Research Paradigms in Public Administration

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Abstract

The term paradigm has become a central issue in philosophy of science. Increasing attention to paradigm in public administration, as a branch of social science, is also highlighted. This paper attempts to analysis seven paradigms in public administration research and to study ontological, epistemological, methodological, rhetorical and axiological assumptions of the each paradigm. Finally, we briefly offer some potential areas of public administration that can be informed by seven research paradigm.

Keywords: Research Paradigms, Public Administration, Ontology, Epistemology, Methodology

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Introduction

In recent years, increasing attention has been devoted to understanding how the assumptions which scientists bring to their subject of investigation guide and influence what is seen and studied (Morgan 1990, 13) because the way we think can the world is (ontology) influences: What think can be known about it (epistemology); how we think it can be investigated (methodology and research techniques); the kinds of theories we think can be constructed about it; and the political and policy stances we are prepared to take (Fleetwood 2005, 197). For this reason, many scholars in various filed of social science have attempted to analyze research philosophies (paradigms) that underpin their discipline (Astley and Van de Ven 1983; Burrell and Morgan 1979; Eckburg and Hill 1979; Guba and Lincoln, 1994; Morgan 1980; Morgan, 1990; Reingold, 1980; Tschannen, 1994). In organization theory, Morgan's works (1979; 1980, 1994).

The research studies in public administration are conducted in seven paradigms. The purpose of this paper is exploring ontological, epistemological, methodological, rhetorical and axiological assumptions that underpin all studies in public administration. There are several typology of research paradigms (e. g., see for example, Guba and Lincoln 1994; Hatch 2006, Jennings 2001; Morgan, 1979); but we will expand research paradigms to seven paradigms and will study not only their ontology, epistemology, and methodology, but also draw up rhetorical and axiological assumptions of the each paradigms.

In public administration, for example, Henry's work (1986)," public administration and public Affairs" is an original source that offers five paradigms in public administration as a discipline not a field of research.

Therefore, the majority of public administration textbooks, articles and papers do not address theoretical paradigms or according to Hatch (1997) perspectives that underpin public administration research. Though, some public administration authors refer to these paradigms in public administration itself as a discipline (Gunn, 1987; Henry, 1986; Hood, 1990; Kettl, 1993; Rainey, 1994; Marshall, 1998) not as a field of research. We focus on paradigms underpin "public administration research" not "public administration itself".

This paper attempts to analyze seven paradigms that inform and guide inquiry in public administration areas. These paradigms are: positivism, interpretive, critical theory, feminist, postmodern, chaos theory and complexity theory.

Our purpose is not to discuss "complementary" or "competition" between paradigms [this debate refers to triangulation or commensurability; you can find many works about this (for example, Gioia and Pitre 1990; Hassard, 1988; Hassard, 1991; Hassard and Pym 1990; Willmott 1990; Jackson and PiPPa 1991; Willmott 1993; Weaver and Gioia 1994; Schultz and Hatch 1996). Each paradigm has unique ramifications and aPPlications for conduct of research in public administration field.

If we define paradigm as "basic belief systems based on ontological, epistemological methodological, rhetorical and axiological assumptions" [Creswell, Guba and Lincoln, 1993; 1994], it is important for researchers in public administration to understand the basic foundations of their paradigms. This understanding is very helpful and very important for maintaining consistency among major elements in "research process onion", that is, research orientations (basic, aPPlied

and evaluation); research philosophies (positivism, interpretive social sciences aPProach, critical theory orientation, feminist perspectives, postmodern aPProach, chaos theory and complexity theory); research aPProaches, (induction, deduction and abduction), research strategies or designs (experimental strategy, correlation strategy, survey strategy, grounded theory strategy, ethnographic strategy, narrative research strategy, case study strategy, action research strategy and mixed methods strategy); Research methods (observation, questionnaire, interviews); and research objectives (exploratory, descriptive and hypothesis testing).

This paper does not provide a detailed description of each paradigm, because that is beyond the scope of this paper (you can refer you to massive of works about it, for example Burrell, 1996; [Burrell and Morgan, 1979; Dettz 1995; Guba and Lincoln, 1994; Kaghan and Philips, 1998; Moldovan and Baum, 2002, Wicks and Freeman, 1998;]

In the first section, we define 'paradigm' and elements of it, and then we will describe each of the paradigms, based on five questions that are there in Creswell's work [1994] as following:

1) Ontological assumptions: what is the nature of reality?

2) Epistemological assumptions: what is the relationship of the researcher to that researched?

3) Methodological assumptions: what is the process of research?

4) Rhetorical assumptions: what is the language of research?

5) Axiological assumptions: what is the role of values?

The major importance of this debate about paradigms in public administration research is: structure, implementation and report of the entire research process must be colored by a paradigm.

History of Paradigm and Public Administration Research: An Overview

The Longman dictionary (1995) defines research as "the studious study of a subject, that is intended to discover new facts or test new ideas; The activity of finding information about something that you are interested in or need to know about". According to kim (2003 .9) as the definition implies in the strenuous journey to knowledge, researchers and scholars employ various research paradigms to guide them through the course of knowledge seeking.

It was kuhn (1962) who first argued that at a particular time in the history of scientific development in a field, a particular paradigm acted as a framework that determined key concepts and methods in scientific research. In 1970, "The Structure of Scientific Revolutions", infused kuhn's notion of paradigm in hard sciences. But since 1970, this term has been widely used in the social sciences even though its author was not sure about its aPPlicability outside the hard sciences of nature.

In public administration discipline, two authors (Dixon and Dogan 2005; Henry, 1986) discuss public administration paradigms with emphasis. Most disciplines also discuss research paradigms, but there is little work (in public administration and other disciplines in social sciences) has examined research paradigms comprehensively.

Nevertheless, the works on research paradigms in the majority of the fields of study and their branches have significantly increased (see e.g., Asamen and Berry, 1997; Bygrarvc, 1989; Burrell and Morgan, 1979; Colclough and Patrick, 1983; Davies, 1988; Jackson, 1990; Tschannen, 1994;

Grant and Perren 2002; Nightinigale and Cromby 1999).

Although, there is the paradigm debate in authors's works on organizational analysis (see e.g., Aucoin, 1990; Astley and Van de Ven, 1983; Behn, 1987; Borins, 1994. Gioia and Pitre, 1990; Gioia, 1994; Henry, 1986; Holhand, 1990; and public administration; Jackson, carter, 1993; Jackson and Carter, 1991; Willmott, 1993; Pfeffer, 1993; Weaver and Scherer and Steinmann, 1999; (see e.g., Dixon and Dogan, 2005; Kettl, 1993; Morshall, 1998; Rainey, 1991), in these references, there is no discussion about research paradigms in seven categories with five elements (ontological, epistemological, methodological, rhetorical, axiological assumptions) comprehensively.

There is some consensus beginning with kuhn (1962) and subsequent philosophy of science authors (Eckberg and Hill 1979; Burrell and Morgan, 1979; Colclough and Patrick 1983; Masterman, 1970; Tschannen 1994;) that paradigm is the overlying view of the way the world works and has the following key elements:

1. Ontology: theory or study of existence (being). For example, ontological assumptions in the conduct of inquiry within a paradigm might specifically characterize the nature of reality;

2. Epistemology: a theory of knowledge that deals with the nature of knowledge and its scope, which provides a set of criteria for evaluating knowledge claims and establishing whether such claims are warranted; Methodology: a process by which knowledge is to be generated;

3. Rhetoric: A theory of language that is used in conducting a research (research language);

4. Axiology: A theory of the roles that values play in conducting research.

According to above characteristics, any paradigm has ontological, epistemological, methodological, rhetorical and axiological assumptions that together frame the nature of the research and the role of the research in the scientific study. The terms and their definitions are summarized in table 1.

Table 1. Summary of Terms and Their Definitions

Term	Definition
●Paradigm	A set of beliefs and assumptions
●Ontology	The nature of reality
●Epistemology	The relationship between the researcher and the researched
●Methodology	A set of guidelines for conducting research
●Rhetoric	The language of research
●Axiology	The roles of values in research

In the past, the dominant paradigm in social science was positivism. Essentially, the roots of positivism refer to physical sciences and this paradigm "views" the world or reality as very organized or structured and based on rules that guide actions in both the natural and the social world. Over time, emerging new paradigms such as interpretive social sciences paradigm, critical theory orientation, and recently, feminist perspectives, postmodern aPProach, chaos theory orientation and complexity challenge this view.

As with every other scientific discipline, the conduct of public administration research is guided by a research paradigm. Most philosophers and scientists today agree that researchers could potentially operate under different paradigms, but may disagree on the degree of trust or credibility placed in the knowledge claims of various paradigms (e.g., Philips 1987).We believe that paradigm diversity is an oPPortunity in public administration research, because it celebrates the possibility of obtaining new insights and understanding. (Morgan 1993, 13).

In the following section, we analyze each paradigm, its epistemology, ontology, methodology, rhetoric and axiology, and some potential paths of public administration that can be known by research parading.

