He states, no matter what area or background a communication scholar comes from, they:

can never escape participation in the culture they grew up in, observe, theorize about, interact with, and change. We derive our problems from this participation, solve them with the instruments we acquired from others, and feed the knowledge we generate back to the context in which the problem arose and to which it might be applied. Participation is circular and involves us as part of this circle.169

If there is a motivation for a study (i.e.: carried out as a productivity analysis for a corporation, carried out as critical theory in examining disadvantaged communities), these also should be noted as they explain the type of voice, the viewpoint with which the researcher is seeking to sympathize.

The process of studying communication phenomenon itself is self-referential. Communication research cannot escape the context of communicated language and social meaning in general, nor can the researcher ignore that the process and results of research refer themselves to communication through communication. In this sense, the project of communication research is nested in itself, and therefore must be aware of both the boundaries and possibilities of this state:

The crucial difference between studying a system from the outside or from within lies in the properties of the observers. In systems involving their observers, the properties of its observers enter the system under consideration, often as constitutive components, and a theory of communication in such systems must account for this.170

Communication research in the new paradigm strives to be self-conscious concerning both the self-referential nature of its subject matter and the intimate effects which research can have both on media organizations and the public’s reception of media content. In this sense, self-conscious, multi-leveled systemic research contains an ethical imperative. In realizing that there are a number of choices in describing media systems and media relationships, researchers cannot divorce themselves from the ethical effects which accompany these choices.

The post-positivistic paradigm popularly employed in mainstream effects research (which contains the formalistic echoes of positivism and Newtonian determinism) consciously attempts to divorce its methods from reference to philosophical or ethical reasoning. In stating that the scientific method, the method of empirical experimentation, is the fundamental route to uncovering a singular, basic, linear, physical reality, normative difficulties are abandoned. Post-positivistic communication research maintains this stance in social research: that there is a singular nature to social relations and that the scientific method is the best way to reveal these relations. The dominant paradigm of causal empiricism employed in mainstream effects research thus ignores the consequences or meaning of the research it undertakes. Krippendorff comments:

By making an objective and observer-independent reality the principle ruler over the constitution of scientific knowledge, this dominant paradigm in effect absolves scientists from taking responsibility for their constructions. Indeed, how could a scientist be blamed for finding or


discovering something when one believes that someone else, nature or God, has put it there to begin with? How could a scientist be held responsible for merely describing something when one believes that a description could be distinguished from what it describes and merely pictures what others could see as well?\textsuperscript{171}

In asserting itself as a method of 'physical cartography' in mapping social terrain, the post-positivistic agenda refuses to recognize that meaning can be contextualized in a number of frames. Under the new paradigm view, social research appears more as a realm for discussing and evolving concepts of social meaning and context. Empirical experimentation in the new paradigm view is subsumed under the frames of explanation which instill theory, procedures, and results with relevance.

It is suggested here that there is more at stake than richness of description in self-conscious research. The injunction to compose self-conscious research has an ethical imperative to it as well. In that complex, multi-leveled systems exist according to a number of frames of relevance, researchers must be aware (and make others aware) of the motives, philosophy, and larger social meaning of their research. A self-conscious frame for research reacts against the notion of 'objectivity.' In using objectivity to ignore the importance of systemic perspective, levels of analysis, and relative social meaning, issues of bias, context, and relevance in research are also conveniently ignored to the advantage of hidden philosophical agendas. As pointed out in the earlier discussion of the relationship between empiricism and rationality, a researcher pursuing an 'objective' vision of social phenomenon uses the reputation of science to advance hidden (consciously or unconsciously) rationalized philosophical constructions.

In that objectivity ignores reference to perspective and diversity of experience, it benefits a grand 'architectural' vision of society as entrenched, mechanical, planned, and organized. Objectivity can be used to advance the agenda of linear, macro-level organizations such as governments, corporations, and institutions. In writing on communication research metatheory, Krippendorff emphasizes the link between deterministic, linear social research methods and macro-level organizational interests, thus highlighting the ethical imperative of a self-referential context for communication research:

Denying the reflexive nature of human communication (theory) sets communication researchers apart from their subjects and creates reality constructions that aid technologies and can support oppressive social structures. Reflexivity is perhaps the most outstanding feature of human communication.\textsuperscript{172}

The roots of 'objective' social research lie in a Comtian architectural vision of the bureaucratic utopia. As has been discussed previously of the historical formalization of social research, transforming the concept of society into a physical object or machine was intended to streamline social functioning and cure its ills, to abolish unreason and conflict through the imposition of standardized precepts for behavior. The stillborn goal was to, in a sense, resolve the intrinsic conflicts of the human spirit through the mechanical and mechanizing tool of science. Such a goal was advanced by the rationalist rhetoric of such progressive schools as German idealism and utilitarianism. The process of conceptualizing and making significant the 'ordering,' rational potential of society as an ordered organism, in this sense acted to empower a level of organization existing systematically beyond human needs and individual realities. As observed by Isaiah Berlin:

\begin{quote}
The reformist, progressive nature of social science led to the patterning of institutions and laws according to empirical, rationalist notions of society. The programme of the modern Enlightenment has played a strong role in the social, legal, and technological organization of our world.\textsuperscript{173}
\end{quote}

\begin{thebibliography}{99}
\bibitem{171}Krippendorff, "Ethics of Constructing Communication," 78.
\bibitem{172}Krippendorff, Klaus. "The Past of Communication's Hoped-For Future," \textit{Journal of Communication} 43 (Summer 1993): 42.
\bibitem{173}Isaiah Berlin, \textit{Against the Current}. (New York: The Viking Press, 1977), 82.
\end{thebibliography}
Young adds in asserting that historically the rationalist-empiricist methodology benefited a specific vision of political control:

the choice of depoliticized, depersonalized terms is more than mere poetics, it is political; the structure of bureaucratically organized work, politics, military, and school makes any theory using the concepts of force, power, and object preferable to one using concepts of prophecy, definition, subjectivity and sanction.174

The politics of Comtian positivism and German idealism (along with progressive theoretical perspectives such as utilitarianism) each contributed to the agenda of formalizing society in different ways. Positivism emphasized physical perfection, the institution of social architecture. Idealism advocated the rationalization of social life, encouraging linear logics and bureaucratization. Rationalist thought sought to abolish 'ignorance' such as tradition, superstition, and spirituality. The mission was to socially stamp out the Freudian 'id,' the turbulent subconscious, years before it was written of as an integral component of the human psyche. The method of science pronounced judgment on what could be considered 'real' and worthy of study in social systems, namely habitually occurring, observable physical behavior.

