A PHILOSOPHICAL STUDY OF THE HOLISTIC PARADIGM
WITH HEURISTIC IMPLICATIONS FOR
WRITTEN LANGUAGE

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Carol L. Campbell, B.S., M.Ed.
Denton, Texas
December, 1993
A PHILOSOPHICAL STUDY OF THE HOLISTIC PARADIGM
WITH HEURISTIC IMPLICATIONS FOR
WRITTEN LANGUAGE

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Carol L. Campbell, B.S., M.Ed.
Denton, Texas
December, 1993

The problem of this study was to investigate the philosophical assumptions underlying the holistic paradigm. These underlying philosophical assumptions include beliefs about the nature of being (ontology), goals (axiology), and knowledge (epistemology). The interdependence of these assumptions, as well as how they translate into different research processes, is noted in this study. The disciplinary matrixes of both Western Marxism and quantum physics are specifically addressed in the discussion. The discussion is not limited to just these two systems, but, rather, is placed in the larger context of holistic thought in an attempt to eliminate at least part of the ambiguity that is associated with the holistic paradigm.

Due to the magnitude of information and literature in the field of philosophy, a significant reliance upon secondary sources was necessary in the philosophical section of this study in order to gain an overall historical understanding and synthesis of the assumptions of various
worldviews. Primary documents, however, were utilized for validation of secondary sources. In addition, contemporary (20th century) authors were read and are referenced from primary sources.

Finally, the philosophical assumptions of the holistic paradigm are applied to written language. Even though a paradigm cannot be logically associated with a particular theory or model, different worldviews imply different practices. Therefore, heuristic implications are addressed, providing insight for the conceptualization and development of theories and models through flexible, contextually situated usage.
TABLE OF CONTENTS

Page

LIST OF TABLES .................................. vi
LIST OF ILLUSTRATIONS .......................... vii

PART ONE: INTRODUCTION

Chapter

1. INTRODUCTION TO THE STUDY ............... 1

Statement of the Problem
Purposes of the Study
Research Questions
Definition of Terms
Background and Significance of the Study
Design of the Study
Limitations of the Study

PART TWO: PHILOSOPHICAL ASSUMPTIONS

2. ONTOLOGICAL ASSUMPTIONS: LONGITUDINAL NATURE OF BEING ............... 16

A Static Universe
A Dynamic Universe
A Temporal Universe
A Dialectical Universe
A Structuralist Universe
A Historical Universe

3. ONTOLOGICAL ASSUMPTIONS: LATITUDINAL NATURE OF BEING ............... 42

An Undifferentiated and a Differentiated Whole
A Relational Whole
A Dialectical Whole
A Structuralist Whole
A Circular Whole
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. ONTOLOGICAL ASSUMPTIONS: EXPRESSIVE/DECENTRED NATURE OF BEING</td>
<td>60</td>
</tr>
<tr>
<td>Expressive Nature of Being</td>
<td>Decentered Nature of Being</td>
</tr>
<tr>
<td>5. ONTOLOGICAL ASSUMPTIONS: BOUNDARIES OF BEING</td>
<td>67</td>
</tr>
<tr>
<td>Closed Boundaries</td>
<td>Open Boundaries</td>
</tr>
<tr>
<td>6. ONTOLOGICAL ASSUMPTIONS: CAUSALITY AND BEING</td>
<td>70</td>
</tr>
<tr>
<td>Linear Causality</td>
<td>Nonlinear Causality</td>
</tr>
<tr>
<td>7. ONTOLOGICAL ASSUMPTIONS: NATURE OF SOCIAL BEINGS</td>
<td>75</td>
</tr>
<tr>
<td>An Objective Universe</td>
<td>A Subjective Universe</td>
</tr>
<tr>
<td>8. AXIOLOGICAL ASSUMPTIONS: NATURE OF GOALS</td>
<td>87</td>
</tr>
<tr>
<td>Technical Goals</td>
<td>Practical Goals</td>
</tr>
<tr>
<td>9. EPISTEMOLOGICAL ASSUMPTIONS: NATURE OF KNOWLEDGE</td>
<td>97</td>
</tr>
<tr>
<td>Empiricist/Rationalist Traditions</td>
<td>Historical-Cultural Tradition</td>
</tr>
<tr>
<td>PART THREE: APPLICATION OF PHILOSOPHICAL ASSUMPTIONS</td>
<td></td>
</tr>
<tr>
<td>10. RESEARCH PROCESSES</td>
<td>110</td>
</tr>
<tr>
<td>Positivistic Research</td>
<td>Interpretive Research</td>
</tr>
<tr>
<td>Chapter</td>
<td>Page</td>
</tr>
<tr>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>11. WRITTEN LANGUAGE PROCESSES</td>
<td>124</td>
</tr>
<tr>
<td>Longitudinal Nature of Written Language</td>
<td></td>
</tr>
<tr>
<td>Latitudinal Nature of Written Language</td>
<td></td>
</tr>
<tr>
<td>Expressive/Decentered Nature of Written Language</td>
<td></td>
</tr>
<tr>
<td>Boundaries of Written Language</td>
<td></td>
</tr>
<tr>
<td>Causality and Written Language</td>
<td></td>
</tr>
<tr>
<td>Social Beings and Written Language</td>
<td></td>
</tr>
<tr>
<td>Goals and Written Language</td>
<td></td>
</tr>
<tr>
<td>Knowledge and Written Language</td>
<td></td>
</tr>
<tr>
<td><strong>PART FOUR: SUMMARY</strong></td>
<td></td>
</tr>
<tr>
<td>12. SUMMARY OF THE STUDY</td>
<td>144</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>147</td>
</tr>
</tbody>
</table>
### LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nature of Goals</td>
<td>96</td>
</tr>
<tr>
<td>2. Nature of Knowledge</td>
<td>109</td>
</tr>
<tr>
<td>3. Characteristics of Positivistic Research</td>
<td>113</td>
</tr>
<tr>
<td>4. Characteristics of Interpretive Research</td>
<td>119</td>
</tr>
<tr>
<td>5. Characteristics of Critical Research</td>
<td>123</td>
</tr>
</tbody>
</table>
### LIST OF ILLUSTRATIONS

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Early Philosophical View of the Universe . . .</td>
<td>17</td>
</tr>
<tr>
<td>2.</td>
<td>Trajectory in the Classical Newtonian Model of Science . . . . . . . . . . .</td>
<td>18</td>
</tr>
<tr>
<td>3.</td>
<td>Enlightenment’s View of the Universe . . .</td>
<td>19</td>
</tr>
<tr>
<td>4.</td>
<td>Einstein’s General Theory of Relativity . . . .</td>
<td>21</td>
</tr>
<tr>
<td>5.</td>
<td>Heidegger’s View of the Universe . . . .</td>
<td>22</td>
</tr>
<tr>
<td>6.</td>
<td>Whitehead’s View of the Universe . . . .</td>
<td>23</td>
</tr>
<tr>
<td>7.</td>
<td>Time but no History in Linear, Near-Equilibrium Thermodynamics . . . . . .</td>
<td>25</td>
</tr>
<tr>
<td>8.</td>
<td>Spatial View of Temporality . . . . . .</td>
<td>26</td>
</tr>
<tr>
<td>9.</td>
<td>Hegel’s Dialectical Process: Negation of Contradictions in Non-Being, Synthesis of Being, and Non-Being in Becoming . . . . . . . .</td>
<td>28</td>
</tr>
<tr>
<td>10.</td>
<td>Qualitative Change in the Dialectical Process . . .</td>
<td>29</td>
</tr>
<tr>
<td>11.</td>
<td>Hegel’s Closed Totality Versus Open-Ended Totalization . . . . . . . . . .</td>
<td>30</td>
</tr>
<tr>
<td>12.</td>
<td>Althusser’s Structuralist View of the Universe . . .</td>
<td>31</td>
</tr>
<tr>
<td>13.</td>
<td>Piaget’s Law of Equilibration: New Information Contrads Existing Information in Disequilibration, Assimilation, and Accommodation of New Information in Re-Equilibration . . . . . . . .</td>
<td>33</td>
</tr>
<tr>
<td>14.</td>
<td>Habermas’ Weakened Version of Dialectical Process . . . . . . . . . . . . .</td>
<td>35</td>
</tr>
<tr>
<td>15.</td>
<td>Heidegger’s Directional and Relational Nature of Time . . . . . . . . . . .</td>
<td>36</td>
</tr>
<tr>
<td>Figure</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>16. Whitehead’s Time as a Relation to the Past: Inclusion of Past Events in Present Event</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>17. Time and History in Prigogine’s Nonlinear, Nonequilibrium Thermodynamics: Dissipative Structure Conserves Information About the Past in Autocatalytic Process</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>18. Changing Interpretations in Gadamer’s Hermeneutics: Revision of What has Been Read in the Present, Anticipation of What is to be Read in the Future</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>19. Early Philosophical View of a Whole</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>20. Classical Science’s View of a Whole</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>21. Western Marxism’s View of a Whole</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>22. Whitehead’s View of a Whole</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>23. Quantum Theory’s View of a Whole</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>24. Dialectical View of a Whole</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>25. de Saussure’s View of a Whole</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>26. Piaget’s View of a Whole</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>27. S-Matrix’s View of a Whole</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>28. Bohm’s View of a Whole</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>29. Gadamer’s View of a Whole</td>
<td>59</td>
<td></td>
</tr>
<tr>
<td>30. Expressive View of a Whole</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>31. Decentered View of a Whole</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>32. Classical Science’s View of Boundaries</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>33. Quantum Theory’s View of Boundaries</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>34. Classical Science’s View of Causality</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>35. Quantum Theory’s View of Causality</td>
<td>74</td>
<td></td>
</tr>
<tr>
<td>36. Objective View of the Universe</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>Figure</td>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>37.</td>
<td>Subjective View of the Universe</td>
<td>81</td>
</tr>
<tr>
<td>38.</td>
<td>Intersubjective View of the Universe</td>
<td>86</td>
</tr>
<tr>
<td>39.</td>
<td>Dynamic, Temporal View of Written Language</td>
<td>125</td>
</tr>
<tr>
<td>40.</td>
<td>Historical View of Written Language</td>
<td>126</td>
</tr>
<tr>
<td>41.</td>
<td>Dialectical View of Written Language</td>
<td>128</td>
</tr>
<tr>
<td>42.</td>
<td>Structuralist View of Written Language</td>
<td>129</td>
</tr>
<tr>
<td>43.</td>
<td>Reductionistic View of Literacy Events</td>
<td>130</td>
</tr>
<tr>
<td>44.</td>
<td>Relational View of Literacy Events</td>
<td>131</td>
</tr>
<tr>
<td>45.</td>
<td>Dialectical View of Literacy Events</td>
<td>132</td>
</tr>
<tr>
<td>46.</td>
<td>Structuralist View of Literacy Events</td>
<td>133</td>
</tr>
<tr>
<td>47.</td>
<td>Circular View of Literacy Events</td>
<td>134</td>
</tr>
<tr>
<td>48.</td>
<td>Decentered View of Literacy Events</td>
<td>136</td>
</tr>
<tr>
<td>49.</td>
<td>Boundaries of Literacy Events</td>
<td>138</td>
</tr>
<tr>
<td>50.</td>
<td>Linear View of Literacy Events</td>
<td>139</td>
</tr>
<tr>
<td>51.</td>
<td>Nonlinear View of Literacy Events</td>
<td>140</td>
</tr>
<tr>
<td>52.</td>
<td>Subjective View of Literacy Events</td>
<td>141</td>
</tr>
<tr>
<td>53.</td>
<td>Intersubjective View of Literacy Events</td>
<td>142</td>
</tr>
<tr>
<td>54.</td>
<td>Historical Nature of Process: Unilinear Levels Dialectically Related in Qualitative Development</td>
<td>145</td>
</tr>
<tr>
<td>55.</td>
<td>Contradictory Relationships of Events Maintain the Decentered, Open, and Nonlinear Nature of Processes</td>
<td>145</td>
</tr>
<tr>
<td>56.</td>
<td>Relationship of Social Beings to Processes Through Intersubjective Communication</td>
<td>146</td>
</tr>
</tbody>
</table>
PART ONE: INTRODUCTION

CHAPTER 1

INTRODUCTION TO THE STUDY

In recent years, increased emphasis has been placed on the investigation and conceptualization of written language, specifically the reading and writing processes (K. S. Goodman, 1989). As a result, several theories and models have emerged, depicting various aspects of the reading and/or writing process (Singer & Ruddell, 1985). Whole language theory, in particular, is a result of such investigations. This theory is, in part, a response to those models which separate language into isolated pieces; language is divided into independent parts—sounds, syllables, and words. In contrast, whole language theory addresses the parts of language within the context of undivided or whole language (K. S. Goodman, 1986).

Many of these investigations are focused on methodology; however, written language is more than techniques (Pearson, 1989). Although it is necessary to address the practical, "how to" features of whole language models, researchers have neglected to examine the philosophical paradigm that underlies the models—the holistic paradigm. Educators need to become familiar with
the assumptions on which their practices are based, thus, enabling them to construct and utilize the most appropriate theories and models (Greene, 1981).

Statement of the Problem

The problem of this study was to investigate the philosophical assumptions underlying the holistic paradigm.

Purposes of the Study

The purposes of the study were to demonstrate the relevance of applying the holistic paradigmatic assumptions to understanding the processes of learning about written language, and to derive a conceptual model which can be utilized as a heuristic device for the interpretation of written language.

Research Questions

The basic question of the study is, What philosophical assumptions underlie the holistic paradigm? Furthermore, How do these assumptions contribute to the understanding of written language? Finally, What heuristic model can be derived from the assumptions?

Definition of Terms

The following terms were defined for this study:

Model is a concrete representation which delineates clearly defined patterns of interaction among conceptual components of a theory.
Paradigm is a way of discussing the world, the things in the world, and the relationships among these things, that a particular community has adopted as its worldview.

Philosophy is an assumption or belief about the general nature of the world.

Theory is a general statement of the relationships among concepts, representing a coherent and explicit set of assumptions.

Background and Significance of the Study

Written Language Development

There are, in general, three classes of written language models—bottom-up, top-down, and interactive. The majority of these models deal specifically with reading processes, with implications being drawn for writing processes (Singer & Ruddell, 1985). In particular, reading is conceptualized as a decoding or encoding process in bottom-up models (text-driven). When reading orally, reading involves the process of decoding graphic symbols into speech; when reading silently, reading involves the process of encoding graphic symbols into inner speech. In addition, perceptual (lower-level) and cognitive (higher-level) processes are autonomous in nature, with perception preceding cognition. Specifically, the identification of graphic symbols (letters, words, etc.)
occurs first; then, syntactic and semantic processes follow. Correct word identification, therefore, automatically ensures reading comprehension (Gough, 1985; Harris & Sipay, 1980; LaBerge & Samuels, 1985).