Positivism Paradigm

According to Bohm (1957, 130) "The positivism paradigm is based on a mechanistic philosophy which states that" The enormous diversity of things found in the world… can all be reduced completely and perfectly and unconditionally (i.e without aPProximation and in every possible domain) to nothing more than the effect of some definite and limited general framework of laws". This paradigm has its roots in the work of Descartes (1596-1650) and his Cartesian paradigm, as well as the work of Isaac Newton (1642-1727) and his Newtonian physics paradigm of scientific inquiry. Its philosophy is still pervasive in most of today's scientific communities and their practices. In Hughes's view (1990, 16) positivism is a term used interchangeable with "empiricism", "behaviorism", "naturalism" and "science".

The positivistic research originated in the 19th century in an attempt to aPPly the methods of the natural sciences to social phenomena (Smith 1983). According to

Babbie (1993) in 1822, the French philosopher Auguste Comte created the term *sociologie* and further classified social interactions as physical science-like phenomena to investigate and find their universally governing rules. In other words, adoption of positivism as a means to understanding the social world is credited by Auguste Comete (1798- 1857).

As a paradigm, positivism embraces a view of the world as being guided by scientific rules that explain the behavior of phenomena through relationships. By studying positivism's ontological, epistemological, methodological, rhetorical, axiological assumptions further explanation can be possible.

Ontological Assumptions: What is the Nature of Reality?

In Guba and Lincoln's views (1994), ontology of positivism is realism (naïve realism). This ontology assumes that reality exists independently from the knowing subject and (reality) is deterministic in nature. According to Morcol (2001, 103) determinism is composed of three layers of assumptions:

1. Reality is composed of discrete entities and events that can be aggregated hierarchically.
2. Entities and events are causally connected.
3. Universe is completely and totally predictable.

In positivism world, there is an aPPrehendable reality, driven by immutable natural laws and mechanisms. In such a world, researcher can predict human behavior, because he can discovery external forces (the universal law and truths that explain causal relationships). When research finds causal relationships, shaping and controlling human behavior can be possible. Thus, positivism is homothetic, because for developing theories to explain behavior or relationships in the natural and social world, it is necessary to provide generalizations based on observable or testable facts. Therefore, this determinism requires reductionism that corresponds with Hesse's view (1980) that state that "the basic posture of the positivism paradigm is argued to be both reductionist and deterministic. Consequences of these characteristic are: Discrete entities and events, linear causality and total predictability.

Epistemological Assumptions: What is the Relationship of the Researcher to that Researched?

Epistemology refers to "what is the relationship between cognition and object of cognition?" In positive epistemology, objective cognition of an independent reality is possible. According to authors (e.g.Donaldson 1996; Giddens 1978; Neurath 1951) this epistemology claims the possibility of eliminating subject-dependent directions of the cognition of reality, as soon as suitable measures for the removal of aPPropriate intervening variables are found. Thus, dualist and objectivist are characteristics of this epistemology. Assumption is, investigator and the phenomena of interest (or the investigated "Object") are to be independent entities and researcher can study the object without influencing it. This epistemology assumes that this separation makes objective knowledge possible, the truthfulness of any knowledge can be determined by empirically testing its correspondence to reality (this principle is called the correspondence theory) (Chorcolg, 2001, 148).

In positivists' view, researcher must follow strict procedures to make universal laws of nature and society. Logical positivists claims universal laws are meant to hold true for all times and places (Keat and Urry 1975, 9-26). As a consequence, other researchers can be able to replicate the same piece of research and obtain the same findings.

Methodological Assumptions: What is the Process of Research?

As we early noticed, positivism is based on the assumption that there are universal laws that govern social events, and uncovering these laws enables researchers to describe, predict, and control social phenomena (Wardlow 1989). Thus, it will use the methodology of the physical sciences, that is, reductionist and analytical methodology. Therefore, according to Guba and Lincoln (1994,110), questions and (or hypothesis) are stated in propositional form and subjected to empirical test to verify them.

Therefore, logical positivists of the early twentieth century attempted to established logical deduction and mathematics as the main methods of science and refined the aPPlications of both (Giddens, 1995, p.158).

The research in positivism tradition begins with a question. In order to find the answer to the question, researcher makes a conceptual framework or early theory based on past research and drives one or more hypotheses and then tests them in the empirical world. Therefore, positivist research will primarily use quantitative strategy (e .g survey strategy, correlation strategy and experiment strategy) and the methods of it include questionnaires, observation, documentary analysis and experiments and quasi- experiment.

Rhetorical Assumptions: What is the Language of Research?

Throughout the short history of positivist epistemology, research has been the formal process of inquiry by an organized quest for principle, theory, or even "law of nature" (Sprague and Sprague 1976, 59)

When a positivist researcher writes a study, the language should be not only impersonal and formal, but also based on accepted words such as relationship, comparison, and within-group. Concepts and variables are well defined from accepted definitions (Creswell 1994, 6).

The language or terms that are used in positivist research process include hypotheses, variables, probability (random) sampling, descriptive statistics, measures of association, inferential statistics, measures of central tendency, and mathematical formulas that enable the researcher to generate theories about the world (Jennings 2001, 36). In summary, the language of positivists is engineering language.

Axiological Assumptions: What is the Role of Values?

To ensure objectivity in knowledge, positivists attempt to separate facts from the values of the knowing object. In positivist paradigm, the researcher's values are kept out of the study. This feat is accomplished through entirely omitting statements about values from a written report, using closely from the evidence gathered in the study [e.g, Lee 1991; passmore 1967].

Axiology of positivism is "value – freedom", that is the choice of what to study, and how to study it. It should be determined by objective criteria rather than beliefs and interests. Table2 has summarized the world of positivism paradigm.

Table 2. The World of Positivism Paradigm

Assumptions / Paradigm	Ontological assumptions	Epistemological assumptions	Methodological assumptions	Rhetorical assumption	Axiological assumptions
Positivism	• Naive realism (Guba, Lincoln, 1994, p. 109) • Universal truths and laws (Jennings, 2001, p.56) • Determinism, linear causality, total predictability, discrete entities and events (Morcol, 2001, p.106). • Causal world	• Dualist /objectivist (Goba, Lincoln, 1994, p. 109) • Researcher is dependent of subject • Objective knowledge • Subject-object distinction (Morcol, 2001, p.106). • Gap between research and subject	• Deductive aPProach • Stricted procedures	• All research should be quantitative • Statistical relationship	• Value-freedom • Facts must be separated from values

Interpretive Paradigm

Interpretive scholars argue that the social world cannot be understood in the same way as the natural and physical worlds. Interpretivism, also called constructivism perspective to science are found in many social sciences, (e.g.,see Boland 1989; Geertz 1973; Gregory 1983; Hatch 1997; Jennings 1983; Longino 1990; Modleski, 1986, Rabinow and Sullivan 1979; Yanow 1987; 1995 1996), including public administration. According to Hatch and Yanow (2001, 63), interpretive aPProaches trace antecedents, to set philosophical arguments that were developed largely in the first part of the twentieth century in Europe (initially in Germany, at mid-century in English philosophers). These arguments have even earlier roots, in the eighteenth–century work Kant, in the ancient Greek philosophers, and in 1,500-year-old Jewish textual practices. However, some scholars (Jenninges 2001; Beam and Simpson 1984; Fay 1975; Filmier et al. 1972; Polkinghorne 1988) have stated that interpretive paradigm was based on Weber's "Verstehen" or empathetic understanding. In terms of Weber (1928, 3), empactic or aPPreciative accuracy is attained when, through sympathetic participation, we can adequately grasp the emotional context, in which the action took place.

In this paradigm ontology is relativist, epistemology is subjective and methodology is naturalistic. There are differences between interpretive paradigm and positivism, with regard to ontological, Epistemological, methodological, rhetorical and axiological assumptions.

Ontological Assumptions: What is the Nature of Reality?

Research conducted under an interpretivist ontology, considers reality as subjective and socially ontology on the other hand, considers reality as subjective and socially constructed with the researcher and the object (respondent) both involved in the knowing process. The subjective researcher seeks to know the reality through the eyes of the respondent. (Olson 1990, 3)

Thus, for the interpretivist researcher, eality is not a rigid thing, instead it is a creation of those individuals involved in the research. Reality dose not exist within a vacuum, its composition is influenced by its context, and many constructions of reality are therefore possible (Hughes 1994).

To Guba and Lincoln [1994, 110], ontology of interpretive (or constructivism) is relativist, that is realities aPPrehendable in the form of multiple, intangible mental based, local and specific in nature (although elements are often shared among many individuals and even across cultures), and dependent for their form and content on the individual people or groups holding the constructions. In general, ontology of interpretivism is based on this belief "we cannot know an external or objective existence apart from our subjective awareness of it, that which exists is that which we agree exists" (Hatch 2006, 14).

Epistemological Assumption: What is the Relationship between the Researcher and the Researched?