The historical development of communication research in particular personifies the co-opting of the tools of social science by institutional interests to serve the entrenched needs of social control, linear processes, and logical formalization. As discussed previously, the roots of communication research united pro-human social critique and philosophical rationalism with the formalizing power of scientific empiricism. The conceptual advent of Lazarsfeld's Bureau of Applied Social Research graphically represents the ultimate perversion of these critical goals towards uniquely self-interested institutional concerns. Indeed, as communication research tangentially concerns itself with the social mechanisms and processes of propaganda, persuasion, and the formation of 'social reality' (the technical composition of a broad pseudo-environment), it would seem logical that institutional interests would seek to learn from and bend these methods to their own needs. By understanding persuasion and influence through mass communication processes, institutions (as organic entities with goals beyond the systemic reality of the individual) seek to orient the needs and desires of the individual towards a 'group consciousness' or organic social-structural reality. The inherent danger of this situation is framed by James Coleman in "Theory of Action":

Social policy research will ordinarily be initiated by the largest corporate actors and be designated to provide information that will allow them better to pursue their interests. In the asymmetric structure of society that has emerged in this century, natural social processes will result (given the problems of paying the cost of a public good) in an asymmetry of information, leading to increased asymmetries of power between corporate actors and persons.175

Whereas the institution, the nation, and the corporation exist on a level where individuals are but components in social tissues, issues of individual justice, happiness, and dignity will be overlooked for the higher needs of organic social connectionism. Communication theory has an ethical imperative to make itself conscious of and relevant to the individual level of social existence which we all, meaning you and I as 'selves,' fundamentally inhabit. The individual needs to be rediscovered and empowered in the patterning of social research. Social science has dabbled with orienting research towards individual concerns. However, under the old paradigm of linearity and control, this only resulted in attempts to better control the individual systemic level of social organization in order to benefit the group. J. W. N. Watkins proposes in "Ideal Types and Historical Explanation" his concept of methodological individualism. In this theory, individual


action is seen as the basic unit of social analysis, the *reduction* of large scale social behavior.\textsuperscript{176} Such a goal is pointed in the right direction (attempting to make conscious the individual in research) yet becomes misguided through the inherently distancing, control oriented properties of the old, positivistic paradigm. As Coleman recognizes, much research is conducted according to the precepts of methodological individualism (looking at the behavior of individuals) but with the selfish intent of acting on individuals according to the motives of larger organizational entities:

much if not most applied social research . . . has come to be research directed to problems of policy, that is, designed to inform the actions of large corporate actors, most often government but also business corporations, trade unions, and various voluntary associations.\textsuperscript{177}

Such a process means that the social organism is empowered over the state of the individual. The stance here disagrees with methodological individualism in its goals of *reducing* macro scale social behavior to the individual level. The act of reducing the individual from the social / organizational scale acts to benefit the control oriented motives of grand social interests moreso than it seeks to empower the individual. However, it is agreed that the *intent* of social research should be oriented towards the individual level of experience.

The application of new paradigm science understandings of social systems suggests a reversal of methodological individualism: that individuals should be realized as being inherently parts of the non-linear social systems within which they interact, but that these systems should be analyzed and governed with the well being of individuals, not organizations, in mind. Instead of being reduced from society, society should be expanded from observations of individual needs and natures. The distinction can be thought of as a self-conscious, intellectual observation of the gestalt nature of systems dynamics tempered by an ethical prescription towards individualism. In other words, the multi-leveled, systematically conscious researcher understands social unity and large-scale social-organic patterns, but is fundamentally interested in this phenomenon to the singular extent that life at the individual level can be improved and enriched. This represents a more mature and self-conscious realization of the point that:

Not only do individual professionals select and construct media content, but individuals also consume mass media content. It is inevitable that individuals in either their cognitive or physiological domains are likely candidates for the micro analytical level. However, all individual mass communication behavior is performed in a social, cultural, institutional, and organizational context.\textsuperscript{178}

The goal is to be self-conscious in this point. Research into the relational significance of the individual to society should view the individual as a fundamentally sovereign unit. Under the old paradigm, such understandings would be used for control. Under the new paradigm, such understandings imply a mature vision of change, transformation, multiple perspectives, expansive boundaries, and ‘fuzzy’ identities within larger social and communicative relationships. Such a guiding methodology could be called ‘prescriptive individualism,’ in that it recognizes that higher level forces compose the unity of social systems, but that researchers must stress the fundamental ethical goal of social research: to benefit individuals in the broad sense, not to animate and enrich social organisms (i.e.: institutions, governments, businesses) which individuals inhabit. To concentrate on the well being of organizations such as corporations or governments in research is to seek the advancement of something that by nature exists beyond individual welfare, and, indeed, altogether outside any human perception of reality.


\textsuperscript{177}Coleman, “Theory of Action,” 1318.