Theorizing that reading fluency is the result of the acquisition of many subskills while moving through a number of prerequisite, discrete stages, David LaBerge’s and S. Jay Samuels’ (1974) early characterization of reading portrayed a bottom-up model. Each stage processes and records the input and, then, transfers this information to the next level for further processing. The reading process takes on a unified character when the subskills are processed automatically (McKenna, Robinson, & Miller, 1990).

In top-down models (concept-driven), however, reading comprehension is influenced more by the cognitive and linguistic processes. Rooted in psycholinguistic theory, these models note a significant relationship between thought and language (K. S. Goodman, 1989; Harris & Sipay, 1980; Smith, 1982). Kenneth Goodman (1967), observing that readers utilize their predictive potential to select language cues from sensory input, referred to this process as a "psycholinguistic guessing game." The predictions concerning meaning are accepted or rejected as the processing of information transpires. In contrast to bottom-up models, graphic cues are used only when either
validating or rejecting predictions. If letters or words do not correspond to syntactic and semantic processing of predictions, they are not likely to be employed in the reading process (Harris & Sipay, 1980).

Whole language theory is a recent conceptualization of the reading/writing processes (literacy events) within this model (K. S. Goodman, 1989; Y. M. Goodman, 1989; Watson, 1989). This theory is a response to the fragmentation of bottom-up models, specifically the decontextualization of subskills (McKenna et al., 1990). Rather than separating the reading process into subskills, whole language theory emphasizes the wholeness of literacy events (Pearson, 1989).

Finally, interactive models, which portray reading in terms of the coordination of perceptual and cognitive processes, stress that neither bottom-up nor top-down processing plays a dominant role in reading comprehension. The processing of information at higher levels can effect the processing in lower levels. Thus, despite its hierarchical location, each level has the potential to influence all other levels (Rumelhart, 1985; Stanovich, 1980).

In particular, interactive theorists such as David Rumelhart (1985) have proposed that graphic symbols as well as thought significantly influence comprehension. This observation implies that top-down and bottom-up processing
transpire simultaneously. Therefore, the absence of a graphic or semantic cue can impede comprehension. Such limitations make it necessary for the reader to rely on decoding and/or contextual skills (Harris & Sipay, 1980).

These written language models, then, are distinguished by the nature of the processing involved (Singer & Ruddell, 1985). Furthermore, with the development of the whole language movement, there appears to be a growing dissatisfaction with the bottom-up model and, consequently, an increased emphasis on a more holistic approach, exemplified in features of both top-down and interactive models (K. S. Goodman, 1986). In practice, though, "the transition from one model to the other [generally] represents little more than methodological change" (Poplin, 1988, p. 389).

As stated by Dorothy Watson (1989), however, "Whole language is not a program, package, set of materials, method, practice, or technique; rather, it is a perspective on language and learning that leads to the acceptance of certain strategies, methods, materials, and techniques" (p. 134). Judith Newman (1986) pointed out that "'whole language' isn't an instructional approach . . . [but] a philosophical stance" (p. 1). Jerome Harste, V. A. Woodward, and Carolyn Burke (1984) also asserted that the
curriculum must be thought of differently in a whole language approach.

Educators need to go beyond practice, even beyond the theories and models themselves, to address the assumptions that underlie this approach (Greene, 1981). What is needed, then, is paradigmatic clarification. Luis Heshusius (cited in Poplin, 1988) noted that "the concept of paradigm . . . is far more encompassing than that of theory. . . . While theory directly delineates the phenomena of interest, a paradigm does not, but rather presents a world view" (p. 389), a way of discussing the world, the things in the world, and the relationships among these things. This paradigmatic vocabulary or language thus serves to contextualize theory and practice. Paradigms, therefore, presuppose theories, models, and practice (Kuhn, 1962; Masterman, 1970).

The Nature of a Paradigm

Conceptually, paradigms are structured in terms of "constellations of group commitments," embracing assumptions at three different levels of analysis (Kuhn, 1962). The accepted presuppositions of a scientific group compose the most comprehensive level—"metaphysical paradigms" or "metaparadigms." The "disciplinary matrix," embodying the commitments of a specialized research community, is less
comprehensive in nature. Such commitments entail philosophical assumptions concerning beliefs, values, goals, and norms, often articulated through symbolic generalizations. Finally, the practical achievements of a disciplinary matrix—"exemplars"—characterize the least comprehensive level of a paradigm. Embodying and exemplifying the assumptions, exemplars are the methodological tools which allow the disciplinary matrix to apply generalizations in specific contexts. For example, in different contexts, generalization A may be qualified as A', A'', or A''' (Eckberg & Hill, 1979; Kuhn, 1962; Masterman, 1970).

These three levels form a developmental hierarchy, with the most comprehensive level—metaparadigm—serving as the structure in which the less comprehensive levels evolve. Requiring further specification, the lower levels influence the development of the higher levels which, in turn, modify and incorporate elements of the lower (Eckberg & Hill, 1979).

More important than the definition of a paradigm, though, is its function. As stated by M. Masterman (1970), "A paradigm is a concrete 'picture' of something A, which is used analogically to describe a concrete something else, B" (p. 77)—a heuristic model. Therefore, the function of a paradigm is to provide a means of conceptualizing and
describing content, thereby facilitating research (from theory to practice).

The Holistic Paradigm

There are many diverse ways of discussing the world. Such conceptualizations, however, are generally grouped in one of two worldviews—a mechanistic paradigm (alternatively referred to as atomistic, reductionistic, natural science, quantitative, analytic, empirical, objectivism, absolutism, positivistic, or Cartesian) or a holistic paradigm (alternatively referred to as organismic, subjective, naturalistic, qualitative, humanistic, nonabsolutism, interpretive, nonreductionist, or contextualist), the specific characteristic stressed by any one approach being designated by its name (Rosenberg & Jackson, 1988). One tradition, has, in fact, dominated the modern era. In particular, beginning with Rene Descartes’ and Isaac Newton’s work, western science has emphasized that the world is composed of separate and independent parts—a mechanistic worldview (Minnix, 1987).

In the past several decades, though, many researchers have tried to demonstrate that the social sciences cannot necessarily appropriate the methods of the natural sciences (Heshusius, 1989; Poplin, 1987; Rorty, 1979). For example, according to Ilya Prigogine and Isabelle Stengers (1984),
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 where these concepts and methods are valid was very restricted, and thus the analogies between them and social or economic phenomena are completely unjustified. (p. 207)

Furthermore, "our visions are undergoing a radical change toward the multiple, the temporal, and the complex" (Prigogine & Stengers, 1984, p. xxvii). The world is now conceptualized as holistic as opposed to mechanistic in nature (Bohm, 1980; Capra, 1983).

The emphasis on such a view has recently intensified, stressing a general discontent with the study of human beings by mechanistic methods. This dissatisfaction has permeated many disciplines, including natural science, social science, psychology, education, special education, and philosophy (Heshusius, 1986). Specifically, there is a general awareness of the limitations of the "paradigmatic boundaries" that have guided inquiry (Heshusius, 1989). Having obstructed the understanding of human beings, the positivistic and empiricist approaches are viewed as inappropriate (Bohm, 1980; Capra, 1983; Heshusius, 1986; Poplin, 1987; Prigogine & Stengers, 1984; Rorty, 1979).

Although the concept "holism" was proposed by Jan Smuts in 1926, many schools of thought have incorporated this conceptualization of the world—structuralism, Gestalt
psychology, systems theory, Jean Piaget’s genetic epistemology, existentialism, phenomenology, and quantum theory, to name a few. Because there is no unified history of the holistic worldview, though, the paradigm has remained ambiguous in many respects. Despite a shared commitment to assumptions at the metaparadigmatic level, contention prevails on the disciplinary matrix level of analysis. All holistic systems may appear similar from a mechanistic point of view; however, differences are significant from within various disciplinary matrixes (Jay, 1984).

At least two particular systems—quantum physics (Loye & Eisler, 1987) and Western Marxism (Jay, 1984)—though, having developed simultaneously yet independently, project comprehensive holistic worldviews. Specifically, new findings in quantum physics, a system of mechanics which describes the behavior of atoms, molecules, and elementary particles, have led to questions concerning the utilization of mechanistic assumptions as universals. Albert Einstein’s debates with Niels Bohr and Werner Heisenberg in the 1920s and 1930s over the use of the classical or quantum system marked the beginning of this movement. Through their investigations, these theorists revealed many inconsistencies in the laws governing classical physics. Atomic behavior, which was more complex than once assumed, prompted more holistic interpretations (Loye & Eisler,
Prigogine and Stengers (1984), among others, are contemporary proponents of such a view.

Western Marxism, a movement associated with the Institute for Social Research founded by Georg Lukacs within the University of Frankfurt in 1923, has also projected a holistic worldview (Jay, 1984). Originating in the philosophical critique of Kant and German Idealism, specifically George Hegel, and culminating presently in the critical theory of Jurgen Habermas, Western Marxism is generally "a subterranean tradition of humanist, subjectivist, and undogmatic Marxism that was the negation of its official Soviet (or Eastern) counterpart . . . [with its] doctrinaire ideology of legitimation" (Jay, 1984, p. 2). In particular, these philosophers noted the limitations of Marxism's mechanistic assumptions as well as the limitations of other holistic systems. Still impressed with Marx's work in general, though, they endeavored to create a new totality by reconceptualizing Marxist theory into what later became Western Marxism. As a result of their desire to know the whole, "totality" has had a special significance for all Western Marxists, permeating their work in politics, culture, and aesthetics (Habermas, 1971; Jay, 1984).
Design of the Study

This study, which is philosophical in nature, emphasizes the synthesis, analysis, and evaluation of assumptions and beliefs. John Brubacher (cited in Ozmon & Craver, 1986) stressed the relevance of philosophical inquiry to education generally and, by implication, to written language specifically. He stated,

Too few educators could formulate or pursue such questions or give adequate responses about why things are done as they are in most schools. . . . The study of philosophy of education would help educators build more adequate theoretical bases, and hence, more adequate education. (p. 290)

Specifically, one of the advantages of philosophical research is delineation of the paradigms that underpin theories and models. Each theory or method is grounded in certain assumptions and beliefs (Kneller, 1964; Morris, 1961). By analyzing these assumptions, educators can be better suited to address theoretical as well as practical issues (Scriven, 1988).

The purpose of this study, then, was to explore the enabling assumptions of the holistic paradigm. As argued by Thomas Kuhn, "Differences in paradigms are differences in worldviews, involving differences in assumptions made, questions asked, evidence taken, and methodologies used" (cited in Doll, 1986, p. 10). These underlying philosophical assumptions include beliefs about the nature of being (ontology), goals (axiology), and knowledge
(epistemology) (Hudson & Ozanne, 1988). The interdependence of these assumptions, as well as how they translate into different research processes, is noted in this study. The disciplinary matrixes of both Western Marxism and quantum physics are specifically addressed in the discussion. The discussion is not limited to just these two systems, but, rather, is placed in the larger context of holistic thought in an attempt to eliminate at least part of the ambiguity that is associated with the holistic paradigm.

Due to the magnitude of information and literature in the field of philosophy, a significant reliance upon secondary sources was necessary in the philosophical section of this study in order to gain an overall historical understanding and synthesis of the assumptions of various worldviews. Primary documents, however, were utilized for validation of secondary sources. In addition, contemporary (20th century) authors were read and are referenced from primary sources.

Finally, the philosophical assumptions of the holistic paradigm are applied to written language. Even though a paradigm cannot be logically associated with a particular theory or model, different worldviews imply different practices (Greene, 1981). Therefore, heuristic implications are addressed, providing insight for the conceptualization
and development of theories and models through flexible, contextually situated usage.

Limitations of the Study

The outcome of this study is limited to a heuristic model of written language within the holistic paradigm. Application of the model to specific aspects of written language (e.g., early literacy development, assessment, curriculum development) is left to future studies. Heuristic implications are significant, but of limited utility until normalized in practice.

In addition, this study is limited to western philosophical schools of thought. It is for future studies to investigate the holistic assumptions of eastern philosophy, which, in turn, may provide cross-cultural implications for written language.
PART TWO: PHILOSOPHICAL ASSUMPTIONS

CHAPTER 2

ONTOLOGICAL ASSUMPTIONS: LONGITUDINAL

NATURE OF BEING

In his study of Western Marxism, Martin Jay (1984) delineated a number of ontological categories—longitudinal, latitudinal, expressive/decentered, boundaries, causality, and social beings. This topology is utilized to structure the ensuing chapters. Specifically, the longitudinal assumption conceptualizes being in terms of a historical process.

A Static Universe

One of the earliest philosophical conceptions of being portrayed the world as permanent and without development, in eternal existence, as exemplified in Baruch Spinoza’s philosophy (cited in Jay, 1984). Left with this static account, being is visualized as relatively independent of time and history, which reflects in some respects the positivistic conception of the world (Couch, 1987). Displaying a neo-Kantian disregard for history, this view admits to no elapse of time; there is no difference, qualitatively, between past and present. Rather, as in Max
Horkheimer’s view, the present conditions maintain a perpetual repetitive existence from which there is no means of escape (cited in Jay, 1984, see Figure 1).

![Figure 1. Early philosophical view of the universe.](image)

Likewise, as a result of the mechanical, stable, and therefore time-reversible nature of the world, uniformity was maintained in the classical, Newtonian model of science (Sampson, 1985). Isaac Newton, as well as Francis Bacon and Rene Descartes, projected that everything was conceived in terms of permanent regularities, that all matter existed in unvarying cycles or patterns. They suggested that, similar to a machine, the natural universe achieved an ordered, uniform state (Couch, 1987). There was, then, no sense of development or progress.

A fundamental concept of this model was that of the trajectory, a space-time line composed of separate material points. Specifically, a trajectory depicts a future point
or state toward which the initial conditions of matter are moved. Space and time, however, are absolute; they exist independently of matter. Time, therefore, is reversible, for it does not have an arrow. One can return to the starting point by following the path backward, pursuing the same route on which it moved forward. For example, a clock can be moved forward or backward, and a bowling ball can be moved up and down a lane. Furthermore, because the initial conditions lead to a future state and then return, the future can be said to be included in the present (Jantsch, 1980; Sampson, 1985). Everything is present at each point; all states are equal. Thus, being was characterized as changeless matter and motionless states—atemporal (Prigogine, 1984; Prigogine & Stengers, 1984, see Figure 2).