According to Guba and Lincoln [1994, 111], the epistemology of interpretive paradigm is transactional and subjectivist, that is, the investigator and the object of investigation are assumed to be interactively linked so that the "findings" are literally created as the investigation proceeds.

In this paradigm, all knowledge is relative to the knower and can only be understood from the point of view of the individual who is directly involved. Truth is socially contrasted via multiple interpretations of the

objects of knowledge thereby constructed and therefore shifts and changes through time. Thus, in the interpretive paradigm, the relationship between the researcher and subject (or "social actors" "respondent", "participants" or interviews' base on interpretive terminology) is subjective rather than objective (Jennings, 2003, 39). In the other word, terms such as'' I'' (researcher) and ''YOU'' become ''WE'' (close interactions between I and YOU).

Methodological Assumptions: What is the Process of Research?

The interpretivsts claim that we must study social phenomena in inductive process, because it suits the nature of social actors. Therefore, to Guba and Lincoln [1994, 111], hermeneutic and dialectic are two core methodologies in interpretive paradigm, that is, the process of research in this paradigm is inductive.

In this paradigm, the individual constructions can be elicited and refined only through interaction between and among investigator and respondents, because social constructions have variable and personal nature.

Interpretivist research, by using

conventional hermeneutical techniques, interprets the varying constructions and compares and contrasts through a dialectic interchange. (Guba and Lincoln 1994, 111). Grounded theory strategy, action research, social construction and narrative research strategy fit to this methodology.

Rhetorical Assumptions: What is the Language of Research?

In language of the interpretive paradigm, terms such as ideographic view, participants, respondents, emic perspective, reflexivity, reciprocity, ground theory analysis, content analysis and triangulation are common. [Jennings 2003, 39]. The language of the study may be first person and personal. In contrast with hard and engineering language of the positivism, the language of the interpretivism is soft and comprehensible for social actors.

Axiological Assumptions: What is the Role of Values?

In interpretive paradigm, investigator admits the value- laden nature of the study and actively reports his or her values and biases, as well as the value nature of information gathered in the field. The interpretivists emphasize on important of

the effects of subjecties values in research findings ,and they believe the separation between subject and object, researcher and

summarized the world of interpretive paradigm.

the researched to be impossible. Table 3

Table 3. The World of Interpretive Paradigm

Assumptions / Paradigm	Ontological assumptions	Epistemological assumptions	Methodological assumptions	Rhetorical assumption	Axiological assumptions
Interpretive	• World is a human construct • Relativism (Guba and Lincoln, 1994, p. 109) • Any phenomena have multiple riealities	• Closely subjective interaction between research and researched • Intersujectivity relashanships	• Inductive aPProach • Loosely and flexible procedures	• Qualitative methods • Soft language	• Value laden; biased

Critical Theory Paradigm

Critical theory, developed by members of the Frankfurt school, as they have become known, aims to combine social science and philosophy to advance politically and practically committed social philosophy. They criticized producing objective, value-free knowledge of social reality that social science claims. In critical theorist's view, "given" patterns of activity (e.g. consumerism, authoritarianism) takes shape

within specific historical and societal contexts, and the methods of representing these patterns are themselves inextricably embedded within and colored by these contexts [Willmott, 2003, 23]. Thus, critical theory has repeatedly assailed the received understanding that science is unified, authoritative, and value-free, is underpinned by the assumption that reality is "out there" (e.g. Horkheimer 1937).

The term "critical theory" was coined in 1937 after the majority of institue's members had already emigrated to the united state, following the triumph of Hitler. Its aim was to find a radical supra disciplinary social theory rooted in Hegelian-Marxian dialectics, historical materialism, and Marxian critique of political economy and theory of revolution. Four authors (Horkheimer, Adorno, Marcuse, Habermas) have significantly played in advance critical theory.

In Horkheimer's view, critical theory was to be a new interdisciplinary theoretical activity, which suPPlemented and transformed the dialectical philosophy Hegel and Marx with insights from the relatively new discipline of psychoanalysis, from German sociology, anthropology, and less mainstream philosophers such as Friedrich Nietzsche (1844-1900) and Arthur Schopenhauer (1788-1860).

Adorno, similarly, argues that "facts are not in society ……. the resting up on which knowledge is founded because they themselves are mediated through society (Adorno, quoted in Spinner, 1975, 28).

Adorno is denying the finality on which all knowledge is presumed to rest. Adorno also put the view that there was a constant interplay of particular and universal, of moment and totality.

In Marcuse's view (1993, p. 445), dialectical thought invalidates the a priori aPPosition of value and fact by understanding all facts as stages of a single process –a process in which subject and object are so joined that truth can be determined only within the subject–object totality. All fact embody the knower as well as the doer, they continuously translate the post into the present. The objects thus "contain" subjectivity in their very structure.

However, Habermas provides a significantly different historical diagnosis of the social, political, and cultural situation to horkheimer and Adorno.

Habermas is interested in the concept of the public sphere, because he sees it as the origin of the ideal of a democratic politics, and as the ground of the moral and epistemic values mat nourish and maintain democracy – equality, liberty, rationality and truth.

The form of argumentation by Adorno, Horkheimer, Marcus and Habermas is one that comprehends events and engages in a

form of reflection that is dialectic logic. This dialectical thinking owes much to the work Hegel and marx.

In general, researchers conduct research under the critical theory paradigm, see research as a means to benefit the world and change conditions, particularly for the oPPressed groups.

The major aim of doing inquiry in critical theory is freeing oPPressed groups from oPPression and there by change their social circumstances. By analyzing its ontological, epistemological, methodological, rhetorical and axiological assumptions, we find differences between critical theory paradigm and two other paradigms (positivism and interpretive).

Ontological Assumptions: What is the Nature of Reality?

In critical author's view (e.g. Horkhiemer, Marcause, Adorno and Habermas), the social sciences are different from the natural sciences, inasmuch as generalizations could not be easily made from so-called experiences, because the understanding of experience itself is being fashioned from ideas they are in the

researcher themselves. Therefore, for Horkheimer, aPProaches to understanding in the social sciences cannot simply imitate those in the natural sciences (Carr 2000, 210). In critical theory paradigm world is complex and organized by both overt and hidden power structures. Subsequently, this world, involves oPPression, subjugation and exploitation of minority group, who lack any real power. In Jennings view (2001, 42), the social world is perceived as being orchestrated by people and institutions in power positions, who try to maintain the status quo and subsequently their positions of power. Therefore, the ontology of critical theory is historical realism, the virtual reality shaped by social, political, cultural, economic, ethnic, and gender values; and this reality has been crystallized over time (Guba, and Lincoln 1994, 109).

Epistemological Assumptions: What is the Relationship of the Researcher to the Researched?

In critical theory research, the researcher is a part of what he is researching and is caught in a historical context, in which

ideologies shape the thinking. Thus, theory would be conforming to the ideas in the mind of the researcher rather than the experience itself. However, according to sarantakos, (1998, 4.), the epistemological position of critical theory is "between subjectivism and objectivism". Critical researcher is seeking scientific findings that will change conditions of subjecties. In this research, interaction between critical research and subjecties (the minority group) is very important. Therefore, researcher's empathy with subjecties (minority group) and the social circumstances of subjecties is paramount to achieving the required transformational changes to the minority group being studied (Jennings, 2001, 42). As the result, according to Guba and Lincoln (1994, 109), Epistemology of critical theory paradigm is transactional and subjectivist; and the research findings should empower the minority group to effect change to improve its social circumstances (Jennings 1994, 42).

Methodological Assumptions: What is the Process of Research?

During the 1960's, a variety of new theoretical paradigms emerged, which put in question the prevailing quantitative, empiricist, and positivist conceptions of social theory on social research. Growing dissatisfaction with the dominant methodologies and theories produced by the mainstream, promoted a search for alternative methodologies and conceptions of social theory and research. Critical theory paradigm was an alternative. Its methodology is matched with the nature of naturalistic research that is aPPropriate for social sciences.

The transactional nature inquiry (in critical theory paradigm) requires dialogue and interaction between researcher and the phenomena of interest; in Guba and Lincoln that dialogue must be dialectical in nature to transform ignorance and misaPPrehendsions into more informed consciousness.

In the methodology of critical theory, the objective of research is getting below the surface to the meaning of social interaction and the power plays that are implicit in social interaction, [Jennings 2000, 42]. For achieving this objective, critical researcher will predominately use a qualitative methodology. As a result, the process of research is subjective inductive. This

methodology in terms of Guba and Lincoln [1994, 110] is dialogic and dialectical.

Rhetorical Assumptions: What is the Language of Research?

The language of critical theory paradigm is based on its methodology. Its methodology is qualitative and inductive, thus methods used by critical theory researchers, for example, participant observation, in-depth interviewing, focus groups, Delphic panels and aPPreciative inquiry in order to expose the oPPression, subjugation and exploitation of the minority group being studied (Jennings, 2001, 42). The major method in critical theory paradigm is dialectical analysis. Benson (1977, 4-7) suggested that dialectical analysis proceeds on the basis of four fundamental premises, or principles.