\textsuperscript{178}Pan, 148.
The government, the corporation, the institution, all exist as conceptual entities which are only relevant in being conceived of by individuals acting in congress. Life indeed exists, but not without matter. Society exists, but not without biological individuals. Communication exists, yet not without life. In the same sense, society exists as a systemic distinction, yet not outside of individual frames of well being. The corporation and government as social organisms each exist only as the result of codes and practices for understood symbolic behavior. It is this which creates an organization. However, it is this spirit enforced which makes the organism wholly distant from any sense of individual reality. Each time we speak of banks, businesses, or ‘the media’ generally, as operating as independent macro-scale creatures, we empower them conceptually. Similarly, theory which intends to view institutions as organisms important in themselves draws a biased relation among macro-scale units and makes a distinction away from the individual. In empowering the organization, individuals become more so cells or raw material to maintain the independent life of the macro-organism, rather than fundamental components of organizations for whose welfare the organization exists in the first place.

Ascribing irreducible significance to the needs and plight of the ‘self,’ the individual, as the basic component of social reality is paramount in self-conscious theory. This viewpoint is lent credence within the context of both relativity and quantum physics, where the relational position and observational behavior of a viewer, as individual perspective, is the key element in the construction of the natural world. Likewise in social research, in terms of systems dynamics, the framing of systems levels originates at the individual level. As such, to some degree all theory ultimately should have a self-reflexive bent to it: both 1) in terms of the individual researcher as constructing the world, and 2) in the ethical prescription of highlighting the significance of the individual ‘self’ as the goal of social research.

Theory is composed by and reported to individuals. The language and modeling of theoretical propositions thus is fundamentally relevant to and responsible to the individual. In conclusion, it should be observed that the new paradigm consciousness of multiple perspectives and self-reflexivity in communication research implies research can be organized according to a number of relative levels of organization and relevance. In these terms, as noted by Zhongdang Pan and Jack M. McLeod in “Multilevel Analysis in Mass Communication Research,” mass communication research must be conscious of a number of aspects of communication phenomenon:

First, mass communication theories must explicitly convey propositions or assumptions about both production and consumption of media content. It is theoretically beneficial to the field to state these propositions clearly at multiple levels. Second, all theories of mass communication, regardless of their units of analysis, contain stated or unstated propositions about how both societies and individuals work. They involve certain assumptions about social structure, social dynamics, and social processes and also about how persons process information and learn. The multilevel view of mass communication process forces researchers to examine these assumptions and ideally to test the hypotheses that can be derived from them.179

The challenge encouraged by the new paradigm is to develop a ‘self-consciousness’ of the interaction between society and the individual which encourages a sensitivity to the ‘self’ above all. The prosocial vision of modern social research should not be a mission of linear, organizational rationality, but a positive escape from these values to the extent that they reduce and alienate individual human welfare. New paradigm research is framed as a consciousness of the plight of the irreducible, fundamental individual in our modern technical, bureaucratic society: a society still patterned by the control oriented paradigm of positivistic science.


The brief layperson’s perspective on new paradigm science which has been outlined in this project suggests methods and theoretical perspectives for the conduct of social science and communication research. It is implied that the more formal quantitative methods of such tools as non-

179Ibid., 152.
linear mathematics and fuzzy set analysis could be set to the task of dynamical social statistical analysis. Cognitive science could similarly be used to examine network and processing relationships in social communication (i.e.: in as social communication connections systemically resemble theoretical and mathematical models of networks in the mind and computers). Krippendorff has in his research outlined the formal implications of cybernetics in communication research. Further, quantum mechanics potentially could be extended towards more formal, formulaic studies of communication phenomenon (i.e.: in as spontaneous order, statistical relationships, and micro level spheres of probability systematically can be related to micro level communication interactions).

The field of information theory exists as an example of the 'formal' application of new paradigm physics to phenomenon with a directly human context. Information theory has occurred as the direct result of applying the scientific and mathematical observations of thermodynamics to the flow of information as energy systems phenomenon. This perspective could be broadened further through the application of non-linear dynamics analysis. Chaos theory (as a partial union of thermodynamics and quantum mechanics) implies that information theory could be expanded into a realm where not only information (as it is pictured by information theory as being a measurable 'physical' quantity), but the social flow of 'meaning' (as a fuzzy concept of social symbolism in flux) could be analyzed. Whereas the old paradigm offered a perspective on information as a type of material, the new paradigm, and its methods of characterizing complexity, unpredictability, and multiple realities, has the potential to examine the hazier distinctions of symbols in transition / communication. Such a theory would apply non-linear mathematics and the tools of quantum thermodynamics to the examination of continually evolving social networks of meaning, mass communication systems being one of these potential networks. However, such details must, for the moment, be left as potentials and suggestions. The limited space of this project has centered itself on providing a largely theoretical and philosophical critique of the old and new paradigms of science in as they are broadly relevant to the study of social / communicative phenomenon. In this sense, specific quantitative applications of new paradigm science theories are left for future research.

The larger theoretical meaning of the new paradigm, however, has been discussed in detail. Emergent has been a new vision for viewing phenomenon, in tension to the positivistic and post-positivistic outlook, as: systemic (rather than physical), multi-leveled (rather than two-dimensional), multi-contextual (rather than reductive), and consciously self-reflexive (rather than self-absorbed and ethically detached). The new paradigm, in being conscious of the importance of epistemology in both theorization and research, encourages an awareness of each of these characteristics. In that they apply to systems in general, these theoretical terms potentially are revolutionary to new understandings of science, society, and space. In that these terms refer to a reflexive awareness of theory and method, they occur as metatheory and metamethodology.

The new paradigm terms outlined above suggest a theoretical context for theory which envisions communicative phenomenon as systemic and multi-leveled. Hence arises 'metatheory,' or theory dealing with the processes of theory. These terms also suggest a method which encloses methodology. The idea of multi-contextual and self-reflexive research implies that methods in research to some degree refer back to their own processes in constructing a vision of reality. In this sense, method encloses methodology, hence 'metamethodology.' Thus appears the title of this project: "Towards a New Paradigm of Society, Science, and Space: A Multi-leveled, Metatheoretical Context For Mass Communication Systems Research."