Figure 2. Trajectory in the classical Newtonian model of science.
A Dynamic Universe

Beginning with the Enlightenment, however, a faith in progress and growth was manifested—humanity's continual progress proceeded with the collective resolution of problems. History, having once been understood by the Greeks, Giambattista Vico in particular, as an endless cycle lacking progress, could now be conceptualized in terms of a beginning, middle, and end—a "progressively meaningful whole." There was, then, no transcendence from history or culture as portrayed by earlier philosophical conceptions of being (Jay, 1984, see Figure 3).

![Diagram](image)

**Figure 3.** Enlightenment's view of the universe.

In the field of physical theory, Einstein began to question the laws of classical, Newtonian mechanics. He discovered that certain things which the classical theory regarded as absolute (i.e., "the absoluteness of time and
space for all frames of reference") were actually relative. Through the development of the general theory of relativity, Einstein recognized that certain variables associated with a frame of reference are critical to understanding and representation of the physical events observed from within this particular frame of reference (Snyder, 1983). The idea of a space-time state of events, which was relative to a specific frame of reference, therefore, replaced the concept of absoluteness (Greene, 1984). For example, one's motion relative to what is being observed significantly affects the description. The mass is less when the motion is faster; the mass is greater when the motion is slower (Frankel, 1991).

As a result of the discovery of the relative nature of states, the traditional concepts of absolute space and absolute time were united. Specifically, mass was conceptualized as a form of energy (Capra, 1991). Space-time, then, was an inherent feature of matter; space-time, being produced from matter, could not be independent of it. Despite the dynamic implications of this theory, however, the concept of a space-time localization was retained, thus denying any interconnection of states (Frankel, 1991; Prigogine, 1984, see Figure 4).
A Temporal Universe

As philosophical, as well as scientific, schools of thought continued to project new dimensions of the universe, the static and dynamic views proved to be inadequate representations of the world. Martin Heidegger (1962), echoing Heraclitus' famous dictum that everything is in flux, proposed that being was defined through temporality. In other words, one understands things in "the active and the possible" rather than through "the static and the necessary" (Faulconer & Williams, 1985). Characterizing states in terms of being and temporality in terms of becoming, Heidegger objected to the theory of the static nature of being (cited in Prigogine, 1984, see Figure 5).

Utilizing the concepts of being and becoming, Alfred Whitehead (1929) also questioned whether matter could be understood as possessing a permanent identity. Based on the
Becoming's view of the universe.

creative nature of the universe, it seemed more appropriate to conceive of matter in terms of a process; Einstein's notion of a space-time localization was no longer applicable. Privileging process over static structures, Whitehead proposed that static matter could not account for nature's evolution; therefore, activity was a defining characteristic of states. It was important, then, to harmonize static and dynamic views, being and becoming, to understand matter as process (Prigogine, 1984; Prigogine & Stengers, 1984).

Specifically, Whitehead (1929) replaced the idea of a state with what he referred to as "actual occasions" or "actual entities," suggesting a change or transformation. Characterized by a dynamic set of relationships, the actual occasion is involved in an endless act or process of moving into a new union. Furthermore, each actual occasion is in
the process of becoming; its being is formed by its
becoming. Rather than emphasizing being (matter) or
becoming (energy) as the significant feature of the
universe, Whitehead stressed the process in which matter and
energy were united in temporary relationships, creating a
series of events (cited in Oliver, 1989, 1990, see
Figure 6).

![Actual Occasion](image)

**Figure 6.** Whitehead’s view of the universe.

With the development of thermodynamics in the 19th
century—specifically Ludwig Boltzman’s principle of
entropy—the arrow of time was introduced, signalling the
demise of reversible processes. Entropy, derived from the
Greek meaning to change, refers to the wasted or dissipated
energy in a system. The entropy principle, or second law of
thermodynamics, notes that a defining characteristic of
closed systems is the maintenance of homogeneity or
thermodynamic equilibrium, which, in turn, leads to a state of higher entropy or disorder. Due to the closed nature of such systems, it is only possible for entropy to increase; the entropy of a future state can only be equal to or greater than the entropy of a past state (Doll, 1986; Sampson, 1985). For example, as water is converted to steam power in thermodynamic reactions, there is a loss of energy; the remaining energy is not equal to the potential power of the original water (Doll, 1986). Therefore, as in the Newtonian model of science, one cannot retrace the path to the initial conditions, for different qualities appear that are not reducible to the qualities of past states. The level of energy does not remain constant or static. Time, then, is not reversible; one cannot step into the same river twice (Sampson, 1985).

By introducing the irreversible nature of time, linear, near-equilibrium thermodynamics attributed a temporal aspect to being. As the system moves closer to thermodynamic equilibrium, however, changes are uniform; the initial conditions are not retained. Thus, the system's entropic process is ahistorical in nature. Because states are not affected by the history of the system, the past is independent of the present and the future. There is no connection between states; development is conceptualized as a series of separate events. This view acknowledges the
Historicism, while increasing the significance of time in the description of historical processes, is also depicted as a series of events, a succession of discrete totalities (Faulconer & Williams, 1985). Conceptualizing history as the transformation of knowledge at a particular time, Michel Foucault (1972) reached a similar conclusion. The content of totalities was determined in this theory by the knowledge present during a given historical period, prompting his poststructuralist portrayal of successive and separate epistemological structures (Greene, 1984).

In this view, temporality is characterized in terms of space, and is portrayed as a linear succession of points or moments. Because length is defined as a sequence of
moments, "the moment is a duration without length" (Faulconer & Williams, 1985, p. 1183)—dimensionless. Therefore, the present is the only moment which exists; it is not possible to consider the being of past and future points (Faulconer & Williams, 1985). This spatial conception of temporality, then, provides no link between the past, present, and future (Prigogine, 1984, see Figure 8).

Another problem with this conception of being is the concept of equilibrium. Equilibrium or homeostasis, as it is referred to in systems theory, concerns the maintenance of the stability of a system. However, with an emphasis on stability, homeostasis precludes any explanation for change in a system’s functioning (Dell, 1982).
A Dialectical Universe

As indicated by the dynamic and temporal views, there has been a significant attempt since the time of Kant to reconceptualize the mechanical emphasis of classical physics. However, its replacement—linear, near-equilibrium thermodynamics—although linking being with time, failed to address the transition from one state to the next (Prigogine, 1984). In partial response, Heidegger (1962), as well as many of the Western Marxists to follow, based his view of time on the general principles of Hegel’s dialectical materialism and Marx’s subsequent application of these principles to the historical development of human society—historical materialism. Hegel, utilizing Socrates’ conversational method of argument or debate, systematized dialectics, which was an endeavor to understand the complex interrelationships of processes (cited in Bidell, 1988). Specifically, a process of opposition (contradiction, refutation, negation) regulates the transition from one state to another, the general method being one of thesis, antithesis, and synthesis (Tolman, 1983).

States restructure their relationships—resolving oppositions as well as developing others—through contradiction, known as the law of the negation (resolution) of the negation (contradiction) (Bidell, 1988). The system must negate contradictions when attempting to overcome them.
Thus, as parts of the same event, non-being originates and unites with being in the process of becoming (Runes, 1983). Synthesis implied preservation—the contradictions were maintained and transcended (Jay, 1984). Process, then, is critical to overcoming contradictions and creating new relationships; as a relation of transformation among relations or states, dialectical process serves a unique role in the system (Bidell, 1988, see Figure 9).

![Contradictions]

State of Being → Non-Being → Becoming → Being

**Figure 9.** Hegel's dialectical process: Negation of contradictions in non-being, synthesis of being and non-being in becoming.

As transitions transpire between states, however, new qualities are generated; the changes are not necessarily quantitative in nature. Having developed from a prior quality, the new quality is not an accumulation of the former quality; it cannot be reduced to the quality of a prior state (Runes, 1983). Therefore, the new state is the
transformation of the past, not merely a replacement of the former state. This qualitative transformation, rather than a quantitative change, characterizes the dialectical process as developmental (Tolman, 1983). Furthermore, there is perpetual change; every developmental state synthesizes contradictions from the former state, and, in turn, precipitates different contradictions for a new qualitative level (Runes, 1983, see Figure 10).

Figure 10. Qualitative change in the dialectical process.

Despite the dynamic features of this process, dialectics was closed upon itself in an effort to overcome the open-ended boundlessness of historical time. Referring to the latter as a "bad infinity," which was a limitless series of moments without form, Hegel chose to emphasize what he called a "good infinity," which was a circularly ordered whole with finitude. Consequently, dialecticians
who were to follow, while retaining the dynamic aspects of Hegel's system, rejected the idealistic concept of time as closed and as rediscovering only itself, and projected open-ended totalization rather than a closed totality (cited in Jay, 1984, see Figure 11).

**Figure 11.** Hegel's closed totality versus open-ended totalization.

In anticipation of the post-structuralist position, however, Theodor Adorno challenged this developmental view (cited in Jay, 1984). He postulated negative dialectics, a discordant "forcefield" of contradictions. Rather than the dialectical mediation and synthesis of contradictions, Adorno stressed untotalized parts. Being was thus a dynamic interaction of opposites, yet a continuous fragmented sequence of contradictions.
A Structuralist Universe

Based on the pioneering work of Ferdinand de Saussure in linguistics and Claude Levi-Strauss in anthropology, structuralism has also contributed to a new conceptualization of being which has dialectical overtones. Although initially concerned with synchronic structures, emphasizing relationships across a moment in time, some attention has been given to diachronic processes through time as well (Lane, 1970). In particular, Louis Althusser, incorporating structuralist tenets into Western Marxism, supplanted Hegel's idea of time as dialectically irregular yet homogeneously continuous with the notion of distinct temporalities of independent structural or historical levels. Due to the heterogeneous nature of time, it was not possible to reduce it to one dominant chronology (Jay, 1984, see Figure 12).

Figure 12. Althusser's structuralist view of the universe.
Jean Piaget’s (1970) genetic structuralism, portraying cognitive development as a series of levels, however, placed more stress on the dialectical unification of these levels than on discrete stages (Greene, 1984). Piaget observed that there are changes in an entire structure when one part changes as a result of its interaction with the environment; the whole structure can be affected by one developmental sequence. Furthermore, the changes in a cognitive structure are in accordance with its whole being (Goldberg, 1987).

The law of "equilibration," which includes the dialectical processes of assimilation and accommodation, directs these developmental changes or transformations. According to Piaget, as present structures integrate new knowledge—assimilation, the structures are simultaneously changed, so that they can accept this stimuli—accommodation. As the cognitive structures react to new information, however, their equilibrium is affected. The resulting imbalance generates a developmental sequence, leading from equilibrium to dis-equilibrium, to re-equilibration. The re-equilibration, though, is more than the reversion to a preceding level; it is the conversion to a new qualitatively different state (Doll, 1983; Goldberg, 1987). Through a dialectical process of transformation among contradictory relationships in a structure (Bidell, 1988), a cognitive structure maintains
its prior state while constantly changing (Goldberg, 1987, see Figure 13).

![Diagram of equilibration process](image)

Figure 13. Piaget's law of equilibration: New information contradicts existing information in disequilibrium, assimilation, and accommodation of new information in re-equilibration.

Combining features of Piaget's as well as Lawrence Kohlberg's developmental learning theories, Habermas (1979) also proposed a dialectical theory of progress in his reconstruction of historical materialism. In general, he stressed conscious processes rather than static cognitive structures (Arnason, 1982). Habermas, specifically, rejected the anti-evolutionary conception of the early Frankfurt School, and supplanted it with the notion of developmental stages of historical change (Eyerman, 1984). This view projects "an irreversible sequence of discrete and increasingly complex stages of development; no stage can be
skipped over and each higher stage implies the preceding stage in the sense of a rationally reconstructible pattern of development" (Habermas, 1979, pp. 73-74). Therefore, the more advanced social structures (i.e., capitalism) are understood only in relation to prior social structures. The present, then, cannot be understood when separated from the past (Arnason, 1982). In addition, there are different levels of historical evolution which are related yet independent; time does not move in an unilinear manner (Jay, 1984).

Despite Habermas' (1979) emphasis on processes, however, mention of "discrete stages" and "autonomous levels" leads to a "differential concept of progress." His goal was to diversify rather than unify prematurely; there is no initial dialectical unification of structures or processes. Separation, though, does not imply absolute independence (Jay, 1984). Habermas noted,

It seems useful to me to start with the interdependence of two countervailing causalities. If we distinguish the plane of structural possibilities (learning-levels) from the plane of factual processes, then the two causalities can be clarified with a change of explanatory perspectives. The emergence of a new historical event can be explained by reference to contingent peripheral conditions and to the challenge of structurally open possibilities. On the other hand, the emergence of a new structure of consciousness can be explained with reference to the developmental logic of the pattern of previous structures and to an impulse given by problem-generating events. (Habermas, 1979, pp. 10-11, see Figure 14)
A Historical Universe

Each of these views of the universe has significantly contributed to the development of a longitudinal conception of being. The dialectical and structural views, with an emphasis on process, events, becoming, and qualitative changes, have noted the necessary and meaningful connection between states, moments, or structures. In addition to dynamic and temporal features, the world is historical in nature as well.

Both Heidegger (1962) and Whitehead (1929), in their philosophical discussion of being and becoming, were led to address the relational as well as the directional nature of time. Because time is conceptualized in terms of space in the temporal position, all moments are identical; there is no differentiation in terms of content. Conceptualizing
space in terms of time, however, Heidegger projected that time was not dimensionless or spatially determined. Time is not "filled up" by activity, but is itself activity. "The past exists in the now as the 'from whence'. . . ; the future exists in the now as the 'to whence'" (Faulconer & Williams, 1985, p. 1184). Time, then, is historical and temporal (see Figure 15).

![Figure 15. Heidegger’s directional and relational nature of time.](image)

Similarly, Whitehead (1929) viewed time as the integration of one "actual occasion" in the becoming of another; thus, time is seen as relational (Oliver, 1989). A sequence of events maintains a level of autonomy, while relating to past and future moments. Time, therefore, manifests a cumulative feature. The present, having incorporated many events of the past, is not independent of
its history. Thus, time is a relation to the past (Griffin, 1986, see Figure 16).

![Diagram](image)

**Figure 16.** Whitehead's time as a relation to the past: Inclusion of past events in present event.

The reconceptualization of time in physics also addresses the historical perspective. Through the development of nonequilibrium thermodynamics, Prigogine (1984) challenged the notion that objects occupy a static position in space or that time uniformly determines events in space. In so doing, he dealt with two related issues—the relationship between equilibrium and nonequilibrium structures and the nature of the transformation from one to the other (Doll, 1986). Drawing a distinction between these two types of structures, Prigogine noted that structures at or near equilibrium, referred to as "hypsons" or sleepwalkers, are independent and isolated, and exhibit
chaotic behavior. Nonequilibrium, however, serves to arouse and order structures, creating a dissipative structure (Jantsch, 1980; Prigogine & Stengers, 1984; Sampson, 1985).