These are that:

1. People are continually in a process of constructing and reconstructing the social context.

2. Social phenomenon needs to be studied rationally as part of a totality or lager whole that has multiple connections.

3. Social arrangements are exactly that, social constructions with latent possibilities of transformation that become conscious through inherent contradictions in those social orders; and

4. There is a commitment to praxis, while recognizing the limits and potentials of present social arrangements (see also Zeitz 1980).

Axiological Assumptions: What is the Role of Value?

Conducting research under the critical theory paradigm is impossible without close interaction between researcher and subjecties, because the central objective of research in this paradigm is to effect change in conditions of those being studied. Thus the researcher's values are an important part of research process as the entire process is about the transformation change of the social setting being studied (Guba and Lincoln 1994, 110]. As the result, critical theory paradigm is value- laden and biased. Table 4 has summarized the world of critical paradigm.

Table 4. The World of Critical Paradigm

Assumptions / Paradigm	Ontological assumptions	Epistemological assumptions	Methodological assumptions	Rhetorical assumption	Axiological assumptions
Critical theory	●Complex world organized by overt and hidden powers (Jenning, 2000, p.56) ●Historical realism (Guba and Lincoln, 1994, p.109) ●World organized around domination and oPPression	●Transactional (Guba and Lincoln, 1994, p.109), ●Between objective subjective (Ginning, 2001, p.56)	●Predominantly inductive aPProach	●Qualitative language ●Dialectical analysis	●predominantly Value-laden, biased

Chaos Theory Paradigm

Literature review on chaos theory shows that, in a scientific context, the word "chaos" has a slightly different meaning than it does in its general usage as a state of confusion, lacking any order. Chaos, refers to aPParent lack of order in a system that nevertheless obeys particular law or rules; this understanding of chaos is synonymous with dynamical instability, a condition discovered by the physicist Henri Poincare in the early 20th century that refers to inherent lack of predictability in some physical systems [Prokhorov 2001, 22].

Here, we will use Brian Davies's efinition of chaos from his book "exploring chaos: theory and experiment", where it is defined to be a situation where one sees:

1. Sensitive dependence on the initial conditions, making long term prediction impossible (the butterfly effect).

2. Mixing of the states of the system on ever finer states go that the trajectories (paths) which it may follow become inextricably tangled.

Based on the above definition, if a system has following characteristic motions, we called it, "chaotic system": Determinism:

Motion which is generated by concise set of equations and deterministic rules.

1. Nonlinearity: A prerequisite for chaotic motion. However, this does not suggest that nonlinearity implies chaotic motion.

2. Sensitive dependence on initial conditions: As mentioned above, the small change results in enormous conclusions.

3. Aperiodicity: in a topological view, chaotic motion does not bring itself to fixed points. Motion will never repeat itself identically in two different systems.

4. Some stability with some tension and boundness: chaos itself can act stable in its playing field.

In general, chaos theory is a paradigm that explains the behavior of chaotic systems. Thus, it can be used to explain a number of both natural and artificial phenomena, such as weather patterns, stock prices, economics, traffic and even biology aspects such as heart arrhythmia (Overman 1996, 487).

The conceptualization of chaos theory is attributed to Edward Lorenz. Lorenz was a meteorologist who, when trying to repeat a weather pattern simulation in 1961, discovered that changing the number of decimal points in an equation, that would generate the simulation, altered the results of the sequences or patterns. His discovery is known as the "butterfly effect" [Jennings 2001, 52].

Nowdays, chaos theory influences majority of disciplines [e.g., Baker 1993; Butz and Duran and Tong 1995; Gregersen and Lee 1993; Thietart and Forgues 1995].

We must notice that chaos theory is aPPlied using metaphoric dimensions within the social science areas. However, the difference between positivist and chaos theory lies in the fact that positivist paradigm can explain behavior of stable systems (stable linear relationships), whereas the chaos theory can explain behavior of chaotic (or dynamic) systems.

By decomposing chaos paradigm to its elements (ontology, epistemology, methodology, rhetoric, and axiology), we find differences among chaos theory paradigm and other paradigms.

Ontological Assumptions: What is the Nature of Reality?

The world of chaos paradigm is a

disordered world that has chaotic order. As the result, the world of chaos theory is dissimilar to positivist world. In chaos theory world, systems, events and phenomena in general are unstable, non-linear dynamic, ever-clanging systems, but positivist world is stable, static and linear. Thus, chaos theory deals with chaotic behavior and the basic paradigm of chaos is that infinite small differences in two systems will produce wildly different results in the long run. As a result, the world is unpredictable and cannot be ordered; small events can have significant unexpected impacts [Jennings 2001 53].

Epistemological Assumptions: What is the Relationship of the Researcher to that Researched?

The study of chaos is a new paradigm. This paradigm began as simply as a mathematical consequence of existing paradigm for fluid mechanics and astronomy. However, chaos theory has since been found to explain in biology, geology, economic, organization studies and the fields which did not previously use the same mathematics. To Prokhorov

(2001, 23), nonlinear dynamics and chaos theory has corrected the old reductionist tendency in science, to study a system by means of superimposition of its separation elements.

Chaos theory by using quantitative research, has challenged epistemological assumptions of research in social science, the relationship between the researcher and phenomena of interest is similar to positivist, because this relationship is based on scientific experiments and mathematical equations, but since the world of chaos theory is non-linear, dynamic and unpredictable, it uses fractal geometry (Donabue 1999, 4). Researchers need to spend time in the field and ensure that the disorder experienced in the field is not forced in to pattern or explanations (Patton 1990, 87).

Methodological Assumptions: What is the Process of Research?

Chaos theory has significantly changed the research methodology. The positivist method of making a theoretical prediction and then checking it against experiment is not quite fit for chaotic processes.

Since in such processes, long-term forecasting is impossible, verification of a theory should involve more delicate cons considerations of statistical properties of the theory rather than its predictive power. For studying chaotic behavior, chaos theory uses three tools: fractional dimension, strange attractors, and universally. These tools become part of the paradigm and allow chaos theory to explain and predict.

Thus, the researcher uses open systems and descriptive algorithms to explain the world that is perceived as dynamic and ever changing.

Chaos theory offers a new set of metaphors for thinking about what we observe, how we observe, and what we know as results of our observations. Chaos theory, by challenging the need for order and prediction, offers new ways to fulfill those needs. According to Patton (1990, 82), chaos research is highly mathematical, but making sense of the results seems to depend heavily on metaphors and the researcher of chaotic systems, gathers data by learning to observe, describe and value chaos rather than forcing the data in to ordered and patterned explanations [Patton 1990, 83].

Rhetorical Assumptions: What is the Language of Research?

Chaos theory has a mathematical orientation. However, the view of the ystem, as closed as in a positivist paradigm, is not suPPorted in the chaos theory paradigm, which asserts that systems are open and dynamic. Chaos theory uses descriptive algorithms to demonstrate iterative change with systems.

The language of chaos theory is quantitative, but if chaos theory is used metaphorically it will be qualitative. Fractal geometry and simulation are common terms in chaos theory research.

Axiological Assumption: What is the Role of Values?

Axiological assumption of chaos theory is similar to positivist assumptions. That is, phenomenon of interest (or subject) is one that is objective and value free. In chaos theory research, researcher cannot impact on research finding. The conduct of inquiry follows procedures to ensure objectivity and value- free interpretations. Table 5 has summarized the world of chaos theory paradigm.

Table 5. The World of Chaos Theory Paradigm

Assumptions / Paradigm	Ontological assumptions	Epistemological assumptions	Methodological assumptions	Rhetorical assumption	Axiological assumptions
Chaos theory	●World is unstable, dynamic and non-linear ●World is disorder, but it has chaotic order	●Objective	●Quantitative and qualitative if used metaphorically	●Descriptive algorithms, ●Fractal geometry	●Value- free unbiased

Postmodernism Paradigm

Postmodernism is the belief that we are entering a new era of world history that is significantly different from past era. In other words, post structuralism (or postmodernism) is a philosophical paradigm that makes the rather more radical claim that the assumptions we have held about truth and knowledge in the past are mistaken: it is an attempt to disrupt, and reinvigorate our aPPreciation and understanding of reality [Travers 2001, 151].

According to Chia [2003, 124] the term "Postmodern, made its first aPPearance in the title of a book, "postmodernism and other essays" written by Bernard Idding Bell in early days of 1926. It was subsequently picked up by Arnold Toynbee in 1939 in volume V of his massive tom "A

study of history", where he used the term "post-modern" to describe the end of the modern era, beginning from about the third quarter of the nineteenth century. Then postmodernism penetrated into many disciplines in natural and social sciences.