The metatheoretical and metamethodological concepts outlined have applications to both future and previously existing theories in social science. In communication research, gatekeeping research and knowledge gap theory in particular have a relevance to new paradigm concepts. These theories to some extent have a previous awareness of multiple levels, multiple perspectives, and networks of effects in communication processes. However, they were composed and still largely exist within the naturalistic, positivistic paradigm of research. In this sense, they still hold interests in final states, linear processes, and reductive two-dimensional models. New paradigm concepts as explained in this project imply that such formalistic expectations can be liberated from these theories through the development of a deeper awareness of metatheory and metamethodology. These theories have the potential to become increasingly self-aware and conscious of greater connections to both the process of research and the broader context of society.

Traditionally, the concept of gatekeeping has existed in the critical analysis of news production. The editor and the reporter were, as the metaphor implies, seen as stages, or gates, where information
passed by and was edited or revised according to organizations and/or personalities. In this sense, the term gatekeeping was restricted to mass media systems. In exploring the complex ways in which information systems interact and react within social groups and organizations came a growing expansion of the metaphor of gatekeeping. The term came to encompass not only editors and reporters as decision makers, but also publishers, managers, business owners, advertisers, and even audiences. In this transition, the term became a more general concept for the idea of decision makers controlling crucial boundaries between organizations, businesses, and groups. Among others, research has used the term gatekeeping to study social work, law, tracking in schools, collegiate education admission, publishing in academics, teaching, community leadership, mentoring, and psychology. The metaphor of the gatekeeper as boundary controller has taken hold thus in critical studies of a wide variety of social organizations.

In the context of this expansion of the metaphor, gatekeeping is meant in terms of key professional, decision-making individuals situated in influential organizations that moderate the production of both tangible technology, the implementation of that technology, and the production of information for that technology. Such a wide definition does not come without the danger of overextending the metaphor. The intent, though, is to give some credence to the growing realization that


organizations and groups are prolifically and mutually inter-reactive, that any one group interacts and reacts in a vast web of other groups in a multi-layered social environment.

For communication research, gatekeeping is thus a theory of both media production (i.e.: concerning how decisions about media content and form are made by key gatekeeping managers) and media functions (i.e.: concerning how messages are interpreted and spread in a community or organization through gatekeeper individuals, as in two-step flow analysis). In this sense, gatekeeping theory already has some sense of interconnectedness and complexity, and an awareness of the role mediating structures play in the effects of communication.

This consciousness of complexity and non-linear processes could be expanded by more specifically examining what chaos theory has to say about mediating structures in complex organizational systems: how ideas and organizations grow or are diminished through the mediation of gatekeepers as both dissipative and stabilizing structures. As Bryant remarks: "The gatekeeper model comes to at least a partial recognition of the non-linear nature of the communication process, in that the self-interest of the gatekeeper role is a factor in the selection and transmission of information." In these terms, one could view gatekeeping theory as offering access to an important variable in the often chaotic nature of content production in media. In attempting to delineate the 'strange attractor' pattern constraining the behavior of an organization or type of media, the regularities of gatekeeping decision makers would be an important variable to examine.

In terms of multi-leveled systems analysis, gatekeeping offers a theoretical stance which acknowledges the importance of key micro level variables to the behavior of macro level organizations. Gatekeepers as individuals can be seen as 'sensitive nodes' which act to reduce to one decision the behavior of an organization with complex and often conflicting needs and tendencies. As in the butterfly effect, it is at the point of the gatekeeper where the macro level behavior of a system could be influenced by very small behavior (i.e.: the gatekeeper wakes up in a bad mood on an important day). Gatekeepers are a point of convergence in the behavior of systems whose micro-level composition (all the conflicting and coordinating members of a media organization) is often quite chaotic beneath the seemingly steady skin of the macro level organization as a whole. A clearer understanding of the nature of non-linear dynamics thus could enhance the potential of gatekeeping analysis. Gatekeeping analysis can be seen as a step in forging a multi-leveled link between macro level media organizations and the production of content, which is consumed by micro-level individuals. By more explicitly defining the participation of gatekeepers in the multi-level passage of information, gatekeeping could be used as a theoretical model for examining patterns in the flow of information from media organizations to individuals.

As a general observation, gatekeeping could be made more self-conscious in examining how the researcher and their choices of methodology and subject matter affect the research process (how researchers are gatekeepers themselves!). Much of gatekeeping analysis presumes an 'objective' view of organizational culture which is steeped in the post-positivist outlook. Hierarchical control is often presumed, and those individuals in management positions are given the bulk of attention in theoretical formulas of media gatekeeping. However, it could be said that the way in which researchers delineate gatekeepers from mere service providers, common cogs in the media machine, is itself a process patterned by political, cultural, and social biases. In this sense, gatekeeping could be more precise in terms of how it goes about defining the gatekeeper (i.e.: stating that a certain study sees gatekeeping as being explicitly involved with organizational management decisions).

Other members of media organizations could be viewed as gatekeepers, were the conceptual boundaries of the 'gatekeeping' term shifted slightly. The potential exists to view creative personnel in a media organization as a type of gatekeeper in the broader sense as they function to choose certain types of content over others in producing media. Likewise, the role of the larger public in influencing management level gatekeepers could be examined. Polls, ratings, and sales figures act as a feedback mechanism (in a cybernetic sense) which can constrain the decision making of gatekeepers.

These suggestions are not offered to hopelessly dilute the concept of a gatekeeper, but rather to encourage a much more self-conscious, detailed analysis by researchers of what guides their theoretical formulation. In general, the metatheoretical metacontext of the new paradigm frame in assessing gatekeeping research can be distinguished from the paradigm of post-positivism in that gatekeeping

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190 Bryant, 13.
phenomenon is seen as involving: systemic relations - in as a gatekeeper becomes a component of an interconnected network with indistinct influences (rather than linear, causal, deterministic processes), multi-leveled - whereas gatekeeping is a mediating structure participating in broad relations between macro and micro levels (rather than a machine part acting to 'switch on' or 'switch off' mechanical processes), multi-contextual - in as the gatekeeper can be viewed variously and contemporaneously as an individual, as an agent of organizational interests, as a reflector of social concerns, etc. (rather than a view of the gatekeeper as participating in certain fundamental, reducible, linear roles), and self-conscious - in that the researcher constructs their own vision of who gatekeepers are and what their relation is to larger social context (whereas the old paradigm attempts to fundamentally divorce the process of constructing research from the results obtained). Finally, the new paradigm observes an ethical imperative in that to the extent that we learn about gatekeepers, we must apply this knowledge in ways which will benefit individuals, not streamline organizations.