This transition from chaos to order necessitates the process of autocatalysis, derived from the work of Humberto Maturana. In such a process, the system is moved far from equilibrium by fluctuations, creating a new state when reaching a critical level of instability. The resulting dissipative structure evolves into a stable structure after reorganization, only to bifurcate and begin the cycle anew. Through this autocatalytic cycle, the system emerges as a whole, constantly structuring itself (Doll, 1986; Fabel, 1987; Roque, 1988). "Order gives way to chaos, order is discovered within chaos, and order is again created out of chaos"—order through fluctuation (Prigogine & Stengers, 1984, p. 245).

Because a dissipative structure is characterized through its becoming, the autocatalytic process creates an open system which cannot be understood as absolute or final. The structure exists by maintaining a continuous exchange of entropy with the environment. Therefore, entropy does not collect and drive the state toward equilibrium, as in closed systems where there are no transactions with the environment (Jantsch, 1980; Sampson, 1985).
The nature of this transformational change is historical. The content of past states is preserved—"transcribe in terms of chemistry"—because the initial conditions of each structure magnify their differences from other structures. By conveying information from the past to the future, such a structure "encapsulates time into matter" (Prigogine & Stengers, 1984; Roque, 1988). Thus, time and space transpire simultaneously, creating a historical system; the future state is different from the past but is constituted in part by the past. Because the future is not independent of the past, these structures are historical as well as temporal (Roque, 1988). In addition, as a result of the nonlocalization of time, structures that are created under nonequilibrium conditions can be connected to any spacio-temporal location; in contrast to structures in classical thermodynamics, they are nonlinear (Bohm & Hiley, 1974; Lucas, 1985). Therefore, there are no independent events; space-time unity implies that the universe is an inseparable whole (Chew, 1968; Lucas, 1985, see Figure 17).

Support for such a view also comes from the field of hermeneutics or textual interpretation. From Schleiermacher to Gadamer, the interpretation of a text as a stable document with one meaning has come into increasing doubt. Because they have a different meaning each time they are read, texts are open documents (Heelan, 1983; Sampson,
Hans-Georg Gadamer (1975) proposed that there is no singular meaning of a text but, rather, a process of changing interpretations. The meaning of a document is developed through many different historically-situated readings. A text is determined by these historical interpretations—its "history of effects" (Wachterhauser, 1986). Therefore, meaning changes with time; it is historical (Maddox, 1983). In contrast to Hegel's emphasis on closure, Gadamer stressed infinity and the impossibility
of closure; history denies any final interpretation (cited in Kerby, 1991).

Specifically, the reader discovers that the interpretation of a text read in the past is continually revised in the present. In anticipation of subsequent interpretations, meaning is also projected into the future. Thus, an asymmetrical relationship is established between prior interpretations and possible meanings: the past is necessary for the future (Packer, 1985)—what Heidegger (1962) termed "fore-having," "fore-sight," and "fore-conception." Interpretation is not a simple reproduction of the past (Hoy, 1978), but is better described as a dialogue among the past, the present, and the future (Chessick, 1990, see Figure 18).

*Figure 18.* Changing interpretations in Gadamer’s hermeneutics: Revision of what has been read in the present, anticipation of what is to be read in the future.
ONTOLOGICAL ASSUMPTIONS: LATITUDINAL NATURE OF BEING

In addition to the longitudinal nature of being, a latitudinal conception of being has been noted as well. Maintaining a process orientation, this assumption identifies one state, whole, or totality relative to others, implying more enduring relationships. Specifically, in terms of Western Marxism, a latitudinal totality refers to one historical period, which is characterized by a particular configuration of social structures (Jay, 1984). Whitehead, similarly, linked this conception of being with duration, defined as "a slab of nature" retaining temporal breadth, "a cross-section of the world in its process," or "the immediate present condition of the world at some epoch" (cited in Runes, 1983, p. 322).

An Undifferentiated and a Differentiated Whole

Despite these general descriptions, the view of a whole has fluctuated since the Greek, Parmenides distinguished the "One," an inseparable unity, from wholeness with parts. The former assumption—that the whole was not differentiated
into parts—was manifested in many philosophical schools of thought throughout the bourgeois era. In the extreme, as with historicism, a totality was interpreted in such a way as to completely deny the existence of any parts. In a few instances where there was an acknowledgement of parts, there was no relationship between the whole and the parts; the whole, possessing emergent properties, was primary and independent of the parts, as with Spinoza’s organicism (Jay, 1984; Kitchener, 1982, see Figure 19).

![Figure 19. Early philosophical view of a whole.](image)

Classical physical theory, however, advocated a differentiated whole. Disregarding the nature of being that included relations between the parts, "Cartesian reductionism" (Levins & Lewontin, 1985) separated processes into irreducible, individual parts—atoms (Bidell, 1988). Working independently, like the pieces of a machine, these
static parts or material particles could not operate in relation to the whole (Bohm, 1980). Furthermore, if the parts did interact with other particles, their interactions did not influence or change their properties, prompting the reference to external relations. Thus, a whole could be understood by determining the properties of the parts and their interactions, and then synthesizing this information through composition laws. Produced by an addition of parts and their properties, wholes, therefore, were aggregates; wholes maintained a summative rather than a constitutive nature (Kitchener, 1982; Steenbergen, 1990, see Figure 20).

Figure 20. Classical science’s view of a whole.

A Relational Whole

These two conceptions of being—an undifferentiated and a differentiated whole—were soon criticized by Hegel for being variants of a "bad infinity." An undifferentiated
whole was too general and devoid of content; a differentiated whole was too fragmented and lacked unity. Instead, in an attempt to represent the dynamic nature of a totality, Hegel as well as Marx stressed the significance of mediating between the separate parts and empty wholes. There was still an acknowledgment of the priority of the whole over the parts, however, with the realization that it was not independent of the parts it united. With the exception of Adorno, who placed equal emphasis on parts and whole, Western Marxists have generally adopted this view of totality (Jay, 1984, see Figure 21).

![Priority of Whole, but not Independent of Parts](image)

Figure 21. Western Marxism’s view of a whole.

Whitehead’s (1929) concept of an "actual occasion" further exemplified this view. With the development of each new occasion, parts were not regarded as separate entities. Rather, due to the dynamic character of the process,
emphasis was placed on a fluctuating configuration of relationships. Such a process denied division, for there were only relations, "prehensions," which were involved in an act of acquiring and relating new information to the whole. These relations, in turn, entailed the movement into a new whole, a becoming (Oliver, 1989, see Figure 22).

![Figure 22. Whitehead’s view of a whole.](image)

In addition, it was soon evident that the material universe could not be divided into discrete parts—"basic building blocks"—which could by synthesized to generate the whole, thus echoing the Gestaltist view that a whole is more than the sum of its parts. Specifically, stressing that particles could not be separated from the space around them, both Einstein’s theory of gravity and quantum theory showed that parts are not distinctly distinguishable. In attempting to identify particles, these theories noted that
as soon as they had done so, the particles came in contact with other parts, destroying the initial particles and forming different ones. This observation led to the conclusion that wholes are composed of events or interactions, not parts, that are in existence for only a moment (Weaver, 1985). Parts, then, have no significance when isolated, and are understood only through their integrated activity within the whole (Capra, 1991). As Henry Stapp (1971) remarked, "An elementary particle is not an independently existing unanalyzable entity, but a set of relationships" (p. 356).

In terms of quantum theory, Gary Zukav (1979) observed that particles can be characterized as interactions between ever-changing electromagnetic fields. Interacting instantaneously and locally at one point in space, two fields create particles, yet maintain an "unbroken wholeness." There is no distinction between being and becoming: "the dancer and the dance are one" (p. 193). Fritjof Capra (1991), likewise, emphasized that matter and energy are not independent, for mass is but a form of energy. With such an interrelationship between matter and energy, particles are reconceptualized as dynamic processes. The creation of new relational patterns transpires, then, as the energy of interacting particles is redispersed.
Furthermore, instead of some type of external interaction between separate parts, quantum theory promotes what John Dewey and Arthur Bentley (1949) referred to as "transactions." In a transaction, parts are interdependent or internally related, implying that a change in one part affects other parts. Parts are primary and the relations and the whole are derived in interactions; relations are primary and the parts and the whole are derived in transactions (Kitchener, 1982, 1985; Riegel & Meacham, 1978, see Figure 23).

![Figure 23. Quantum theory's view of a whole.](image)

A Dialectical Whole

Despite the fact that philosophy and physical theory have advocated an integrated and articulated totality, some disagreement has been evident regarding the organization of relations within the whole. After initially noting that
parts cannot be separated from their internal relationships within a whole, Hegel, utilizing dialectics, addressed this issue by striving to understand the complex interrelationships of processes. In general, the assumption that relations, rather than parts extracted from relations, were the significant determinants of a whole, led Hegel to infer that processes were essentially contradictory (Bidell, 1988).

This view, "dialectical contradiction" or the "unity of opposites," suggested an interdependence of opposites, echoing Heraclitus' stance of "unity in diversity" (Tolman, 1983). A part had "no being of its own, but only in something else" as a "relation-to-other" (Tolman, 1981, p. 37). As Hegel (cited in Lawler, 1975) observed, "To know, or, in other words, to comprehend an object is equivalent to being conscious of it as a concrete unity of opposed determinations" (p. 4). The meaning of a part, then, relies on its relationship to another part; however, each is also discernable from the other (Tolman, 1983). The specific pattern of contradictions is what distinguishes one whole from another (Tolman, 1981).

In contrast, reductionism ignores contradictory interrelationships. Presenting instead a somewhat homogeneous view of the whole, reductionism prioritizes the parts and disregards any potential contradictions among
relationships. Driven by Aristotelian logic, this conception adopts the laws of "identity"—a part has its own identity—and the "excluded middle"—parts cannot participate in a relationship. By emphasizing parts, opposition is lessened, thus avoiding the contradictions that relationships promote. Dialectics, though, which maintain that contradictions are the most important characteristics of processes, note the significance of conflict within relationships (Bidell, 1988, see Figure 24).

Figure 24. Dialectical view of a whole.

A Structuralist Whole

In addition to defining relations through dialectical contradictions, another early conception, beginning with Aristotle and organicism, viewed the whole as a series of interlocking parts, arranged in hierarchical levels. The sequence of levels is such that the characteristics of each
level are included in higher levels but not in lower levels, because they are influenced by the general inclusiveness and abstract complexity of the relations between parts (LeGare, 1987). This view is still widely held and is particularly visible in systems theory and structuralism.

Specifically, the stress of structuralism on synchronic structures, dealing with relationships during a moment in time, projected that the whole could only be understood through the relationships that connect and unify the parts. In general, structuralism goes beyond appearances ("surface structure") to a structure of relationships underlying the surface ("deep structure"). This underlying structure can be further reduced to a complex hierarchial network of binary oppositions. Furthermore, one totality can be differentiated from another through the particular structural formations by comparing the patterning and ordering of relations divided by time or space (Lane, 1970; Scanlon, 1986).

For example, de Saussure’s structural linguistics identified the surface structure as spoken and written language and that which is used to produce language as the deep structure (Scanlon, 1986). The binary oppositions in this underlying structure were composed of chains of signs, consisting of a "signifier" (verbal or written representation) and a "signified" (conceptual
representation). These two elements, however, were only linked arbitrarily because the nature of signs was relational rather than inherent. With the meaning of a particular sign in the linguistic chain being determined by its difference from other signs, each sign gained its value by its relational position in a matrix of oppositions (Lane, 1970; Weedon, 1987, see Figure 25).

Figure 25. de Saussure’s view of a whole.

Through genetic structuralism, Piaget also demonstrated that the mind functions as a whole rather than through the summation of isolated concepts (cited in Goldberg, 1987). An epistemic state, characterized by skills that were present during different phases of mental functioning, had an underlying organizational pattern of relationships. The relations or processes of epistemic states were primary; parts and wholes were abstractions formed from these
relations. Furthermore, the relations were expressed as composition laws which, in turn, produced the structure—they "structured the structure" (Kitchener, 1985), prompting the reference to a whole as both structured and in the process of being structured (Goldberg, 1987). In addition, such states could take on a variety of structured forms. For example, in regards to an epistemological totality functioning at a particular time, Piaget arranged concepts in terms of their relational difference from other concepts. The result was a hierarchial arrangement of epistemological structures from less to more complex (Greene, 1984, see Figure 26).

![Epistemological Hierarchy](image)

**Figure 26.** Piaget’s view of a whole.

As Lukacs was perhaps the first to point out in his criticism of organicism and enlightenment thought, however, a hierarchial structure reduces relationships to a single
dimension—parts can only be related to what is above or below them—creating a homogeneous organization of parts. A hierarchy presents a simplified picture of the whole, minimizing differences and reducing everything to the same pattern; parts are assigned equal value, denying privilege to any concept (Jay, 1984). Furthermore, due to restrictions applied by higher levels to lower levels, a relationship of domination characterizing a hierarchial whole was identified (Kitchener, 1982).

Post-structuralists, likewise, have mounted a challenge to this view. In his discursive investigations, Foucault (1972) noted separated fields of statements without any mediated integration. There was no underlying structure to unite the parts; there were no relationships beneath the surface (Jay, 1984).

Despite its detotalizing implications, deconstruction, originating in the philosophy of Derrida (1978), also disputes the opposition and the hierarchy inherent in structuralism. Utilizing the concept of "difference" to accomplish this deconstructive task, Derrida delineated two significant components of the process—"difference" and "deferral." First, instead of emphasizing the differences between pairs of concepts, he illustrated the similarities between them. The concepts have characteristics in common, implying that they depend on each other for meaning.
"identity logic" of "either/or," is destroyed, for what is significant is not that the concepts are opposites—that there is either one or the other—but, instead, the "logic of the supplement"—"both/and"—in which one concept is defined through the other, for there is one and the other. In addition, a signifier may be related to more than one concept, or a concept may have more than one signifier, as a result of the arbitrary nature of the relationship between the bipartite signifier and signified. Second, in terms of deferral, relations cannot be expressed as particular presences, for the concept in question ("immediate and present") is composed of the concept from which it is distanced ("deferred and absent"). The immediate presence of being, then, is the result of both difference and deferral (Ellis, 1991; Hare-Mustin & Marecek, 1988; Sampson, 1983).

A Circular Whole

Others have become dissatisfied as well with this "one-dimensional"—referred to as such by Horkheimer—or hierarchic conception of totality. Along with Hegel, they have rejected the distinction between levels and have noted instead the heterogenetic nature of a whole, for every part is related to every other part (Jay, 1984). This is also reinforced by Bell's Theorem in which being is considered to
be nonlocal, implying that all particles are connected in a cyclical fashion (Cziko, 1989).