To define post modernity, post modernism or post modernization aPPears to be a futile task. It is not a school and since many of its adherents refuse the language and logic of "definition" in the first place, it is difficult to summarize it in one package [Parker, 1992]. For these reasons, it is impossible to choose a core theory, or a typical set of ideas, to exemplify postmodernism [Hatch 1997, 43]. So, many organization theorists, working outside the postmodern perspective, regard postmodernism as an "anything goes aPProach". [Hatch 1997, 43]

To many Authors [e.g., see, Hatch 1997; Alvesson and Deetz 1996; Cala's and Smircich 1997], postmodernism is, basically, the counterpoint to modernism. The era of modernity, dominated by production and industrial capitalism and the onset of an epoch of postindustrial post modernity, was represented by alternative forms of technology, culture and society [see kellner 1987; Punch 1998, 144]

Thus, postmodernists challenge the modernist desire for unifying view with their belief that knowledge is fundamentally fragmented; that is, knowledge is produced in so many different bits and pieces that there can be no reasonable expectation that it will ever add up as an integrated and singular view [Hatch 1997, 44]

Postmodernism has been viewed as an enterprise that calls for the death of all scientific inquiry, "the end of all new knowledge; the dissolution of any standards that may be used to judge one theory against another; a banishment into utter relativism, where in a clamor of fragmented and contentious voices reigns" [kilduff and Mehra 1997, 2]

By studying the same works about postmodernism, we find postmodernism beliefs as following:

- Knowledge is fundamentally fragmented
- Reality is a multiplicities, fragmented, and contradictory notion
- Sensory perception is no more truthful, we could know something by other ways such as through intuition or aesthetic experience
- All knowledge is truth claims
- Knowledge cannot be a unified body of thought
- Human progress based on science and technology is a myth
- The rapid absorption of knowledge means science itself is becoming less and less useful as a means of prediction and control
- All scientific claims must be deconstructed in order to reveal assumptions
- Giving voice to silence
- Using self-reflexivity for understanding and discovery on yourself as well as on the world around you to reveal what it is that youassume when you produce or use knowledge.

Ontological Assumptions: what is the Nature of Reality?

According to Travers (2001, 153), perhaps the most controversial argument put forward by postmodernism is that there is no such thing as absolute truth. This is mainly directed against a central assumption held by philosophers and political theorists since the eighteenth century: the idea that human beings, through exercising their free will, guided by reason, can produce a better society [Travers 2001, 153].

Based on the writings of Rojna Barthes (1915-1980), Michel foccault (1926-1984), and Jacquas Derrida (b 1930), human language, whether spoken or written, does not refer to an objective world out there, but is instead a system of linguistic signs referring back to itself.

In the strongest form of deconstruction, not only is all meaning bound up intrievably with knower, rather than with text, but words themselves never have a referent other than words, and even then with an emphasis on irony and ambiguity and "plain meaning" of the text subverting itself, language cannot, in the nature of the case, refer to objective reality. [Erroll Hulse,year]

Therefore, an initial theme of postmodern aPProach to knowledge, is the notion of the replacement of the factual by the representational [e.g., see Gergen 1992; Linstead and Grafton – small 1993]. This suggests that attempts to discover the genuine order of things are both naive and mistaken.

For Derrida, normative social structures result from systems which privilege unity and identity over separation and difference. Derrida's project is founded on the postmodern notion that knowledge and discourse have to be "constructed" from a "chameleonic" world [cooper and Burrell, 1988].

According to Baudrillard (1983a), Models and codes precede reality and are reproduced unceasingly in a society where the contrast between the real and the unreal is no longer valid.

As Baudrillard says, "the real is not only what can be reproduced, but that which is already reproduced, the hyperral (1983a, 146). In this society, "simulacra"- that is, copies or representations of objects or events- now constitutes "the real".

By contrast to the laws of production, in the postmodern world, we find a universe of nihilism, where concepts float seemingly in void.

In summary, According to hatch (2006, 4), ontology of postmodernism is "the belief that the world aPPears through language and is situated in discourse, what is spoken of exists, therefore everything that exists is a text to be read or performed.

Epistemological Assumptions: What is the Relationship between the Researcher to the Researched?

Postmodern epistemology suggests that the world is constituted by our shared language and that we can only "know the world" through the particular forms of discourse our language creates.

It is argued, however, that as our language games are continually in flux, meaning is constantly sliPPing beyond within one term. The task of postmodern writing, therefore, is to recognize this elusive nature of language, but never with the aim of creating a meta-discourse to explain all language forms [Hassard 1993, 176].

We can find epistemological assumptions of postmodernism in some authors' works (e.g., see Burrell 1988; Cooper 1989; Cooper and Burrell, 1988). In Cooper and Burrell [1988], The idea of a superior, objective standpoint is completely rejected, emphasis being placed on the inherent instability of organization.

For Lyotard the term "postmodern" reflects an epistemology that is aPPropriate to new conditions of knowledge. The Lyotard" book, *"postmodern condition"* (1984), Therefore, is to document the differences between the grand narrative of philosophy and social theory and what he terms "postmodern science", which represents a preferable form of knowledge to traditional modes of philosophical and scientific inquiry. It is in this context that philosophy defines postmodern discourse as "the search for instabilities" (Lyotard 1984, 53).

In terms of Lyotard, epistemology is a language – games aPProach, in which knowledge is based on noting more than a number of diverse discourses, each with its own rules and structures. In Lyotard's view, each language – game is defined by its own particular knowledge criteria. Importantly, no one discourse is privileged.

The postmodern epistemology concerns knowledge of localized understandings and acceptance of a plurality of diverse language forms. Thus, postmodernism sees the fragmentation of grand narratives and the discrediting of all meta-narratives.

In general, the epistemology of postmodernism refers to "knowledge cannot be an accurate account of truth because meanings cannot be fixed; there is no independent reality, there are no facts, only interpretations; knowledge is a power play" (Hatch 2006, 14).

Methodological Assumptions: What is the Process of Research?

According to Power (1990), in its most stark sense, postmodernism stands for the "death of reason". It offers a frontal assault on methodological unity. Through the postmodern method of "deconstruction" (Derrida 1928) a whole rage of philosophical pillars are brought down, the most notable of which are the "unities" of meaning, theory and the self.

In particular, the modernist objective of determining factual relationships through the empirical methods is considered problematic. In the modernist view, the empirical method reflects the assumption that language is a slave to observation and reason. The logic is that by rigorous research, we will continuously improve language through a more accurate correspondence with nature.

In Gergon's view (1999) under postmodernism, however, the empirical process is re-defined. The language that is produced by the empirical process does not equate with an increasingly accurate correspondence with reality. Instead, it represents a process of professional self – justification. Research proceeds on the basis of discourses that are already shared within a particular scientific community. The evidence that is produced is interpreted and justified within a restricted linguistic domain as the empirical process starts with its theoretical assumptions inact, data produced through experimentation are defined by reference to an existing theoretical spectrum. Findings produced through empirical science reflect pre-existing intellectual categories [Hassard 1993, 184]

In Hassard's view, [1994, P.0] postmodernism, as a theoretical perspective, is directed against the idea of a theory-

neutral observation language. In particular, it is directed against the "picture theory" of language, in which physical properties of the world are considered fixed while language can be adjusted to meet the needs of their description.

Rhetorical Assumptions: What is the language of Research?

According to Richardson (1994), some of the language used in postmodern research includes subjectivity, discourses, discourse analysis, reflexivity, subject and self, and deconstruction, among which, discourse is an important concept in postmodernism and refers to the use of language in communication by "forming structures and conveying meanings" (Holtzhausen 1999).

To Holtzhausen (1999), meaning is not formed through language itself, but through the debate or discourse of different points of view, as well as in the ways knowledge is structured – discourse thus creates and structures ideas, beliefs and ideologies.

Axiological Assumptions: What is the Role of Values?

According to Cova (1996, 15), postmodernism rejects epistemological postulations, contends

methodologies, refutes accepted theories, and contrasts modernist realities in almost every sense. Theory and science, according to the post modernists, can never be seen as the truth, rather an interpretation of theorist at a certain point in time (Holtzhausen 1999).

As Littlejohn (1992, 16) points out, postmodernism (critical theories) examines values that can be used to criticize institutions, powerful groups in society and systems. In other words, critical theories, such as postmodern theories, are "powerful agents for change" (1992, 17).

Thus, the postmodernist perspective is extremely subjective and acknowledges its subjectivity in the course of conducting and writing up "research outputs". The "post modernist researcher" cannot be withdrawn from the research context or site. (Richardson, 1994) As Richardson (1994) points out, the postmodernist researcher is an actor in the research process, thus, research in this paradigm (postmodernism) is value – laden and biased. Table 6 has summarized the world of postmodernism paradigm.