The genesis of knowledge gap theory (the second theory to be examined here) emerged from research in the 1940's suggesting that there was a group labeled as 'chronic know-nothings' that resisted the acquisition of new information or innovations relative to more educated members of the population. Later researchers examined groups that gained relatively more information than others from media sources. These groups were often defined as having a high level of education and socio-economic status. This led to the proposition of a hypothesis by P. J. Tichenor, G. A. Donohue, and C. N. Olien that:

As the infusion of mass media information into a social system increases, segments of the population with higher socioeconomic status tend to acquire this information at a faster rate than the lower status segments, so that the gap in knowledge between these segments tends to increase rather than decrease.

Knowledge gap studies have traditionally used level of education as the key variable indicating receptivity to knowledge. The variable motivation also has been hypothesized as affecting knowledge acquisition. A number of studies have suggested that "the greater the degree of motivation (salience, functionality, concern, interest, etc.) for information, the greater the likelihood that groups will benefit equally from the flow of information in a social system." Currently, knowledge gap theory is at a point


where it must account for both education and motivation as factors in the acquisition of knowledge by different community groups.

As in the uses and gratification model of media consumption, knowledge gap expands the notion of the audience to an active force either seeking or ignoring information content. Bryant states concerning uses and gratification:

The audience is seen not as a passive recipient of information, but as an integral and active component in the communication process, which stands in a mutually causal relationship with the message, with the channel, and with the originator of the message, rather than in a simple linear causal relationship.\(^{196}\)

In these terms, in knowledge gap there is an awareness that to a certain extent there are choices made about the acquisition of media messages. This implies a multi-leveled view of media effects in that mass social systems are seen as being composed of micro individuals who are either motivated or not motivated to assimilate new information. However, this observation, if not related in a larger context, can be deceptive. There needs to be an awareness as well that macro social forces can act to either encourage or stymie education and motivation in the micro individual.

A main new paradigm awareness of knowledge gap theory is that processes of knowledge acquisition are irreversible within class and social systems. It is an awareness that the "growth of human knowledge may be characterized by either linear or curvilinear trends, but that such growth is irreversible within the timespan under study."\(^{197}\) In this sense, there is an consciousness of the new paradigm concept of irreversibility, and thus a suggestion of chaotic properties. Non-linear dynamical theory thus could be applied to the study of information acquisition\(^ {198}\) in order to further explain the functions of social knowledge gaps.

The non-linear dynamical observation that structure and turbulence mutually interact in complex dynamical systems to maintain order could be applied to the study of knowledge gap processes. Prigogine and Stengers, in their discussion of non-equilibrium systems, observe that patterned, seemingly stable systems at the macro level maintain stability by channeling energy in patterned ways in order to stabilize turbulent and chaotic energies which threaten to break the system at micro levels of organization.\(^ {199}\) This bears relevance in knowledge gaps in that the systemic channeling of information, as a form of class power or energy, to higher class individuals allows for a pattern of control to be maintained against the turbulent, destabilizing forces of class conflict.

The link between the upper class and supplies of information and knowledge as energy allows the upper class to exert control, to dissipate the turbulent forces of class conflict. The social system as a systemic whole itself seeks to pattern order by restricting the accumulation of knowledge (which can be used to improve socio-economic status) from the turbulent lower class. In this sense, the stable pattern (strange attractor) of the social system maintains order by adjusting and constraining the path of current social situations to a stable zone of energy exchange and control. The differential in the acquisition of knowledge acts as a dissipative structure for maintaining patterns of control and dominance. Such implications observe behavior generally characteristic of dynamical systems, and are not merely metaphorically relevant. The formal tools of non-linear dynamics have a direct relevance in this analysis of dissipative structures. This observation also relates to cybernetics in that restraining or maintaining control of the lower class can be seen as a type feedback control mechanism.

The new paradigm implications here are two-fold: first that order and chaos have a unique relationship, that the investigation of systems should be aware of how they inter-react to produce structure, energy flow, and transformation. Secondly, the researcher should be aware of framing and

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\(^{196}\)Bryant, 14.


\(^{199}\)Prigogine, 141.
frames of reference in theorization. One should be aware of the inter-linking nature of systems and the interplay of equilibrium and non-equilibrium structures taking place, often in the same conceptual space. The researcher should be remarkably aware that a correlating explanation is not the only explanation possible for phenomenon, that different frames of reference indicate different possibilities of nature and meaning.

In this sense, knowledge gap research could become more 'self-conscious' of the ways in which 'information' and 'knowledge,' as well as 'education' and 'motivation,' are open to theoretical and philosophical critique. It occurs that the definition for what constitutes 'significant knowledge' is defined largely by the perception of what is significant and thus employed by the dominant class. Education and motivation thus come in the larger systemic context of a class definition of what constitutes important knowledge and desirable goals. In the larger frame, the very social definition of information relevance in knowledge gap theory is co-opted by class systems of power in attempts to maintain control of stabilizing systemic structures in society.

In summary, knowledge gap theory can utilize the new paradigm outlook to increase its capacity to view knowledge gap phenomenon as: systemic - in the sense of dynamic open social systems (rather than interacting mechanically), multi-leveled - where issues of class dominance appear (rather than reduced, micro level issues of education and motivation), multi-contextual - where a number of contexts for defining component variables are possible (rather than employing reductive notions of variables and social relations), and self-reflexive - in the sense that the researcher is generally aware of the way in which they construct a certain view of social / systemic processes (as opposed to the view that some fundamental nature of social relations is being uncovered).