Modern physics portrays the relations of a unified whole as a dynamic web of interrelated processes. Specifically, the $S$-matric or bootstrap approach (Chew, 1968) attempts to describe hadrons, interacting energy patterns or interconnected particles in a continuous dynamic event. Because particles are dispersed when they collide, $S$-matrix stands for scattering matrix. Particles, transitory states resulting from a network of processes, are characterized relative to others, for each involves all others. Furthermore, as these particles are associated with other interactions, the parts can be represented diagrammatically in a web of relations. The flow of energy in such interrelations displays distinct patterns, determining the structure of the web (Capra, 1991; Zukav, 1979, see Figure 27).

![Diagram: Hadrons Bootstrapped to One Another](image)

**Figure 27.** $S$-matrix's view of a whole.
David Bohm (1980), employing an analogy between a photographic lens and a hologram, also proposed a theory of "undivided wholeness." Noting the independent, localized parts of a whole, a lens creates a photographic image whose parts correspond to these particles of the whole. On the other hand, a hologram, derived from the Greek meaning an instrument that "writes the whole," registers the whole in terms of the patterns of opposition which result from the movement of electromagnetic fields in the form of light waves. There is, however, no one-to-one correspondence between the parts of the whole and the image, for every part includes characteristics of the whole (Capra, 1991). Thus, as any part is highlighted, it is apparent that each part of the holographic image enfolds the whole structure; the structure is unfolded in such a way as to reveal an image of the whole. In other words, the whole encompasses each part and each part encompasses the whole—"unity-in-diversity" and "diversity-in-unity" (Wilber, 1982).

According to Bohm, being is composed of two interrelated orders—an enfolded or "implicate order" of continuous, flowing movement, from which the "explicate order" of independent parts is unfolded (cited in McKinney, 1988, 1990). Appearing at first glance to be separate, material particles are, instead, inherently connected through an underlying wholeness (Wilber, 1982). The parts, having unfolded from the same whole, are indirectly, yet
internally related, for the whole is present in every one, implying that each part is indirectly present in all others (Griffin, 1986). The parts that have been abstracted, at any time, from the implicite order of "undivided wholeness" have meaning only in relation to this context (McKinney, 1990). An underlying level of structure, then, defines the web of relations (Capra, 1991, see Figure 28).

Figure 28. Bohm’s view of a whole.

By incorporating Heidegger’s notion of the circular nature of understanding, Gadamer utilized a similar conception of relations in his hermeneutical theory (Maddox, 1983). Because specific passages of a text are meaningful only within the context of the whole, texts are said to be composed of relations. Therefore, for understanding to occur, parts and wholes must be related by bootstrapping information from the whole to the part and then back to the whole (Haugeland, 1979). Clifford Geertz (1979) referred to
this process as "a continuous dialectical tacking between
the most local of local detail and the most global of global
structure in such a way as to bring both into view
simultaneously" (p. 239).

Gadamer (1975) identified this structure--the
clarification of the whole by the parts and the
clarification of the parts by the whole--as the
"hermeneutical circle." In other words, understanding of
the whole text is based upon knowledge of the parts;
understanding of the parts is based upon knowledge of the
whole text (Behler, 1987; Hoy, 1978; Roque, 1988). As noted
by Gadamer, "The movement of understanding is constantly
from the whole to the part and back to the whole. Our task
is to extend in concentric circles the unity of the
understood meaning" (p. 259). Thus, this pattern of
relations between whole and parts creates a "sprawling
limitless web" of circulating parts (see Figure 29).

**Figure 29.** Gadamer's view of a whole.
As indicated in the preceding two chapters, wholes are defined through process and relationships. The latitudinal nature of being, however, has been further characterized in terms of the emphasis or value placed upon particular relationships within the totality. As a result, two different views have emerged—an expressive and a decentered whole (Jay, 1984).

Expressive Nature of Being

In chronicling the philosophical development of these two views, Jay (1984) noted that, since the time of Plato, some philosophers have stressed that the latitudinal whole has an original, given unity or expressive center. Through a process of "self-objectification," a "totalizer" or "genetic subject" produces the whole. Furthermore, the relationships which characterize this whole reflect in some sense the "genetic center," prompting reference to a "centered" or "reflective" totality.

An expressive totality was particularly visible in Hegel's identity theory and Lukacs' early work. Hegel,
specifically, postulated that the whole originated in the objectifications of a collective creator subject of history, the "Absolute Spirit." The Absolute Spirit was the universal source for the relationships that resulted from the creation of the "meta-totality"; the Absolute Spirit or "meta-subject," identified as creator as well as created, unified all being. Through this identical subject-object, alienation and reification could be overcome (Jay, 1984).

Lukacs, for a time, also believed in an expressive or genetic center, which he portrayed as the unification of revolutionary process and proletariat praxis. Utilizing a proletariat substitute for Hegel’s Absolute Spirit, he emphasized the objectification process of the meta-subject which returns to its origin after a period of alienation. This was accomplished through an act of dereification, employing anamnestic totalization which endeavored to recollect the source of the social system. Thus, the totality was a reflection of its own genesis (Jay, 1984).

Interpreting contradiction in terms of "over-determination," Althusser, likewise, projected this view to some degree. Dominating each phase of historical development was one main contradiction. A new "structure in dominance" emerged as a "condensation" process united contradictions. A primary contradiction could, then, be
replaced by secondary contradictions, creating an infinite cycle of displacement (Jay, 1984).

A similar conception prevails in the classical thermodynamic view of the universe. Because time is reversible in the classical view, we can return to the starting point by retracing the path of the trajectory that carried us forward. Guiding us to a future state as well as leading us back to the point of origin, initial conditions play a significant role in the determination of the whole (Jantsch, 1980; Sampson, 1985). If the initial conditions are changed, the future state manifests characteristics unique to their origin (LeGare, 1987, see Figure 30).

![Expressive view of a whole.](image)

**Figure 30.** Expressive view of a whole.

**Decentered Nature of Being**

Returning to Jay's (1984) account, it is apparent, that
have a specific origin. A whole, characterized through the relationships which link the parts, is not reducible to an expressive or genetic center. Rather than the objectification of a creator subject, the totality is defined as a configuration of relations which have no particular origin—a decentered whole.

Thus, instead of prioritizing one of the parts or relations within the whole and relegating others to a position of secondary significance, a decentered view maintains that there is dynamic interaction of all parts. Despite the fact that one relationship may assume a significant part while representing the totality, the purpose is not to suppress the other relations. It is impossible to determine if one relationship is more significant than others; therefore, each relation is an expression of the whole. For example, Marx viewed relations in terms of superordination and subordination, but never made the economy the determining feature as some suggested (Jay, 1984).

Lukacs, in his later writings, was one of the first to stress a decentered whole, for the proletariat could no longer be considered a meta-subjective totalizer. Criticizing the idealistic concept of a transcendental subject that could totalize the whole, Adorno's non-identity theory also denied a philosophy of origins. There was no
meta-subject, filling the role of both subject and object of history, preceding each developmental process. Finally, Antonio Gramsci acknowledged that one relationship of a totality should not be privileged over others; no one relationship should determine others. Ernst Bloch, Maurice Merleau-Ponty, and Habermas echoed this stance (Jay, 1984).

Physical theory has given further credence to the position of a decentered whole. In terms of nonequilibrium thermodynamics, time is no longer reversible, therefore, it is not possible to retrace the route backward to the initial conditions. Furthermore, decisions that transpire at points of bifurcation are probabilistic in nature, for they are a result of the system's state—characteristics of the whole at a specific time. Regardless of the initial conditions, the whole develops in accordance with prevailing relationships (Sampson, 1985). Quantum theory also emphasizes that no one part of the web has priority; all parts develop through relations with others (Capra, 1991; Zukav, 1979).

The principle of equifinality in systems theory reiterates this point. According to this law, the same final state of a system may result from a wide range of initial conditions which follow a diversity of routes (LeGare, 1987; Rosenheck, 1988; Zimmerman, 1989). Because the system is connected in a nonlinear fashion to the
initial conditions, development is unpredictable (LeGare, 1987).

Finally, by deconstructing the structuralist’s bipartite relationships, Derrida, likewise, attempted to abolish the assumption of a governing center in which more value is placed on the first member of each pair (cited in Hare-Mustin & Marecek, 1988). He illustrated this process through the critique of the logocentrism and phonocentrism tradition. Within this tradition, mind has been united with speech, for speech is assumed to be in immediate not mediated presence with being and to maintain direct accessibility to mind. Thus, writing is considered secondary to speech, for it is construed as a nonpresent (absent), mediated substitute for the immediate presence of speech. Quoting Aristotle, Derrida (1974) noted that "spoken words . . . are the symbols of mental experience . . . and written words are the symbols of spoken words" (p. 11). Speech, therefore, is privileged over writing, for it is the original not a derivative copy.

By privileging speech over writing, Derrida observed that speech has taken on the status of a center or origin. In an endeavor to deconstruct this notion, however, he maintained that the presence of speech is mediated and derivative, for it is inhabited by writing. Writing acts as a substitute for speech, and adds its absence to speech’s...
presence; writing is both speech and different-from-speech (Ellis, 1991; Sampson, 1983, 1985, see Figure 31).

Figure 31. Decentered view of a whole.
Another defining feature of being is its boundaries—its relationship to the environment. This relationship serves to further identify the spatial (latitudinal) composition of the whole as well as to distinguish one whole from another temporally (longitudinal) (Atkinson & Checkland, 1988; Ford & Ford, 1986). Based on the ontological nature of the universe, two types of boundaries, closed and open, can be differentiated.

Closed Boundaries

In the classical model of science, the world consisted of closed, ahistorical systems which were isolated from their environments. Static states existed independently of one another; one state could not interact with and, thus, affect another, thus preventing development (Sampson, 1985). Separated from the environment as well as from each other, spatial parts also had inherent boundaries. The parts, which maintained no relations with either the whole or other parts, functioned as individual material particles, and
exhibited unvarying arrangements (Bidell, 1988; Kitchener, 1985, see Figure 32).

Figure 32. Classical science's view of boundaries.

Open Boundaries

With the development of quantum theory, however, the universe became open-ended. Characterized through their historicality as well as temporality, dynamic states or events now maintained an active exchange of energy and matter with the environment, and promoted transformations into qualitatively different states. Through such a relational process, boundaries became permeable--no longer discrete stages, being and becoming merged (Doll, 1989; Zimmerman, 1989). Latitudinal wholes, likewise, were unified and determined through their ever-changing relational structures, resulting from the internal
interactions of parts; wholes were now integrated, not isolated (Kitchener, 1985, 1986).

Relations, spatial as well as temporal, therefore, ultimately define the boundaries in this view; as relations change, so do boundaries (Kitchener, 1985). Specifically, wholes are depicted as preserving a somewhat independent context, for the relations outside of the whole are not significantly related to the structure within. However, this independence is restricted, for as the whole interacts with the environment, some of the relations become more significant to the structure within. The incorporation of these new relations leads to reorganization of the whole and, thus, a new structure which redefines the boundaries (Bohm, 1980; Roque, 1988; see Figure 33).

![Figure 33. Quantum theory's view of boundaries.](image-url)
As emphasized by each assumption thus far, relationships of one kind or another are the significant determinants of the features of a whole. These relationships can be reconceptualized in terms of causality, the specific effects that relationships exert upon one another. In addition, both philosophical and physical schools of thought have demonstrated that the concept of causality can be further reduced to linear or nonlinear causality (Zimmerman, 1989).

Linear Causality

Cause and effect have been associated with being since Democritus (cited in LeShan & Margenau, 1982) is said to have proclaimed, "By necessity are foreordained all things that were and are and are to come" (p. 130). Aristotle differentiated causality into material cause (matter composing a process), efficient cause (external force in a process), formal cause (inner structure of a process), and final cause (goal of a process). Efficient cause significantly affected the view that some held of the
universe, resulting initially in the formation of determinism, which stated that each process had a direct cause and was thus predetermined (Rychlak, 1986; Zimmerman, 1989).

Depicting behavior as the "effect" of biological or environmental determinants or "causes," Thomas Hobbes, Bacon, and John Locke utilized this conception of causality in the development of their philosophies. Likewise, concluding that each event was the result of a particular preceding cause, Descartes and Newton viewed being as a linear chain of events (Ford & Ford, 1986; Rychlak, 1986). The mathematician, Pierce Simon de Laplace (cited in Zimmerman, 1989) expanded the concept to include prediction, stating that, "Given the position and velocity of every particle in the universe, [I] could predict the future for the rest of time" (p. 54).

The classical model of science stressed that the final state of a closed, reversible system was determined by the initial conditions, which follow one route in unidirectional causality. Characterizing relationships as linear interactions, the effect (final state) was contingent on the cause (initial conditions). A specific cause would elicit a particular effect, creating a one-to-one relationship between cause and effect. As a result, a future state could be predicted with absolute certainty from a preceding state
(Capra, 1991; Cziko, 1989). In addition, in such a mechanistic, additive system, the whole was determined or predictable from the parts (Kitchener, 1986, see Figure 34).

![Figure 34. Classical science's view of causality.](image)

Nonlinear Causality

This interpretation of causality, however, became questionable with the development of relativity theory, Heisenberg's (1958) uncertainty principle, and quantum theory. Relativity theory demonstrated that a probable cause of an event could be interpreted as subsequent to the event rather than preceding it. This observation was based on the fact that the sequencing of events in time was relative to the observer; it was no longer possible to predict the cause of an event through time and space proximity (Garrison, 1988).
Similarly, through the formation of the uncertainty principle, Werner Heisenberg (1958) showed that the position and momentum of a particle could not be located at a specific point in time. Because it was not possible to trace the route backward to a preceding position or level of energy, this principle identified causality as indeterminate. Therefore, a decisive relationship could not be maintained between cause and effect, for definitive causal relationships could not be determined (Zimmerman, 1989).

In addition, processes, that were once thought to be reversible and thus deterministic in nature, are now viewed by quantum theory in terms of statistical causality. The bifurcation point provides many alternate directions in which the system can move in open, nonequilibrium relationships. Therefore, the decision to proceed in a certain direction is the result of statistical probability; it is not determined by the preceding event (Zimmerman, 1989). Governed by probability as opposed to predictability, causation is reciprocal or circular in nonlinear systems; each whole can be both a cause and an effect. Causality is nonlocal, for events can affect other events indirectly despite the fact that they are separated by space and time (Ford & Ford, 1986).
Final support for this view comes from critical theory, which challenges the over-determined economic models of causality associated with orthodox Marxism. Projecting a one-way causality, economic determinism presumes that the economic "base" of society determines other social institutions ("superstructure"). Instead of predetermined laws, however, Western Marxism, specifically Habermas, promotes the interactive and interdependent relations between different components of society (cited in Arnason, 1982, see Figure 35).