Table 6. The World of Postmodernism Paradigm

Assumptions / Paradigm	Ontological assumptions	Epistemological assumptions	Methodological assumptions	Rhetorical assumption	Axiological assumptions
Postmodernism	• Fragmented reality • Knowledge as a language game • Multiple interpretations of reality • Reality as signs or representation • Fragmented world • Research world is text	• Extremely subjective • Dissolution of subject	• Deconstruction • Fully qualitative • Mutual simultaneous • Categories identified during research process • Questioning	• Value – laden and biased	• Subjectivity • Discourses • Discourse analysis • Reflexivity • Subject and self

Complexity Science Paradigm

According to some authors (e.g.see, Dooley, Johnson and Bush 1995; Morcol 2001; Phelan 2001; Smith 2001), complexity science is not general system theory or postmodern science and chaos theory is not complexity theory, although both have similarities.

While the concepts of chaos and self-organization have evolved from the physical sciences, the notion of complex adaptive system has its roots in biological sciences. [Dooley, Johnson and Bush 1995, 10]. To Jennings (2001, 52), chaos theory is very quickly being challenged by complexity theory. While chaos theory tries to describe the world using non-linear dynamics, complexity theory suggests the world is akin to a model of complex systems that goes through a rapid transition from chaos to order by self- organizing (Rubinstein and Firstenberg 1999, 34).

Axelrod and Cohen (1999, XV) have stated the difference between chaos theory and complexity theory as following.

Chaos deals with situations such as turbulence… that rapidly becomes highly disorganized and unmanageable. On the other hand, complexity deals with systems composed of many interacting agents. While complex systems may be hard to predict, they may also have a good deal of structure and

permit improvement by thoughtful intervention**.**

The key point,which must be mentioned is that both chaos theory and complexity theory are aPPlied using metaphoric dimensions within the social science areas.

Mckelvey (2001, 5) claims, over the past 40 years complexity theory has become a broad-ranging subject that is aPPreciated in a variety of ways, but authors such as Anderson, Arrow, and Pines (1988), Nicolis and Prigogine (1989), Mainzer (1994), Farre et al. (1995), Belew and Mitchell (1996), and Arthur, Durlauf, and Lane (1997), have more and less illustrated this paradigm.

Many disciplines in different fields have focused on complexity paradigm (e.g., see for example, Prigogine and Stingers 1984; Anderson, Arow and Pines 1988; Blitz 1992; Casti 1994; Cowan, pines and Meltzer 1994; De Regt 1994; Goldstein 1994; Harrington 1996, Hausman 1992; Holland 1995; Kauffman 1993; Kaye 1993; Kewin 1999; Nicolis and Prigogine 1989) for driving up its implications, but White et al. (1997) state "there is no commonly accepted definition of what complexity

means". It seems that Dent's (2001) definition of complexity is aPPropriate for our purposes:

"Complexity science is an aPProach to research, study, and perspective that makes the philosophical assumptions of the emerging world view (FWY)." According to Cowan, Pines and Melter (1994), the study of complex adaptive systems as core of complexity paradigm become the ultimate interdisciplinary science, focusing its modeling activities on how microstate events, molecules, genes, neurons, human agents, or firms, self-organize in to emergent aggregate structures. Emergence, as key element of complex systems, refers to the arising of novel and coherent structures, patterns, and properties during the process of self-organization in these systems.

Emergent phenomena are conceptualized as occurring on the macro level, in contrast to the micro-level component and processes out of which they arise [Goldstein 2001, 49]

Complexity theory, with its investigation into emergent phenomena, promises to provide both a methodology and a

theoretical framework for studying something that is already playing a crucial function in our businesses and institutions [Goldstein 2001, 68].

Ontological Assumptions: What is the Nature of Reality?

In the world of complexity paradigm, reality is complex and adaptive that interacts with its environment, and the complexity of it will increase over time. Thus, its ontology is realist in general, but not all complexity researchers see reality as entirely independent from the knowing subject. Some argue that knowing is subject. Some argue that human knowledge is contextual and that the subject distinction is problematic (Morcol 2001, 112). This position is close to positivist paradigm that accepts casual relations and as the result, a deterministic ontology. Complexity scientists, describe realties as emergent holistic system that researchers can not reduce them to those of their parts. These systems integrate into and co-evolve with their environments. This position closed indeterminist ontology that accepted the nonlinear nature of reality. Thus, if we

distinguish complexity theory form chaos theory, the central concepts of former theory are emergence, bifurcation points (threshold of complexity) auto catalysis, and co-evolution that reflect in self-organization of a complex adaptive system.

Ontological Assumptions: What is the Nature of Reality?

In Luhman view (1985, 25), complexity refers to the fact that in a system where "there are more possibilities than can be actualized". The world of complexity scientist is complex rather than complicated. According to Cilliers (1998, viii), in a complicated system, the components (such as computers and jets) can be clearly identified; but in a complex system, the interaction between the components of a system, and between system and the environment, are so intricate that it is impossible to completely understand the system simply by studying its components. Thus, as Cilliers (1998, 2) point out a complex system is not constituted merely by the sum of it, but also by the intricate relationships between these components.

Epistemological Assumptions: What is the Relationship Between the Research to the Researched?

In Morcol (2001, 113), there are no definitive or comprehensive works on epistemology of complexity science, but two epistemological orientations can be identified in its aPPlications. Based on Morcol's work (2001), we can find two thinking lines as positivist complexity science and contextuality complexity science.

In the first thinking line, authors such as Rossler (1986), Prigogine and Stingers (1984) and Casti (1994), have stated that for generating new knowledge, about a phenomenon, research must not be situated out of subject, but the research must be situated within the observed world, that Prigogine and stagers (1984, 218) have called it, "new conception of objectivity".

According to Rossler view (1986, 320 cited in Morcol 2001, 114) researchers must return their focus "from the usual detached, exophyical way of looking at one's model words to the understanding of end physical one".

Makavy (1993, 901) claims that in Heidegger tradition, our knowledge is thoroughly embedded in history and language. Thus, the above view of complexity paradigm, makes it close to phenomenological hermeneutics, that is, complexity theorists believes our knowledge is embedded in our physical existence.

The second thinking line in epistemology of complexity that is based on Kauffman ideas, claims we can discover the laws of complexity, while Pigogine and Stinger, 1984; Casti, 1994, Rossler, 1986 denied universal generalization about systems behaviors.

This position is close to positivism paradigm. In general, (See for example, kadtic and Lempert 2000), complexity theory does not change the positivist instrumentalism claim of knowledge. The purpose of complexity researchers is, finding practical knowledge and knowledge for controlling or modifying phenomena of interest.

Methodological Assumptions: What is the Process of Research?

Complexity science constitutes an emerging interdisciplinary field of investigation into the behavior of a wide range of systems in the natural and physical worlds and indeed

in the silicon world inside computers (Casti 1997).

Complexity science is a systematic paradigm, founded on observed similarities in diverse dynamical systems. It illuminates meaning from dynamical perspective. The essence of dynamical systems is that they are open and dissipative (Prigogine and Stingers 1984), they do not follow the predictable entropic path of closed systems tending to choose, rather they are more in pattern at the edge of order and chaos. This state is from equilibrium.

Based on the above description and according to Morcol (2001), researchers in complexity paradigm use different methods. Some of investigators aPPliy deductive aPProaches and analytical methods that are similar to positivism methodology. Others use holistic aPProach that is based on simulation methods.

Rhetorical Assumptions: What is the Language of Research?

The language of complexity paradigms is qualitative and qualitative. In quantitative tradition, complexity paradigm uses deductive and analytical aPProaches. In these aPProaches, methods such as spatial correlation, nonlinear and polynomial regression, and Fourier power spectrum analysis. (e.g, see Casti 1994; Guastello 1995) are used. Complexity science also uses phase diagrams as heuristic tools in its research.

In qualitative tradition, aPPlied agent-based simulations (e.g., cellular automata, neural networks, and genetic algorithms) that have important implications for research in complexity paradigm are used. By these methods, the behaviors of agents are simulated using specialized computer software.

In other words, according to Casti (1994, 214-19), "local rules" generate emergent holistic systems that are different from positivist methodology (deductive). These aPProaches deny reductionism, which simplifies reality with a small number of variables.

Axiological Assumptions: What is the Role of Values?

Complexity researchers use a mixture of methods (Morcol 2001, 115), thus, complexity research has a mixture of axiological assumptions.

There are at least three themes or communities that characterize the research

effort directed to the investigation of complex systems: A hard one, a soft one and something in between. The first is strongly allied to the (deductive) quest for a theory of everything (TOE) in physics, (a contextual explanation for existence of everything). This community seeks to uncover the general principles of complex systems, likened to the fundamental field equation of physics. In this research, the line of complexity paradigm research is free value, similar to positivist axiology.

According to the soft (inductive) school, complexity thought with its associated language, provides a powerful lens through which to see phenomena. In the soft stream, or holistic aPProach that is close to the position of phenomenological hermeneutics, knowledge is thoroughly embedded in history and language (Makaryk 1993, 91), and subject- object distinction become problematic. Based on this epistemology, research is value–laden. In the mixed aPProach, assumptions of axiology are combined. Table 7 has summarized the world of complexity paradigm.