Lastly, it can be said that the analysis of social dynamics concerned with information acquisition has pressing ethical considerations at the individual level of social concern. Knowledge gap analysis has specifically viewed such issues as the assimilation of public health information according to educational and motivational variables. In this sense, issues of physical health are at stake in the flow of public information. If current structures and patterns of information dispersal fail to reach lower class segments of the population, the results potentially can effect the physical well-being of individuals.

The preceding analysis of gatekeeping and knowledge gap theory has served to suggest general guidelines for incorporating new paradigm concepts into existing research. The tool of new paradigm analysis appears as a perspective which encourages both deeper analysis and a consciousness of the very processes of knowing in research. The concluding commentary following will discuss general considerations of new paradigm research in communication research.


As promised in 0.0., voice changes again, and the author appears to 'frame' this work in making himself-himself 'self-conscious.' That, in part, was the point: to encourage social researchers to emerge from their 'shyness,' to not be afraid to be made familiar. If social research is to grow, we must all emerge from behind the curtain of silent objectivity. The curtain has already been opened, and it cannot be replaced. Looking outside the structure of social science, outside the window of 'objectivity': science has changed! It too has admitted it is, after all, a human project, conducted by humans, for humans, with human hopes and weaknesses. The ideal type is a wash, there is no 'God-like' perspective (God is busy pronouncing Nietzsche dead). We are on our own: yes, real people produce academic social research after all, not Olympian muses. It is possible to 'announce oneself' in one's work and still carry out professional, systematic, reliable research.
In any case, so that I may conclude, I will conclude. In "On the Ethics of Constructing Communication," Klaus Krippendorff offers a call to arms, of sorts:

I believe we are witnessing the emergence of many cracks in the foundations of the established and largely naturalistic paradigm that render this received view somewhat shaky and suggest revolutionary changes might be imminent if not timely.\textsuperscript{201}

This might be a threat, as in a threat towards ferment and fragmentation. This might also be the observation that a change is taking place of its own accord, and that we as communication researchers must merely open our eyes to become a part of it. If we are truly at a point "Between Fragmentation and Cohesion," as suggested by the Journal of Communication, we must ask how we got there. Was it the result of subversive iconoclasts within our ranks rebelling against something that worked, a system of studying communication technology which was good and just and fair? Or, rather, are we between fragmentation and cohesion because of something bigger happening outside the field: a maturing self-consciousness of the ways of studying ourselves? It is this latter perspective, the one of hope and growth, which this project has espoused.

If the field has the potential for cohesion amongst the tangled web that has been woven between research and theory, and I firmly believe it does, it will occur as the result of a new generation of researchers resting for a moment and doing nothing more than putting a good deal of thought into what it means to know ourselves in communication research. On the surface, 'knowing ourselves' seems a complex challenge: In what context? In what relation? According to what variables? How shall we operationalize them? . . . But then, this is the old ghost speaking again, the old ghost, the one that is invoked each time a researcher sets out to 'answer' a 'social question.'

Rather: 'knowing ourselves' means more than a question with an answer, much more: it is the question, the question in itself with no answer. This is the challenge of the next generation: researchers brave enough to seek knowing in realizing there is no final answer. If the field is truly to find 'cohesion,' if we are to all get along, if things are to 'run smoothly' again, if the family is to get back together: well, it won't because we find some great new overarching theory which makes everyone happy. I think it can safely be said that those days are over. Too many feelings have been hurt between here and there. The reconciliation, the 'cohesion,' comes in understanding that there are limits to understanding, and within this, agreeing to go on from there. The 'metatheoretical metamethodology' (it sounds so daunting indeed!) here spoken of isn't a set of rules or standards. There is no answer or key with which to 'save' our field. Even after all this discussion, all these words, all this talk: all I have to offer is an empty hand. It is a hand offered in the spirit of 'cohesion,' it is the urge to look deeper, to be more honest to ourselves and the true nature of social inquiry. It is the power merely to question whether the notion of 'objectivity' in research is or ever was possible.

There is no answer. This is a frightening statement. There is nothing to stand on except our own backs as researchers. This is even more frightening. Yet it is also essential if the field of mass communication research is to evolve and grow towards the new millennium. Chaos theory has a message: systems in turbulence either sink or swim, the caterpillar either dies in the cocoon or becomes the butterfly. If we are to achieve the latter it will be through attempting to open the doors of our field to what is going on outside. Science has changed a lot in the past century. People aren't out looking for answers as much anymore, they stopped looking when it was found out that most 'final answers' are made of pyrite: 'fools gold.'

Questions, that's the key. The answer is the question. The new paradigm is conscious of questions, what they mean, how we ask them, and how they should be explored. The new vision for communication research espoused here is of a field that takes the wind out of its own sails, yet keeps on sailing. There is a myth about: 'without answers, we have no purpose, no goal.' This is just plain untrue, more, it is fearful. The 'answer' is really only a well framed question. It is a question which explains itself: its internal and external relevance, the person who posed it, the ways in which it can be explored. The new question offers types of answers, it can describe 'social phenomenon,' but the conclusions are posed as one view among others. In the old paradigm, science offered and sought social answers that were

\textsuperscript{201}Krippendorff, "Ethics of Constructing Communication," 67.
supposedly resolute, final, and fundamental. In the new paradigm, the way in which questions are dealt with are judged according to what is plausible or important or meaningful in a social context.

Does this mean there is no truth? No, it means merely that we are not in the business of truth. We are explorers in a realm not of geography, but one of language: one where answers are describable in a number of ways. The description today might be better said tomorrow. Away with 'final truths' and 'forms' and all such chimera. These creatures were made as crutches for those afraid to walk without being able to see the ground. Social scientists study themselves: they pull themselves up by the hair and take a good look around, despite gravity, in spite of gravity.