Figure 35. Quantum theory's view of causality.
The final ontological assumption to be considered addresses the nature of social beings. Further delimiting the conceptions of being that have been discussed in prior chapters, this particular assumption notes the relationship of the human actor (subject) to the whole (object). Generally, three views have emerged from this relationship—objectivism, subjectivism, and intersubjectivism (Hazelrigg, 1986).

**An Objective Universe**

The universe was originally conceptualized as static, closed, and, thus, objective in nature; objects existed independently of human activity. This view can be traced to the late medieval period in which Plato, Aristotle, and Spinoza, in particular, emphasized that being was the organic creation of nature. With no human means to change the world, it was believed that being was, therefore, discovered rather than created. Subjects, then, maintained a passive role in the universe, for their position was one
of interpretation or recognition (anamnesis), a retrospective worldview (Jay, 1984).

Further alienating man from nature through the differentiation between mind and physical being, Cartesian dualism soon followed, splitting human understanding into two distinct realms—an objective world of external matter and a subjective world of internal perceptions (Lucas, 1985). Newton, utilizing this dichotomous framework in the development of his physical theory, viewed man as externally controlled by an observer-independent world; man was a detached observer, a spectator (Toulmin, 1982). Maintaining an existence independent from any observer, each object exhibited no external relationships with a subject. Thus, any object, as a completely determined self-identity, was identical to all observers. This implied that the universe was, in principle, "one world," which retained an independent and determined existence. At any point in time, there might be different representations of the world or one of its objects; however, the depiction of "multiple worlds," arising from subjective features, was secondary to the priority of one objective world (Hazelrigg, 1986, see Figure 36).

A Subjective Universe

The primacy of subjectivity began to appear, however, with the Enlightenment’s stress on practice and the
intentional, conscious role of man. Despite an emphasis on "unconscious making," Vico was the key figure in this development. Depicting man as the "creator-poet" or "author of society," Vico’s "verum et factum" principle stated that "the true and the made are interchangeable" (Jay, 1984, p. 35). Man’s creation was considered secondary to God’s creation, though, in terms of man’s knowledge of what he had made. Hegel, basing his philosophy in this principle, also acknowledged that the totality could only be understood through contemplation by the subject. Thus, although emphasizing the significance of activity on the part of the subject, both Vico and Hegel still viewed man, to some degree, as a passive participant (Jay, 1984).

Marx, and Lukacs to follow, though, maintained that, instead of a contemplative activity of the past, the process involved a practical activity of the future. Referred to as
a "practical critical activity" by Marx, this conception projected that true history entails the conscious control of man; "unreflective making would ... give way to reflective creation" (cited in Jay, 1984, p. 35). With a neo-Kantian stress on subjective praxis (practice) versus economic determinism, this view was grounded in Johann Fichte's subjective activism, which portrayed the subject as the creator of the object rather than as a passive observer. Western Marxism continues to emphasize the significance of praxis over predetermined historical development (Jay, 1984).

Social scientists have also noted the importance of the observer's values and interests on investigative results. Designated as constructivism, this conception finds its roots in Edmund Husserl's (1948) phenomenology, in which an object is constituted through an intentional act of consciousness. The understanding of an object is based "neither in an interiority of actor, nor in an exteriority of world," but rather in actions in relation to the world. Understanding, therefore, lies in the contextual relationships which constitute an object; "consciousness is always of something, by someone" (Hazelrigg, 1986, p. 3). Objects are constituted through an actor's experiences, not in and of themselves (Hazelrigg, 1986).
Relying on the activity of the observer, and not on the deterministic forces of nature, this view rejects the idea of humans as "passive spectators." Acting in terms of the future rather than the past, consciousness becomes a significant feature in the world. Constructivism, however, does not suggest that we understand the universe only through the subjective construction of our activities. Rather, activity is pursued in a dynamic and open world of contextual relationships (Jaeger & Rosnow, 1988). For example, Piaget (1970) maintained that mental structures (subject) interacted with sense data (object), thus leading to an integration of existing knowledge with new knowledge. Learning transpired, then, as the result of the creative, constructive activity of the subject in conjunction with the object (Fabricius, 1983; Goldberg, 1987). As Piaget (1976) stated, "To understand is to invent" (p. 20). While not doubting the existence of consciousness, the objectivist interprets it differently. Relegating intentions to a position of secondary significance, objectivism notes that the primary function of intentions is to elicit sensations and perceptions. Therefore, an event is understood to be an objective state that exists prior to the subject’s perception of it rather than an interpretive process (Hazelrigg, 1986).
Stressing the impossibility of generating completely objective observations, relativity, indeterminacy, and quantum theory have also contributed to an increased emphasis on subjectivity. In general, due to new conceptions of being that these theories projected, it became apparent that the object was not separate from the subject, as mechanism portrayed it to be. Objects, in fact, were only meaningful when interacting with the subject. This prompted John Wheeler to suggest that the concept "observer" be replaced with "participator" (Capra, 1991).

Relativity theory maintained that the observer influenced and, in a manner of speaking, created the object. An observer in one frame of reference understood and, therefore, described an event differently than did an observer in a different frame of reference, thus making the description contingent upon the observer (Greene, 1984). Heisenberg's (1958) principle of uncertainty, as well as quantum theory, likewise, suggested that an observer is an integral part of an event, even "interfering to an indeterminate degree." Unpredictable developments were noted in particles under observation, thus leading to the conclusion that subjects could not observe a particle without changing it (Capra, 1991; Garrison, 1988; Zukav, 1979). As Heisenberg (1958) put it, "What we observe is not
nature itself, but nature exposed to our method of questioning" (p. 81).

In addition, Bohr's (1958) principle of complementarity found that matter usually visualized in terms of waves seemed to act as particles in some contexts; matter usually visualized in terms of particles seemed to act as waves in some contexts. Contingent upon the context from which it was observed, the same physical process was manifesting features of both particles and waves. This wave/particle duality was considered to be two complementary representations of the same event (Capra, 1991; Snyder, 1983, see Figure 37).

![Diagram](image)

**Figure 37.** Subjective view of the universe.

**An Intersubjective Universe**

As the subjective view acknowledged the interdependence of subject and object, a few philosophers of science felt
that too much emphasis was granted to subjectivity. In an attempt to balance this relationship, several individuals have addressed the particular influence that subjects exert upon an object. An early solution was to collapse the two conceptions of social beings into one. Vico projected that subject and object, maker and made, were identical, that the object was produced from and constituted by the subject. Hegel’s identity theory also stressed that there was no division between subjective and objective spirit (cited in Jay, 1984).

Beginning with the neo-Kantians, however, some philosophers began to question this perfect unity, viewing the relationship as one of opposition—the non-identical dialect of subject and object. Georg Simmel characterized this dualistic position as the "tragedy of culture"—a conflict between objective matter and subjective consciousness. Gramsci, Lucien Goldmann, and Merleau-Ponty, who attempted to avoid the extremes of separating subject and object too categorically as well as reconciling too readily, advocated a "partial identity" of subject and object (cited in Jay, 1984).

These attempts to bridge the gap between active subjects and passive objects, however, failed to reveal an intermediary that could alleviate the tension between the transcendental collective subject/object of the idealists
and Hegelian Marxists and the isolated subject and object of the empiricists. Habermas (1979) responded by proposing an "interworld" of linguistic meanings. In the course of developing his linguistic theory of meaning, Habermas, specifically, depicted meaning as emerging "intersubjectively" or interactively between subjects. Rather than purely subjective or individualistic interaction with an object, interpretation was rooted in "communicative action" which involved subjects in "the cooperative negotiation of common definitions of the situation"—a dialogical as opposed to monological view. By locating the agent of history in society as a whole and thereby proposing intersubjectivity, Habermas challenged the views of both an individual and a collective self-sufficient subject (Jay, 1984; Johnson, 1991; Murphy, 1986).

Post-structuralism, echoing insights from Adorno, Walter Benjamin, and Althusser, also seeks to replace the individual, Cartesian subject who attempted to represent and master an objective universe. Emphasizing that subjects are active social beings whose actions reflect the social context, Foucault, Derrida, and Jacques Lacan, downplayed the role of the individual in an effort to go beyond subject-centeredness. However, where Habermas reconceptualized individual subjectivity in terms of the contextual character of social action, proponents of
post-structuralism view the individual in terms of over-determination (McCarthy, 1990). In this view, man’s intentions, determined by a social discourse, have little relation to the whole. Instead of an interactive relationship between subjects, individuals have no control over interpretive processes. This prompted Foucault to refer to subjects as "totally imprinted by history"—"the end of man" (cited in Alcoff, 1988).

Final support for this position came from hermeneutics. Asserting that texts ("things-in-themselves") exist independently of the interpreter, hermeneutics traditionally maintained that an interpreter could reproduce a text’s intended meaning by projecting himself or herself into the author’s historical context. Emphasizing, however, that interpreters could not ignore their own "horizon" or context by projecting themselves into the author’s past, Gadamer (1975) challenged this tradition. He grounded his theory in the work of Heidegger (1962), who noted that the subject’s context, rather than some notion of transcendental subjectivity, determined the meaning of objects. Taking into consideration the significance of both subject and object, Gadamer stressed that interpretation entails the "fusion of horizons"—the text and its author in relation to the interpreter.
Furthermore, borrowing a concept from both Heidegger and Husserl, Gadamer (1975) referred to the interpreter’s context as "pre-judgments." Influenced by history or tradition, pre-judgments are the subject’s beliefs concerning an object. In an effort to construct a presuppositionless phenomenology, Husserl (1948) emphasized that pre-judgments alter an object’s true nature and, thus, hamper interpretation. Heidegger, on the other hand, stressed that these presuppositions were essential in order for understanding to occur because interpretation was rooted in "fore-having," "fore-sight," and "fore-conception" rather than a presuppositionless perception of an object (MacKenzie, 1986).

Through his hermeneutical theory, Gadamer (1975) implied that interpretation is neither subjective nor objective; interpretation is neither the beliefs of an individual subject nor the reproduction of a determinate object. Rather, emphasizing the significance of the contexts of both the subject and the object, Gadamer noted that the meaning of a text depends on the limiting potential of a text as well as participation by an interpreter, which is depicted as a dialogue between the text and the interpreter. An interpreter’s beliefs, not having developed in isolation, are the result of social interactions within his or her historical context. This is akin to Habermas’
the notion of intersubjectivity. Therefore, understanding entails submission to an object from the past in conjunction with a contribution from the subject’s historical context.

Utilizing the analogy of a game, Gadamer (1975) illustrated this view more explicitly. Within the context of a game, there is the potential for a variety of practices, as well as a limit. Each game has its own rules which limit the actions of the players; however, despite the rules, a game is not fully realized without the players’ skill. Similarly, a text provides limits, but the meaning is not complete without the interpreter’s participation (Wachterhauser, 1986, see Figure 38).

Figure 38. Intersubjective view of the universe.
CHAPTER 8

AXIOLOGICAL ASSUMPTIONS: NATURE OF GOALS

Each ontological worldview can be further differentiated in terms of its particular goals. The second general category of assumptions to be addressed deals with axiology—the nature of goals. Referring to goals as "human interests," Habermas (1971) delineated three classes under which different conceptions of being can be grouped—technical, practical, and emancipatory.

Technical Goals

Rooted in a positivistic conceptualization of processes, the empirical-analytic sciences project a technical interest. In general, theories are generated with the aim of explanation, prediction, and control (Packer, 1985). Specifically, in an attempt to explain being, this view manifests an instrumental interest in controlling phenomena for the purpose of predicting future behavior (Habermas, 1971).

This class of goals can be traced back to developments in the late medieval period. The goal of Aristotle and Spinoza's organicism was to sanction the status quo by promoting social differentiation and hierarchy. Attempting
to unite the forces of nature, Newton, similarly, viewed the
universe as controlled by exact laws of motion. Locke,
also, located the purpose of human society in the predictive

With the development of the empirical sciences,
explanation was more explicitly articulated to refer to the
act of revealing the true nature of being through the
"conceptual unfolding" of its hidden characteristics.
Assuming that its characteristics were already completely
present due to its ahistorical, closed nature, being could,
therefore, be objectively revealed in its totality. Once
the nature of being had been thus exposed, covering laws
that represented the static regularities of phenomena were
sought. These laws, expressed in terms of generalized
statements, were always applicable to each individual state.
Specifically, based on projections that certain initial
conditions would elicit specific events, near-equilibrium
thermodynamics offered linear explanations for both past and
future events. In terms of the past, one could move
backward and recapture the initial conditions; in terms of
the future, one could move forward and predict behavior
based on the causal initial condition (Packer, 1985; Roque,
1988).
Practical Goals

Since the time of the Enlightenment, however, teleological explanations have received more emphasis than have covering-law explanations. Derived from the Greek word "telos" meaning "end," teleology describes events in terms of an end or purpose. By utilizing Aristotle's conception of causes, teleological and non-teleological explanations can be further distinguished. Explanations of the covering-law model are based on material cause (matter composing a process) and efficient cause (external force in a process); the present and the future are explained in terms of the past. On the other hand, teleological explanations stress the nature of final cause (goal of a process); the past and present are explained in terms of the future. Furthermore, because the future state is conceptualized in terms of a pattern of relationships, formal cause (inner structure of a process) is also applicable. As humans distinguish patterns in events, they act "for the sake of" these patterns (Rychlak, 1986).

Teleological goals, expressed as unified mankind striving for a common destiny, were acknowledged by several early philosophers. Rousseau's goal for mankind—the "General Will" rather than the "Will of All"—implied the replacement of the individual existence of humans with a unified being. In a similar fashion, Kant's desire was for
a "community" in which man, the collective subject, could overcome its "unsocial sociability." Hegel's aim was, likewise, the overcoming of alienation and reification by the identical subject-object of history—the "Absolute Spirit." Continuing throughout the bourgeois era, this view, however, projected little hope for the attainment of such goals; one could only approximate, and could never reach the goal (Jay, 1984).

Advancements in physical theory, Piaget's structuralism, and general systems theory also emphasize teleological explanations. Specifically, non-equilibrium thermodynamics stress that dynamic, open processes cannot be explained or predicted by covering laws, for a particular state was not already completely present; historical phenomena cannot be explained by linear laws (Roque, 1988). Associating cognitive development with purposeful behavior, Piaget's (1970) genetic structuralism viewed the changes in epistemic states in terms of the pursuit of particular goals. Systems theory (Bertalanffy, 1968), likewise, proposes that organisms manifest goal-directed behavior that serves to steer the organism in a specific direction.