Table 7. The World of Complexity Paradigm

Assumptions / Paradigm	Ontological assumptions	Epistemological assumptions	Methodological assumptions	Rhetorical assumption	Axiological assumptions
Complexity	• Realist • Co-existence of determinism and indeterminism • Reality as an emergent whole • Self-organizations co– evolution • Complex adaptive world	• Subject – object distinction problematic • End physical (contextual) nature of knowledge • Limited generalizations or law as of complexity • Instrumentalism	• Qualitative and Quantitative orientation • Deductive and inductive • Abductive aPProach	• Holistic methods (simulations) • Heuristic tools • Analytical methods	• Free-value

Feminist Paradigm

Vigorous debates around feminist theories have been found in many disciplines since the 1960s. All are motivated by a shared purpose: to challenge male dominance, to contribute to knowledge about women, and

to construct a science in which gender and gender relations are seen as fully social, explanatory and important.

Despite the many differences between and within feminist's aPProaches, there are consensus on certain central following ideas that have implications for research and practice:

1- Social experience is gendered. That is, the social order creates, assigns, and influences our roles, values, oPPortunities, status, environments, and perspectives partly based on gender. Gender itself is a social construct distinct from biological category sex.

2- All theory, like all practice, is inherently political; it necessarily either perpetuates or challenges the status quo. The development of knowledge and its aPPlication through action are social enterprises and therefore have political ad ethical aspects, which cannot be disassociates from them.

3- Theory and practice cannot and should not be separated. Feminist theory is explicitly emancipatory and critical. Most theorists believe that knowledge contains an imperative to action, Theory and praxis are seen in a mutually reinforcing reflexive relationship.

4- Subjects and objects are not and cannot be separated. A relationship exists between knower and the object, and each necessarily affects the other. Theory and practice are more accruable and clear when this reflexivity is consciously accepted, rather than attempting the scientific ideal of objectivity through separation [snyder, 1995, 92]

Ontological Assumptions: What is the Nature of Reality?

Feminism is discourse on gender, but many different voices exist internally to it. Feminist theories have stressed the constitution of gender, locating it mainly in the body (Liberal, radical, and psychoanalytic), in culture and social relation (Marxist, socialist), and in language (post- modernism).

Each perspectives of feminism have made distinctive ontological claims about the difference between men and women, which have important practical as well as theoretical implications for the way feminists conduct research. This explains why feminist perspectives have preference for qualitative research. Six theories

representing ontology of feminist, in general as following:

- Libral feminist theory: this movement was initiated in the 1960s. Its debate is focused on equal access for men and women to oPPortunities in all spheres of life and achieving equal representation, while fighting sex discrimination, and dening sex differences are the most important aims of it. According to Haralambos and Holborn (1991, 536) culture and attitudes of individuals are not structures and institutions of society, but roots of the oPPression of women,. Thus, women should be able to achieve equality of the sexes by partnership bymeans of production and coequality in legislative and statutory matters (Taylor Mill 1970, 95).

- Radical feminist theory: views society as patriarchal, and takes the subordination of women as its problem. This movement that stems from the principles of new left in the united states and in the 1968 student movement in Europe, claims the ruling class positions in world have been possessed by men and women work in lower class positions. This situation is the highlighted result of free

labour in the family (works such as cleaning home and child care). This exploitation is variously attributed to biological or cultural circumstances (Jennings 2001, 45).

- Psychoanalytical feminist theory: This theory attributes oPPression of women to patriarchal family engendering distinction in male/ female psychological development and different notions of gendered self and identity. Thus, denies the biological determinism of traditional psychoanalytic interpretations of gender and sexuality [Cheradi 2003, 216].

- Marxist feminist theory: This theory, based on Engels work (1972), conceptualizes gender and identity as structural, historical, and material. In this movement, oPPression of women is a result of historical circumstances that is related to material (private property) and economic reasons. Marxist feminism theory analyses how identities are constructed through social practices such as work (and workplace- household intersection) by focusing on relations of inequality, power, patriarchy, and capitalism (Cherardi 2003, 217).

- Socialist feminist theory: This

perspective, in explaining the persistence of gender segregation and oPPression, addresses complex intersections of gender, race, class, and sexuality (Cherardi 2003). Based on the work of Marx (1972), socialist feminist movement considered the differences between women and men were biologically based and the family unit was a "natural" unit. [Barrett 1988, 189]

- Post modernist feminist theory: According to Charerdi (2003, 117), Postmodernism exhibits a critical distrust concerning "meta-narratives", transcendental reason, and the possibility of objective knowledge and with the same attitude post- structuralist feminist theory interrogates the constitution of the "feminine" within modernity. Based on the above ideas, postmodern feminists criticize text and language and claim we must deconstruct masculinity of text and language. [Tong 1989, 217-223]

In summery feminist paradigm claims:

- We live in masculinist world
- Text and language of our world is masculinist
- Women are oPPressed by men, because power relations between men and

women are unequal.

- Men occupy the higher class position and women the lower.
- Women give free-ride to men by free labor in family
- All scientific knowledge is always, in every respect, socially situated (Hardivy 1991, 11)
- All theories are reflexive, that is their meaning are reflections of their social constructions (Sarantakos, 1998, 51)

Epistemological Assumptions: What is the Relationship Between the Researcher to the Researched?

Feminist researchers believe that they have a superior and more compelete understanding of society than the people they are researching. The objective of research in feminist paradigm is to liberate women form "false consciousness" by showing that they could lead more fulfilling if society were organized differently, and exposing the institutions and social processes that have caused them to accept the economic dominance of men [Travers 2001, 134-135].

The feminist research takes an explicit epistemological stance that acknowledges

the intersubjectivity between the researcher and the researched. This means that feminist research acknowledges women as experts on their own lives and experiences, and dose not privilege the "knowing" of researcher over that of the researched. This explicit epistemological stance demands a critical reflexivity on the part of the researcher.

Feminist epistemological assumption is a loosely organized aPProach to epistemology, rather than a particular school or theory. The diversity of epistemology, as well as the diversity of theoretical views that constitute the fields of gender studies, women's studies, and feminist theory, is a major characteristic of feminist paradigms. But its emphasis on the epistemic salience of gender and the use of gender as on analytic category in discussions, criticism, and reconstructions of epistemic practices, norms, and ideals is highlighted.

The "feminist standpoint" epistemological basics advocated by theorists such as Sandra Harding and Dorothy smith contains similar ideas to those put forward by Marxist philosophers like Geory Lukacs.

Each tradition believes that oPPressed

groups have a better understanding of the world, and how human beings can create a society, in which everyone will be haPPier, and enjoy more freedom, than their oPPressors.

This should, however, be understood more accurately as epistemological claim on behalf of the theoretical tradition, since actual members of the subordinate group are often unable to perceive that they are oPPressed.

Methodological Assumptions: What is the Process of Research?

The major models of feminist research are feminist standpoint research (e.g. see, Ashe 1988; Barlett 1990; Dorothy smith 1974; Fry 1992; Harding 1987; Hartsock 1983; Mackinon 1982; Matsuda 1992; Stanley and wise 1990) and feminist empiricism (e.g. see, Olesen 1994 a; Komarocsky 1988; Hawkesworth 1989).

The broad-based nature of feminism as an intellectual movement means that it is compatible with many types of sociological work, and it is possible to conduct feminist research using a range of research methods (travers 2001, 132).

Following principles govern on feminist

paradigm: Accepting the "pervasive influence of gender's by (1) correcting the silencing of women's voice by analyzing women's experiences, (2) recognizing the social knowledge has been primarily framed by men about men and (3) locating the researcher whose gender influences researched.

1) Emphasis on empowerment and transformation (Cook and Fonow 1990, 72-80).

2) Examination of ethical concern (Cook and Fonow,1990,PP.72-80).

3) A focus on consciousness-raising

4) Employs multiple methodologies and paradigms

5) Is not solely about women, but primarily for women, taking upon emancipationist stance

6) Places emphasis on women's experiences, which are considered a significant indicator of reality (harding,1987)

7) Employs a political stance to research topics and procedures Thus, inductive and deductive aPProaches are used in feminist paradigm.

Rhetorical Assumptions: What is the Language of Research?

Feminist research has special language in conducting investigation. Feminist research,

like any research, creates knowledge. It differs, however, from "objective" research in that its methods are in part also its findings. (Wang, Burris and Ping 1996, 1392). According to Code (1995, 42), the most valuable strategy for feminist research is, evidentiy, to abandon. Any quest for one true method or for a universalism would replicate the worst excess of the older, hegemonic theories.

Reinharz (1992, 6), uses three general definitions of feminist research methods to frame her discussion:

1) methods used in research projects by people who identify themselves as feminists or as part of the women's movement,

2) methods used in research that has been published in journals that publish only feminist research or in books that identify themselves as such; and,

3) research that has received awards from organizations that give awards to people who do feminist research.