So, is this all rhetoric in the end? Well, I am open to suggestions, but no, I do not feel I have mislead anyone anywhere. I have raised some questions related to the epistemology of communication. Communication research is feeling growing pains, and so it must grow. Here, in all this writing, we have trampled through the sometimes triumphant, sometimes sordid past of social science. We have followed the birth and growth of communication research from the path of social science up to now. Now: we have observed where the 'science' outside of 'social science' is. It is at a point where the researcher is humbler now than ever, it is at a point where science is aware of itself as a process of construction. Yet, throughout this hike there was hope, a hope for a better future.

4.0. as a whole has offered a context for disagreement, a field where we can agree to disagree and still get along. It was not an act of prestidigitation: explaining away the 'fragmentation' in our field. Rather, it merely reinterpreted fragmentation according to a newer, broader logic, one more conscious of the new paradigm emerging in social science. It is a format in which mass communication is seen as a broad system intimately linked with, one might say indistinguishable from, a broader society. It is also, unlike positivism and post-positivism, a perspective which is able to deal with issues of change, transformation, and perspective. The new paradigm evolves beyond post-positivistic communication effects research in seeing social phenomenon as: systemic (rather than physical), multi-leveled (rather than two-dimensional), multi-contextual (rather than reductive), and consciously self-reflexive (rather than self-absorbed and ethically detached).

But is this 'metatheoretical metamethodology' only a fancy name for a weak, irresolute philosophy of 'live and let live'? Are we not sacrificing the very boundaries, the systematization and rigor which defines our field? Is the new paradigm more a philosophy and less a standardized and definable methodology? Not so. Under the old paradigm of linear determinism, this would be the critique. However, we must ask if we should listen to those old ghosts any longer if we are to get on with business. No, standardization, systematization, rigor, reliability: these are all possible provided a self-conscious framework for method and interpretation is understood explicitly. In the new view, standards and systems are not measured according to similarities from case to case, from study to study. Rather, rigor is the measure of a relationship between researcher and subject being made plain to a reader. In other words, if the researcher strives to make their methods, biases, and goals explicit, to offer a logic and explanation for their 'systems view' of the universe, then it is up to the individual reader and academic community both to determine how systematic, reliable, and self-consistent their research was.

In discussing the problem of fragmentation in the field of communication research, this project has offered the general metatheoretical suggestion that mass communication research be systemic, multi-leveled, multi-perceptual, and self-conscious. This is offered as much more than an empty platitude so that we can 'all get along.' No there are quite pressing substantial problems that need to be dealt with as well! In as the new challenges surrounding new communication technology involve uncertainty, change, and interconnection, the new paradigm is better equipped than the old to deal with such issues.

Communication technology (as a social tool) begs for a better champion. Communication technology right now is in a turbulent phase of unstable change, change of an organizational, economic (apparent in any newspaper), and physical type (in terms of both substantial technology and infrastructure). The way in which mass communication (soon to be personal communication!!!) systems develop in the next decade, towards the millennium, will have broad ranging economic, social, political, and cultural repercussions. This is no idle boast (or threat), it is happening right now, and society will never be the same. Just think of what the advent of television has meant in society, only make it 'worse' (or 'better' if you wish).

The field, however, is ill equipped to contextualize these new technologies and turbulent changes. Caught with our head in the linear paradigm, communication researchers have only made the odd stabs at E-Mail content analysis and call-waiting ethnography. There has been much talk of 'interactive'
technology and so called ‘virtual reality,’ but who hasn’t put in their two-cent on these technologies by now? No, extraordinary times require extraordinary methods. The so called new paradigm as outlined here provides the merest suggestions for new research methods and metaphors. The new methodological potentials which exist now for analyzing change, interconnection, and complexity in technical systems are apparent. Chaos science (in the respect of both non-linear mathematics and chaos theory), for example, is available to perform short term quantitative and qualitative examinations of shifting media organizations and changing technologies. As pointed out by Gregersen and Sailer, organizational systems in states of chaos display “highly discontinuous behavior in the system, such as sudden shifts in organizational policy, downsizing, product discontinuations, voluntary employee turnover, etc.” Media organizations certainly are exhibiting all of these ‘warning signs.’ Such a state indicates that revolutionary changes are possible for media systems. De Greene comments on media organizations in states of turbulence:

complex sociotechnical systems and their environments under far-from-equilibrium conditions, evolve towards points of bifurcation and instability. Near these points susceptibility to fluctuation is great, and nonlinear, positive-feedback-mediated processes may lead to chaotic regimes, turbulence, and self-organized new structures. Evolution consists of cascades of such structural changes.

We are at a period now in which these evolutionary changes are occurring. If there is some state which we don’t want media and communication corporations to evolve towards (i.e.: totally de-regulated capitalistic information strongholds), now is the time to exert concerted pressures (i.e.: through economics, policy formation, public critique) to shift these systems towards the possibility of more desired stable states.

Beyond the rapid changes occurring in media and communication technology organizations, the physical technology of communication systems themselves are changing (in terms of both infrastructure and individual media outlets). Communication technology in general is becoming more pervasive, interactive, personalized, defined (in terms of bandwidth and quality), and convergent (in that diverse technologies are converging to hybrid media through computers). Mass communication itself is swiftly becoming a misnomer. In this respect, we won't have to worry about broad social effects from media much longer: soon there will no longer be any major centers of uniform media content. In these terms, what is required to study communication technology and media sources generally will be a better understanding of the individual / psychological level of communication technology and its micro-level relations with users. At such an individual level, broad generalities concerning determinism and effects are quite foreign concepts.

However, new paradigm concepts of multi-leveled and perspectual systemic research can provide a wealth of viewpoints from which to examine the relations and structures occurring in the interactive media relationship. Interactive technology posits itself as a type of instant information feedback mechanism, it is a type of ‘cybernetic’ technology. (Hence, perhaps, the term ‘cyberspace’). Between user and technology, the boundary grows hazy: computer and user are networked in a unified parallel information processor. New paradigm theoretical viewpoints such as cybernetics, cognitive science, and fuzzy set analysis can offer methods for characterizing the mutually effecting, interlinked, and uncertain relations which occur in the use of personalized media.