The early Frankfurt School, though, became dissatisfied with this so-called normative or teleological conception of being and adopted an anti-normative position. Some reference remained to subject-object unity, the integration
of individual and society, as in the philosophies of Lukacs, Karl Korsch, and Bloch. Influenced by the work of Adorno and Althusser, however, many rejected the idealist view in which reified subjectivity and alien objectifications were unified (Jay, 1984).

A few members of the Frankfurt School, however, wished to reinstate the goal-oriented view of the Enlightenment. Beginning with Gramsci, they began to develop a new conception of being based in a normative view in which oppression was overcome through man’s activity. Instead of an idealistic subject-object unity, a more comprehensive goal of linguistically organized totalities was projected. Because general social conventions originate in language, the specific goal was a "linguistically unified community." Unity would be attained through intersubjective practice in which a consensus of meaning could be achieved (Jay, 1984).

Emerging from the emphasis on teleological explanations, the second interest identified by Habermas (1971) then, is of practical intent and is associated with the hermeneutic sciences. Rather than building causal laws, this goal is concerned with directly interpreting events. Meaning is historically located in a social process—a "form of life" rather than in ahistorical laws (Hanna, 1991; Packer, 1985). Instead of uncovering regularities that explain processes, this view stresses the identification of
rules that lead to an understanding of processes. By discovering the intersubjectively defined rules of society through the active consensus of participants, normative rules may be identified that promote "rule following" behavior rather than "law governed" phenomena (Hanna, 1991).

Differentiating between the natural sciences, whose goal is explanation, and the interpretive sciences, whose goal is understanding, Gadamer (1975) is the contemporary proponent of practical goals. Instead of theoretical explanations, Gadamer, building on Heidegger's (1962) work, believes that understanding is active and practical in nature. According to Heidegger, understanding transpires when an event is contextually related, or developed within an interpretive process of tradition (cited in Maddox, 1983).

Because tradition is articulated through language, meaning is realized through language; the goal of understanding is achieved through the medium of language (Wachterhauser, 1986). Heidegger (1962) maintained that language is the "house of being"; Gadamer (1975), likewise, emphasized that language gives "access to being," for "being that can be understood is language" (p. 432). Furthermore, language in this view is characterized as "ordinary language" as opposed to the "formal language" of the empirical-analytic sciences (Hanna, 1991). As noted by
Gadamer (1975), "Language has its true being only in conversation, in the exercise of understanding between people" (p. 404); language is not an instrumental means to an end. Conversation is actualized through the development of a communicative discourse of shared understandings by a social community (Ermarth, 1981).

Emancipatory Goals

Closely aligned with hermeneutics, the third interest identified by Habermas (1971) concerns the reestablishment of the emancipatory goals of the Enlightenment. Linked to critical theory, this conception originated in Hegel’s vision of the liberating potential of a critical social theory and Marx’s subsequent application of this notion to the critique of social domination (Jay, 1984). In general, critical theory’s goal—emancipation—is to overcome social conditions (i.e., "false consciousness"), which have been forced by an ideological structure of domination, through a process of critique (Lowy & Baker, 1988).

In order to accomplish this goal of emancipation, Habermas was interested in developing a philosophy that appealed to norms. Believing that norms do not possess an objective, scientific foundation, proponents of technical interests had not pursued them. Habermas insisted that only by reinstating normative ideals can emancipatory interests
be realized (Young, 1981). The function of critical theory, then, is to define "the universal conditions of understanding" through the projection of a final state. This state would serve as a critical standard or norm from which to measure tradition—"an ideal future possibility" (Maddox, 1983).

Habermas, located the normative claims in the conditions of communication which any speech act entails. To specify these conditions, he drew from the work of Piaget, John Searle, and Noam Chomsky, among others, to detail his theory of "universal pragmatics." According to this theory, normative communication transpires in the context of an "ideal speech situation"—the telos of communication. An ideal speech situation refers to the interactive discourse of a social community—the "lifeworld"—specifying the essential conditions in which speakers can attain understanding through collective consensus. With a goal of consensus, such discourse is a reflective dialogue, which is characterized through language and action (Young, 1981).

The ideal speech situation, however, serves only as a normative ideal; it is unattainable in actual practice. Because the goals of any communicative activity are understanding and consensus, the ideal speech situation serves as the universal standard for accomplishing these
goals. Without these conditions, interaction and, hence, understanding would be nebulous; the ideal speech situation is a necessary aim for the pursuit of understanding (Young, 1981).

Assuming that an action-oriented, intersubjectivist goal is not in itself appropriate for critique, Habermas qualified hermeneutics by basing his theory in the language of a particular social context. He utilized an extra-linguistic, transcendental characteristic, rooting normative goals in the conditions of actual speech, for language only has meaning within the context of action (Young, 1981). Acknowledging that tradition may not always be acceptable, Habermas (1971) was reluctant to make tradition the final determinant of understanding as did Gadamer. In fact, even though understanding may begin with tradition, tradition itself requires understanding. Emancipation is rooted in the linguistic conditions of social interactions rather than in language alone (Maddox, 1983).

Gadamer (1975), on the other hand, was involved only with understanding tradition, and not with normalizing tradition. Focusing on past and present traditions rather than future ideals, he developed an understanding of tradition and did not interpret tradition by a standard derived from a future possibility (cited in Maddox, 1983).
A comparison of the three classes of goals is provided in Table 1.

Table 1

<table>
<thead>
<tr>
<th>Nature of Goals</th>
<th>Science</th>
<th>Goal</th>
<th>Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empirical-analytic</td>
<td>Technical</td>
<td>Covering laws</td>
<td></td>
</tr>
<tr>
<td>Hermeneutic-interpretive</td>
<td>Practical</td>
<td>Language</td>
<td></td>
</tr>
<tr>
<td>Critical theory</td>
<td>Emancipatory</td>
<td>Ideal speech situation</td>
<td></td>
</tr>
</tbody>
</table>
The type of knowledge that a view promotes further characterizes the ontological and axiological assumptions. The final category of assumptions to be dealt with, then, addresses epistemology—the nature of knowledge. In general, there have been three major traditions of knowledge development—empiricist/rationalist, historical-cultural, and critical theory (Habermas, 1971; Packer, 1985).

Empiricist/Rationalist Traditions

The empiricist tradition is grounded in the work of Locke and David Hume, who, in turn, were influenced by the theories of Bacon and Hobbes. According to this view, knowledge is provided by what can be directly observed (Faust & Miner, 1986), an exogenic perspective (Gergen, 1982); all of being's characteristics are detectable by the senses (Fabricius, 1983). The epistemological process entails the detection of external stimuli by the perceptual system, which is then identified by the cognitive system. Believing that the mind was originally a blank slate—a "tabula rasa"—Locke portrayed this experience as one in
which the creation of knowledge transpired as the result of sensations being passively transcribed onto the mind (Case, 1987).

Furthermore, it was believed by theorists that these static observables (data) could be objectively detected and transcribed, independently of interpretation (Packer, 1985). In order for being to disclose its true nature and, in turn, create an undistorted, factual and objective science, then, empiricism stressed the exclusion of presuppositions and theorizing (Faust & Miner, 1986), referred to as a detached "present-at-hand" mode of knowledge by Heidegger (1962). "Data collection" preceded the formation of theories and was, in fact, independent of them (Packer, 1985), for theories were considered obstructions to true observations. However, once knowledge (facts) were acquired, they were linearly linked, through a process of induction, to form universal laws, postulates, or theorems; a theory was constructed from a base of empirically, verifiable or falsifiable facts (Faust & Miner, 1986; Wallace, 1988).

Knowledge in this tradition has been described as the accurate representation of objective, external being. Known as the "correspondence theory of truth," this view projects the idea that true statements accurately represent a being’s nature (Wallace, 1988); "a statement is true if it corresponds to the facts" (Popper, 1962, p. 376). Also
referred to as the "spectator theory of knowledge" by Dewey (1916), truth is conceived as something that cannot change. The principles, which maintain a static nature, do not vary from one moment to the next.

Formulated in response to empiricism yet retaining its technical control over processes through the generation of theories, the rationalist tradition originated in Kant's transcendental idealism (Case, 1987). Building on Descartes' belief that all knowledge is preceded by thought, Kant projected that "things-in-themselves" are incomprehensible. Rather, perceptions and sensations are actively processed in the mind by an innate predetermined structure; a priori, transcendental conditions determined what could be represented as an "object" of knowledge (Packer, 1985). Knowledge involved the structuring of sense data; the mind constructed meaning instead of detecting it in nature (Case, 1987), which is an endogenic perspective (Gergen, 1985).

In addition, "theorizing"—hypotheses formation and confirmation—was considered essential for knowledge development (Packer, 1985). Facts were not separate from theories (Faust & Miner, 1986). In fact, W. B. Weimer (1979) noted that "one cannot have a fact without having a prior theory. . . . observation is a skill over and above the passive reception of the raw data. . . . Facts are not
picturable, observable entities; instead they are wholly conceptual in nature" (p. 21). The facts that one discovers are determined by the theory one holds, for facts are "theory-laden." A theory, then, is not produced by facts; instead, facts are characterized in terms of a theory (Faust & Miner, 1986).

This defining of facts through theories entails a logical, deductive process. Kant stressed that the a priori structures are of a logical nature in the form of categories, rules, concepts, and principles (cited in Packer, 1985). Deduction utilizes these structures (premises) to detail the structures' predictive relationship to conclusions (facts) (Roque, 1988). For example, Piaget (1970) viewed cognitive stages as proceeding in terms of trial and error while the mental structures interacted with sense data. Logico-mathematical knowledge resulted from theory building, which was governed by the innate logical rules of the formal structures (Fabricius, 1983; Packer, 1985). Instead of a correspondence theory of truth in which facts are verified through experience (Fabricius, 1983), this view projected a "coherence theory of truth" in which the facts that made up a theory were logically consistent with each other (Wallace, 1988).
Historical-Cultural Tradition

Inspired by the philosophies of Hegel and Marx, the historical-cultural tradition depicts knowledge as originating in a social context; knowledge is the result of historically-situated, communicative interactions among social beings. Stemming from practical activity, knowledge is not composed of value-free facts that are developed in the absence of interpretation, as in the empiricist and rationalist traditions. Truth is not dependent on the empirical validity of facts, but rather the normative practices of social processes (Case, 1987).

Noting that the meaning of a text is determined by changing historical and social horizons, Gadamer's hermeneutics proposes that understanding cannot be validated by transcendental, absolute standards (cited in Elliott, 1987). Truth is neither associated with a mental structure that is imposed upon sensations nor a theoretical knowledge of universal propositions (Hans, 1978). Although there is no "universal validity," there are, some criteria for determining if an interpreter has understood or misunderstood a text. These criteria are relative to the attitude of the interpreter, and are limited, of course, by the interpreter's horizon or experience. In general, the criteria specify that in order for understanding to occur, the interpreter must maintain an open dialogue with the
whole, merging his or her horizon with that of the text’s horizon (Elliott, 1987).

To clarify his position, Gadamer emphasized that understanding (comprehension), interpretation (explication), and application are intrinsically related (Hoy, 1978; Wachterhauser, 1986). Utilizing Aristotle’s notion of practical philosophy—"phronesis," he illustrated how an interpreter’s values and beliefs are actively reflected upon and critiqued within the context of tradition—a "concrete form of practice." These values, in turn, constitute practical principles (fore-conceptions) which lead understanding. The principles, along with their respective values, are critiqued and reconstituted within each new context; they cannot be critiqued from a position which is not involved with making a practical judgment. These criteria, then, are not a result of understanding, but are developed in the process of understanding. In the course of a critique, values are interpreted and applied to a particular context. Thus, the reflective process of understanding entails both interpretation and application (Elliott, 1987).

Kuhn (1962), Paul Feyerabend (1975), and Richard Rorty (1979) projected similar historical conceptions of knowledge development. Basing his view on the theories of Wittgenstein, Sellars, Quine, Dewey, and James, Rorty
(1979), specifically, attempted to discredit the idea of epistemological foundations. In general, he criticized the correspondence theory of truth, inherited from Plato, which states that truth corresponds to nature, and knowledge is the "accurate representation" of that correspondence.

Likewise, he criticized the Cartesian view of the mind as "the Inner Mirror" which reflects the world of knowledge--"a glassy essence." Referring to "Man as the Mirror of Nature" in this conception, Rorty stressed that knowledge as the "activity of representation" made possible by "mental processes" needs to be reconceptualized (Kim, 1980).

In particular, Rorty (1979) proposed that mental representation be replaced by linguistic representation, which is inherently social in nature. Sellars and Quine (cited in Rorty, 1979) argued that justification was founded in conversation which was embedded in social practice rather than a form of correspondence, and that knowledge was the product of a socially, linguistic justification rather than an accurate representation. Referring to this process as a "language game," Wittgenstein (1968) also emphasized that meaning is achieved through use in the outer world of communication rather than an inner world of representation. Rorty confirmed these observations when he noted,

There is nothing deep down inside us except what we have put there ourselves, no criterion that we have not created in the course of creating a practice, no
standard of rationality that is not an appeal to such a criterion, no rigorous argumentation that is not obedience to our conventions. (p. 168)

Rorty (1979) characterized this position as "epistemological behaviorism" or "edifying philosophy," where "assertions are justified by society rather than by the character of the inner representations they express" (p. 174). In the process of rejecting transcendental foundations, Rorty was led to a pragmatic, hermeneutical understanding of knowledge and truth. Specifically, knowledge is rooted in open-ended, intersubjective communicative practices; to understand knowledge, we must understand the social practices by which it is justified. Thus, truth is contingent upon the context of social consensus; knowledge is "true" if justified by the norms of a society—"warranted assertability." As Rorty (1979) suggested, "There is no way to get outside our beliefs and our language so as to find some other test other than coherence" (p. 178). Therefore, his final admonition was to keep the conversation going (Nicholson, 1989).

Critical Theory Tradition

As these two traditions—empiricist/rationalist and historical-cultural—have indicated, theory has, generally, maintained a separate existence from practice. The empiricist/rationalist view has emphasized theory at the
expense of practice; the historical-cultural view has emphasized practice at the expense of theory. Through critical theory, Habermas' epistemological goal was to rid philosophy of the dichotomies resulting from this separation--theory/practice, empirical/normative, fact/value (cited in Ewert, 1991). As a result of this endeavor, he concluded that understanding is not separate from truth (Young, 1988). Habermas (1984) noted that "speakers and hearers understand the meaning of a sentence when they know under what conditions it is true" (p. 276). Thus, he expanded his theory of "universal pragmatics" to include a rational foundation from which truth claims or norms can be judged.