Few materials were found that directly address the use of quantitative methods in feminist aPProaches to women's experiences. While works about use of quantitative methods in feminist research

abound (e.g., see Campbell and Banting 1991; Chesney and Ozer 1995; Hall and Stevens 1991; kasper 1994; Morris 1995; Neysmith 1995), but few authors directly tackle the ways in which feminist aPProaches use these methods for gathering data about complexities of women's experiences.

The part and parcel of the enthusiasm for qualitative methods comes from their ability to access many aspects of women's experiences that have not been conceptualized or aPProached in traditional social science research.

There it has been argued that combination of qualitative and quantitative methods, sometimes called "triangulation" (Fonow and Cook 1991, 91) enables researchers to draw a more complete, holistic and contextual picture of women's experiences.

In summary, the following words are prevailing in feminist research: reflexivity and intersubjectivity (Shield and Darrin 1993, 67), in-depth interview; women taking, women listening, participatory methods, structured questionnaires, participant observation (Harding 1987).

Axiological Assumptions: What is the Role of Values?

To commence the discussion about axiological assumptions, we must answer this question: what makes research feminist? According to Robbins, (1996, 17) a classic answer is that it is research done by, for, and about women. There is no single definition of "feminist research" (or feminism) for that matters, but many authors point to certain key elements as defining features. A wide range of methods, both qualitative and quantitative, are available to feminist researchers. But according to many authors (e.g., see for example, Fonow, and Cook 1991; Reinharz 1992; kasper 1994; Oakley 1993), qualitative methods are more dominant. "The qualitative methods accommodate an aPProach to the total process of research", which fully recognize the critical, and indeed necessary, inter-relationship between subjectivities of both researcher and her participants in the social construction of knowledge" (Henwood and Pidgeon 1995).

These facets of qualitative research are not emancipatory in themselves, but they do have considerable potential in the quest to

do research for rather than on women. Qualitative research builds raPPort and cooperative relationships with participants, and provides an oPPortunity for researchers to reflect the participants' own experiences and understandings of them in their own words. In Creswell (1994), axiological assumption of qualitative method is value – laden and biased, that is, feminist researcher also cannot maintain objectivity in feminist research. Table 8 has summarized the world of feminist paradigm.

Table 8. The World of Feminist Paradigm

Assumptions / Paradigm	Ontological assumptions	Epistemological assumptions	Methodological assumptions	Rhetorical assumption	Axiological assumptions
Feminist paradigm	• Reality is patriarchal • Reality is constructed by men • Women are subject to men • Masculinist world	• Subjective • Researcher and subjects jointly generating knowledge	• Predilection to qualitative research • Inductive aPProach	• Women's voices • Gender influences • Consciousness raising researcher and subjects • Consciousness raising techniques • Subject – object separation • Ethical concern	• Value- laden and biased

Conclusion: Consequences of Research Paradigms for Public Administration Research

A positivist paradigm, when aPPlied to PA research, predicates the explanation of a PA behavior, event or phenomenon, based on causal relationships. In other words, if PA research wants to build a theory for explanation and prediction, positivist paradigm is aPPropriate (See, Dubin 1978). Like other fields, positivist is the dominant paradigm in PA studies. There are some potential areas in PA that can be informed by positivist paradigm. Many scholars in major PA movements (i.e, Administrative Management, Traditional Public Administration, New Public Administration, New Public Management, New Public Management, New Public Service, Islamic Public Administration) have utilized quantitative research strategies such as survey, correlation and experiment and

published their work in positivist tradition (coz2etto, 1994; O'sallivan and Rassel, 1999; Derry and Kraemer, 1986; Stalling and Ferris, 1988; Adams, 1992; White and Adams, 1994; Meier, 2005).

APPlication of the interpretive (Constructivism) paradigm in PA means that the researcher has to become an "insider" and subsequently experience the phenomena, or become one of the social actors within the public administration system being studied. Major research purpose in research in this paradigm is exploration and understanding or according Max Weber is "Verstehen". Building theories for understanding is the main mission of interpretive theorist, because he or she theorizing "interpretations" of people. Therefore, based on qualitative research strategies (i.e case study, ethnography, grounded theory, narrative research and others qualitative methods), PA researcher expresses its understanding in text-based rather than numerical representation. There are some potential areas of PA research informed by interpretive paradigm; thus in recent decades, many researchers in PA field have published mass of books and papers in

interpretive tradition (See, for example Dodge; Ospina and Foldy, 2003; Bailey, 1993).

The publicness constitutes the essences of PA (Marianne and Jorgensen, 1997; Bozeman and Brest Schneider, 1994; Haque, 2001). Thus, public discourse can be a main source for public policy making and solving many of public problems.

The use of the critical theory paradigm in PA research means that the interest needs of minority groups, within or outside public organizations will be identified and data will be collected in order to open up or improve the provision of PA oPPortunities, experiences and services for those minority groups. The main purpose of PA research in critical theory paradigm is "emancipation"; thus, critical theorists are theorizing "emancipation". In public, there are many areas that can be enjoyed form critical research strategies. Recently, we are observing many books and papers about public administration based on critical studies (Box, 2004; Able and sementelli, 2002; sementelli and Abel, 2000).

Feminist perspectives are a new stream of thoughts that have influenced research about public sector. The use of those

perspectives will challenge the dominant patriarchal hegemony that pervades PAR. According to Jennings (2001, P. 47), until recently most studies have had an andocentric nature and have not taken into account the gender bias prevalent in most PA research. The focus of theorizing in PA feminist paradigm is "freeing" women from men in any way. There are some areas for PA research using feminist paradigm. Thus, several books and many papers have been published by this paradigm in public sector field (Guy, 1993; Hawkersworth, 1994; strivers, 1993, Hntchinson and Mann, 2006; Hutchinson, Blackmore, 1995).

The postmodern paradigm has no parallels with positivism, interpretive and critical theory paradigm or Marxist/socialist or liberal feminist. It does, however, have some synergies with the postmodern feminist perspective (Jennings, 2000, P. 51). Postmodern paradigm enables PA researcher to investigate public administration phenomena by questioning methods, theories, discourses, genres and facts in regard to those whose interests are being served within local, cultural and political conflicts. Postmodern tradition theorizes "deconstructioning text".

Therefore, postmodern paradigm enables PA researcher to move beyond and below the surface meanings of language and public administration phenomena. Some areas of PA research can be focus of postmodern research. Numbers of books and papers about influences of postmodern research tradition on public Administration are increasing (Burnier, 2005; McSwi; 1997; Fox, 1996; Fox and Miller, 1995).

Chaos theory as a paradigm has depicted a new world for public administration researchers. Chaos theory enables the public administration system to be analyzed as a dynamic system rather than a steady state or predictable system. According to Mckercher (1991), use of chaos theory is more aPPlicable to understanding public administration system than a positivist paradigm. Chaos theory, considering public administration as a non-linear and unstable system, focuses on theorizing "chaos". Managing chaos is a big issue that pubic managers in public sector face; thus there are many areas in public sector research that can be informed by chaos theory. Influences of this paradigm have been reflected in many books and papers (Dennard, 1996; Overman, 1996; Kiel,

1992; Morcol and Dennard, 2000).

While chaos theory tries to describe the world using non-linear dynamics, complexity theory suggests that the world is akin to a model of complex systems that goes through a rapid transition from chaos to order by self-organizing (Rubinstein & Firstenberg 1999, P. 34). Therefore, theorizing complexity is the main function of complexity theory. Although, some Authors have aPPlied chaos and complexity theory interchangably, some works focus on complexity theory and PA research (Morcol, 2005, Morcol, 2000; Grobman, 2005; Morcol, 2005, Meek; Landurantrey and Newell, 2007).

Obviously, there are advantages and disadvantages associated with each of the paradigms, but the adopted paradigm should take into account the nature and essence of the public administration system that is being studied. The main purpose of this paper is to extend existing paradigms to seven paradigms and discuss five foundation of each paradigm. Detailed discussion about aPPlications of each paradigm in PA research and focus on works in this tradition in public administration requires another paper.

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پارادایم‌های پژوهشی در مدیریت دولتی

حسن دانایی فرد[1]

واژه پارادایم به موضوع بحث‌انگیز محوری در فلسفه علم تبدیل شده است. افزایش روز افزون توجه به مفهوم پارادایم در مدیریت دولتی (به عنوان شاخه‌ای از علوم اجتماعی) نیز برجسته شده است. این مقاله تلاش می‌کند، نصف پارادایم را در پژوهش مدیریت دولتی تحلیل و پیش فرض‌های هستی شناسانه، شناخت شناسانه، روش شناسانه، ارزش شناسانه و بلاغی هر پارادایم را مورد مطالعه قرار می‌دهد. در نهایت برخی از عرصه‌های بالقوه متأثر از این هفت پارادایم مختصراً ارائه خواهند شد.

واژگان کلیدی: پارادایم‌های پژوهشی، مدیریت دولتی، هستی شناسی، شناخت شناسی، روش شناسی.

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