Society itself, as a broader symbolic system of mediated social symbols, is becoming increasingly ‘virtualized’ or ‘mediated.’ The symbolic infrastructure of communication technology is swiftly usurping the physical world as the stage for social communication. Technical communication is the medium through which social events which once occurred on the direct and physical plane in human society are now occurring interculturally, internationally, trans-spatially, and trans-temporally. Social meaning is becoming increasingly contingent on media technology and computers. The speed, quantity, quality, and content of


technological communication is geometrically expanding. The results of the breakdown of space through technical media include: increased social interaction (increased amounts of 'energy' in social symbolic systems), evolving forms of social interaction (where new media act to combine and transform social relations), a breakdown of time restrictions (where the restrictions of space are rendered obsolete), new forms of culture involving personal expression and leisure (where these technologies potentially liberate time and open people to new mediated experiences), and the creation of a virtual space for society (where increasingly social intercourse occurs through mediated technical agents).

As both communication organizations and technologies become increasingly complex, communication research will be severely challenged to find reliable methods for investigation. Having a multi-perspectival, multi-leveled systemic outlook in mind can help researchers in both theoretical analysis and research design. In taking a metatheoretical perspective, in being able to marshal a number of methods to the task of communication technology analysis, the types of media and technological relationships we study will not be as severely restricted by the limitations of our methods. Utilizing all the interdisciplinary, theoretical perspectives available to us for examining the current state of affairs can only serve to give us a more diverse and complete picture of the complex forces which are now interacting.

To return to the ground for a moment, such new methods can only occur if we as communication researchers as a group are willing to broaden our horizons and restrict the expectations of 'final answers' which exist under the old paradigm. What is required is a metamethodological context which allows for complex phenomenon to be systematically examined from a number of perspectives. This in part entails a broader context for interdisciplinary research, a willingness to explore and employ conceptual tools from a number of disciplines to a number of disciplines. The call is going out for cooperation among diverse fields in order to confront complex social questions and problems. E. Laslo, for example, in Goals for Mankind, calls for the interdisciplinary investigation of processes of transformation in society using the tools of systems theory and cybernetics. More generally, there needs to be a willingness for diverse fields to cooperate with one another and assimilate different perspectives. In his Journal of Communication article "From Field to Frog Pond" Karl Erik Rosengren comments on the problem of fragmentation in the field:

The solution seems to be twofold. Humanistically oriented communication scholars must overcome their aversion to formal models. Social-science-oriented communication scholars must be willing to draw on the sometimes very productive insights gained by humanistically oriented scholars. There is a strong need for 'combinations, comparisons, and confrontations' to be carried out in the precise terms offered by studies combining substantive theory, formal models, and empirical data.

In this sense, interdisciplinary analysis involves a loosening of methodological boundaries in order to allow different perspectives to contribute to complex problems. Integration with science should not be the final goal of social science (nor of mass communication research). Rather, the goal should be an easing of disciplinary boundaries from both perspectives, each reaching towards an overlap of methods and theories. New paradigm sciences such as those examined here represent areas where social science, particularly communication research, will benefit greatly from such cooperation.

In final summation, the most significant outgrowth of these changes will be a shift in the goals (and therefore, results) of social science. The implication of increasing understandings of uncertainty, complexity, and unpredictability will be that causal, lawlike, and predictive views of social phenomenon will be closed out, but that in the exchange a much more robust vision of social exploration is gained. The move is from an attitude of dissection and objective observation to one of multi-contextual exploration and short-term 'weather prediction.' In this sense, more precise, short-term observations of specific phenomenon will be possible, while broader range, deterministic investigations will be realized for their inherent difficulties (as scale and time increases). It is hoped that the over-application of deterministic

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and empirical methods of social assessment (i.e.: content analysis, surveys, polls, etc.) will be revealed for their inherent limitations. As Lowery and DeFleur comment:

We can never reach a state of complete closure on understanding the effects of mass communication. A characteristic of science is that its truths tend to be temporary. The best explanations of today are likely to be discarded in the future as new insights are gained, new data are assembled, and new explanations are formulated and tested. . . Unlike the more invariant world of physical science, mass communication takes place in a constantly changing social and cultural milieu that can alter both the process and its consequences. . . Thus, as society and the media change, their effects can be expected to change.\textsuperscript{206}

Communication research as a field should be ready and willing to adapt to such an evolution. Examining the methodological implications of new paradigm science is one way the field can evolve to keep pace with rapidly diversifying organizations, technology, and content.

This work is intended to offer an introductory foundation for more formal and specific investigations into the application of new paradigm science to communication research and social science. The issues tackled here represent philosophical and theoretical concepts which are intended to provide a basis for theoretical and qualitative work. The application of more formal quantitative methods (i.e.: non-linear mathematics in particular) have been implied but not detailed. More closely studying new paradigm science could prove directly useful to the examination of communication effects. However, such an interdisciplinary project is left for future research.

In closing, it remains to offer that the curtain of objectivity is open, that we all must work as social scientists to discover our place in a world becoming increasingly self-referential, interconnected, and turbulent / transformative. For the study of society, this means we cannot labor under the illusion that we are discovering final truths. As Hermann Hesse eloquently observes in \textit{Steppenwolf}:

All interpretation, all psychology, all attempts to make things comprehensible, require the medium of theories, mythologies and lies; and a self-respecting author should not omit, at the close of an exposition, to dissipate these lies so far as may be in his power. If I say "above" or "below," that is already a statement that requires explanation, since an above and a below exist only in thought, only as abstractions. The world itself knows nothing of above or below.\textsuperscript{207}

Thus we must all endeavor to explore the lie, to live with the question.


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