In an attempt to steer a course between the absolutism of the empiricist/rationalist position and the relativism of the historical-cultural position, Habermas appealed to normative validity within the context of the practical life-world (Huspek, 1991). Substituting communicative rationality for a purely theoretical, instrumental reason, he characterized truth in terms of justification, which occurs in an intersubjective communicative act (Olive, 1987). Referred to as the "consensus theory of truth," justification is "a question of the procedures and presuppositions under which justification can have the power to produce consensus" (Habermas, 1979, p. 205). Habermas
identified four validity claims or "dialogue constitutive universals" implicitly associated with "communicative competence," which are necessary to legitimate a normatively grounded consensus: (a) speech is comprehensible, (b) speech is true, (c) speech is sincere, and (d) speech is right in terms of accepted norms (Dickens, 1983; Young, 1988).

Consensus, then, does not necessarily guarantee truth unless the validity claims have been met (i.e., a false consensus may be coerced from participants by a domineering ideology). If communication breaks down and the validity claims are not fully realized, "systematically distorted communication" may result (Young, 1988). Therefore, to ascertain whether norms have been rationally conceived or distorted, a self-reflective critique, based on Freud's therapeutic model of psychoanalysis in which repressed attitudes are made explicit and the subject is subsequently emancipated, is applicable (Milner, 1987). Utilizing John Austin's and Searle's (cited in Habermas, 1979) depiction of speech acts, Habermas (1979) outlined how this process transpires in "discourse," which takes place within the normative context of an ideal speech situation. Norms can be grounded, challenged, or argued at this level of communication. Furthermore, a "general symmetry requirement" defines this free and open context in which all
participants have an equal opportunity to participate (Cushman & Tompkins, 1980; Francesconi, 1986). In addition, Habermas identified three universal conditions of "nondistorted communication" or, as Robert Antonio (1989) referred to them, "procedural norms of democratic discourse": (a) all participants have an equal opportunity to speak as well as to critique other participants as they speak, (b) all participants have an equal opportunity to state their values and beliefs, and (c) all participants have an equal opportunity to request that other participants provide intersubjective normative justification for their speeches. If these conditions are met, consensus is deemed true (Young, 1988).

In challenging the position of critical theory, post-structuralism’s view of knowledge is also grounded in language, but with a significantly different emphasis. Jean-Francois Lyotard, who incorporated Wittgenstein’s conception of language, viewed knowledge in terms of "language games" (cited in Murphy, 1986). Operating under a wide range of rules, these games are heterogeneous in nature (Nicholson, 1989). While hermeneutics projects a "universal metalanguage" in which to justify the games’ unity, post-structuralism emphasizes their plurality, a "never-ending play of differences." Knowledge, therefore, is characterized as variable and instable, constantly
changing (McKinney, 1986). Noting that signifiers are defined in terms of their difference from each other, Derrida, likewise, stressed that meaning is a function of the ever-changing, relational context of signifiers (cited in Giroux, 1988; Weedon, 1987).

With such a view of knowledge and language, post-structuralism challenges truth in any form, whether objective, transcendental, absolute, normative, universal, or consensual. Labelling these conceptions "metanarratives" or "grand narratives," post-structuralists associate truth with acontextual knowledge. These narratives appeal to foundations, a privileged representation, to legitimate or justify truth. Post-structuralists argue, however, that it is impossible to validate knowledge, because it is "locally determined" (Lyotard, 1984); it is temporally and socially determined rather than an ahistorical representation (Murphy, 1986). Plato’s "the Good, the One, and the True" is no longer applicable. As Lyotard (1984) pointed out, "Knowledge has no final legitimacy outside of serving the goals envisioned by the practical subject, the autonomous collectivity" (p. 78). In a similar fashion, Derrida (1974) stated, "Nothing exists outside of the . . . knowledge mediated by speech acts" (p. 135). A comparison of the three traditions of knowledge is provided in Table 2.
<table>
<thead>
<tr>
<th>Tradition</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empiricist/rationalist</td>
<td>Correspondence/coherence</td>
</tr>
<tr>
<td>Historical-cultural</td>
<td>Social consensus</td>
</tr>
<tr>
<td>Critical theory</td>
<td>Social consensus within ideal speech situation</td>
</tr>
</tbody>
</table>
PART THREE: APPLICATION OF PHILOSOPHICAL ASSUMPTIONS

CHAPTER 10

RESEARCH PROCESSES

Research has generally been associated with methodological concerns (i.e., quantitative versus qualitative inquiry). However, more recently, emphasis has been placed on the assumptions which characterize research processes. Based on the ontological, axiological, and epistemological assumptions, several different research approaches have been identified—positivistic, interpretive, and critical (Bredo & Feinberg, 1982).

Positivistic Research

Positivistic research is rooted in Auguste Comte's "positive philosophy," which attempts to ground knowledge in empirical experiences (Bredo & Feinberg, 1982). Reconceptualized as "logical positivism" in the early 20th century by the "Vienna Circle," it was also associated with rational logic and mathematics (Flew, 1979). Today, as noted by Mary Poplin (1987), summarizing Donald
Polkinghorne's (1983) description, positivistic research is identified with an experimental methodology, which advocates empirically "observable, quantifiable, and verifiable data" collection procedures. The facts that emerge from the data analysis are, then, conceptualized in terms of theories (Angeles, 1981); utilizing the empirical facts, logic provides the framework for theory development (Bredo & Feinberg, 1982).

More specifically, based on the ontological assumptions that the world is static and singular in nature and that the whole is identified with the sum of its parts, it is believed that the universe can be separated into discrete parts or variables. After variables have been identified and isolated, each one can be studied independently (Borland, 1990; Guba & Lincoln, 1982; Stainback & Stainback, 1984). This reductionism is necessary so that data can be subjected to logico-mathematical analyses. By delimiting the number of parts to be investigated, variables can be quantified and assigned a numerical value (Poplin, 1987).

Furthermore, in order to obtain objective data or facts, the researcher (knower) is separated from the variables (known) that he or she is to study. Hilary Putnam (1978) referred to this stance as a "God's Eye" view, in which the inquirer places himself or herself above the investigative setting. The investigator distances himself
or herself from the object of inquiry because it is necessary to maintain a value-free investigation and to eliminate any bias which might result from the interaction of subject and object (Borland, 1990; Guba & Lincoln, 1982; Stainback & Stainback, 1984). Therefore, because it is assumed that objects exist independently of subjects, the external relations of variables are addressed by research (Smith, 1983).

Methodology is characterized by detached intervention and observation techniques. By manipulating and controlling the environment, specific conditions and/or variables are selected for investigation. As the result of the exclusion of variables other than those being observed, cause-effect relationships can be determined. By introducing causes into the setting, effects can be elicited, leading to predictive potential (Borland, 1990; Guba & Lincoln, 1982; Stainback & Stainback, 1984). Because instruments are also considered to be independent of objects, they are utilized to produce an accurate measurement or representation of the state of being (Smith, 1983). Data collection procedures, thus, are selected which do not influence the phenomena under observation (Schubert, 1980).

Finally, research is conducted in such a manner as to ensure the validity and reliability of data. In particular, by replicating the results through the proper application of
procedures and instruments, one can demonstrate the reliability or stability of data. Validity is demonstrated through the acquisition of universal truths, which can be generalized and validated for any context (Borland, 1990; Guba & Lincoln, 1982; Stainback & Stainback, 1984). By reporting the results in numerical notational form and "neutral, scientific language," objectivity is further enhanced (Smith, 1983). A summary of the major characteristics of positivistic research is provided in Table 3.

Table 3  

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Positivistic Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object of inquiry</td>
<td>Isolated variables</td>
</tr>
<tr>
<td>Researcher's role</td>
<td>Separated from variables</td>
</tr>
<tr>
<td>Methodology</td>
<td>Detached intervention and observation techniques</td>
</tr>
<tr>
<td>Reliability</td>
<td>Replication of results</td>
</tr>
<tr>
<td>Validity</td>
<td>Acquisition of universal truths</td>
</tr>
</tbody>
</table>

**Interpretive Research**

Based on the need for human understanding, interpretive research originated in the work of Wilhelm Dilthey and Max Weber (cited in Smith, 1983). Heidegger (1962), building on
Husserl’s phenomenology, incorporated this notion into a method of inquiry known as hermeneutic phenomenology. With the goal of practical understanding, Heidegger proposed to investigate and describe meaningful human action without any preconceived theoretical assumptions.

Instead of a static universe, the ontology of the interpretive approach conceptualizes the world as changing and dynamic in nature, projecting multiple worldviews (Borland, 1990; Guba & Lincoln, 1982; Stainback & Stainback, 1984). Through reduction and separation into variables, the positivist view emphasizes the decontextualized parts of a whole (Poplin, 1987). However, in the interpretive view, the whole that is under investigation cannot be broken into parts, it must be studied in its entirety. Because all parts interact, all of the parts are influenced by the observation of one part (Borland, 1990; Guba, 1981; Guba & Lincoln, 1982; Stainback & Stainback, 1984).

There has been some discussion, though, concerning what constitutes a whole for investigative purposes. Generally, research should address processes rather than isolated variables. More specifically, the unit of analysis is identified as an "ongoing, active event," a set of concrete relations with temporal duration, which is relative to a particular investigation (Jaeger & Rosnow, 1988).
(1970) defined his unit of analysis as the "bipolar unit," a set of inseparable dialectical relations that represent a "particular configuration of contradictions." For example, the biopolarities of assimilation-accommodation functions and operative-figurative knowledge unite the relations as well as acknowledge their contradictions. This unit of analysis allowed Piaget to identify particular configurations of relations for investigation that were manageable in scope, yet did not defer to the reductionists' separatism (Bidell, 1988).

Lev Vygotsky (1978) was also interested in identifying a unit of analysis for dialectical research which would unify the pertinent relationships rather than separate them. Such a unit of analysis must include all relevant relations (both internal and external) that influence the development of the process being investigated, as well as the contradictions which characterize the internal relationships. As with Piaget's bipolar unity, Vygotsky, by selecting a particular set of relations and contradictions for analysis, provided a way to escape the limitations of isolating parts from their relations and, yet, addressed a manageable set of relations for research. For example, Vygotsky employed this concept in the investigation of word meaning, by analyzing the relations and contradictions which appeared most significant to the target word (Bidell, 1988).
Thus, instead of a subject-object dualism in which one does not affect the other, the investigator interacts with and influences the object in this view (Borland, 1990; Guba & Lincoln, 1982; Stainback & Stainback, 1984). Because events are context dependent, the researcher cannot be considered a "spectator"; he or she cannot observe from a position outside of the socio-historical context. Rather, the investigator helps to construct the context by actively participating in the process under observation (Toulmin, 1982). As noted in Heisenberg’s (1958) uncertainty principle, an object is altered by the act of observation. The focus, thus, is on the meaning of events as understood by the researcher—an internal process, as opposed to external behaviors. As stated by Michael Polanyi (1966), "Tacit and personal knowing interiorizes as opposed to externalizes" (p. 16). This stance implies a value-ladenness to inquiry, where values play a significant role in determining the "facts." Therefore, the subject is reconceptualized as a research-participant. In order to understand the context, the researcher becomes a participant in the process, rather than an observer or measurer (Heshusius, 1989).

Rather than controlling and manipulating the environment, as in the positivistic approach, the researcher is more flexible, thus allowing the methodological design to
emerge as the study progresses. This flexibility is due to the belief that the universe is dynamic in nature, that it is not possible to precisely determine a design prior to an investigation. Thus, data are collected in the natural setting and variables that normally influence the object of inquiry are permitted to maintain their relationships. These relations, in turn, allow for "mutual simultaneous shaping" to occur instead of cause-effect relationships. Furthermore, the researcher is the main "data-gathering instrument," rather than using nonhuman tools of measurement. Any type of instrument--human or nonhuman--can influence the inquiry process; however, the human instrument is the only one that can interpret these influences (Borland, 1990; Guba & Lincoln, 1982; Stainback & Stainback, 1984).

Such a conception of instrumentation restores the original meaning of measurement as viewed by Galileo, Descartes, and Newton. Kepler (cited in Heshusius, 1989, p. 404) noted that they perceived God as the "chief mathematician of the universe"; "geometry existed before the creation, is coeternal with the mind of God, is God himself." Originally, then, to "measure" an object was linked to comprehending its "innermost being." Measurement involved insight, which was accomplished through
understanding the meaning of processes rather than a comparison to an external measure (Heshusius, 1989).

Thus, mathematical notation is replaced by the "language of our everyday discourse," qualitative as opposed to quantitative measurement. Narrative, in particular, is projected as the most appropriate means of representation for relationships between parts and wholes. In this context, narrative is more than a chronological listing of separate events or facts. "In true narrative the telling of the tale explains by interweaving sequential but overlapping threads such that a temporal pattern, the meaning that has flowed throughout the unique sequence of events and has bound them into a whole, emerges" (Roque, 1988, p. 251).

Furthermore, the employment of validity and reliability as conceived by the positivists is no longer applicable. Because no universal truths exist in the interpretive view, credibility (truth being a matter of social consensus among participants) and transferability (the application of a hypothesis from one context to another) take the place of validity. Reliability, which is based on the assumption that the world is static in nature, is replaced by dependability (the description of change) and confirmability (justification of data in the natural setting) (Borland, 1990; Guba & Lincoln, 1982). A summary of the major
characteristics of interpretive research is provided in Table 4.

Table 4

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Interpretive Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object of inquiry</td>
<td>Entire whole</td>
</tr>
<tr>
<td>Researcher’s role</td>
<td>Interaction with whole</td>
</tr>
<tr>
<td>Methodology</td>
<td>Researcher as interpreter</td>
</tr>
<tr>
<td>Reliability</td>
<td>Dependability and confirmability</td>
</tr>
<tr>
<td>Validity</td>
<td>Credibility and transferability</td>
</tr>
</tbody>
</table>

Finally, as the foregoing discussion has illustrated, these two approaches to research—positivistic and interpretive—have, generally, been portrayed as incompatible (Firestone, 1987; Guba, 1978). Recently, however, some researchers have qualified this "incompatibility thesis" by conceptualizing research in terms of two interacting levels of inquiry. The paradigmatic or "logic of justification" level addresses the philosophical assumptions that inform each view. Researchers generally agree that the two views are mutually exclusive and, therefore, incompatible at this level and
that one must make a choice between research paradigms (Smith & Heshusius, 1986).

The second level addresses the research procedures and techniques (methods) which some believe are derived from the philosophical assumptions. Each method is associated with a particular paradigm; a logical relationship exists between paradigm and method. By embracing the assumptions of one paradigm, the researcher, likewise, determines the method(s); one must pursue different methods for each worldview. Thus, methods are rigidly designated as either positivistic or interpretive in nature and may not be utilized together in research. They are incompatible because they are founded on different paradigms (Smith & Heshusius, 1986).

However, Charles Reichart and Thomas Cook (1979) argued that neither quantitative or qualitative methods are necessarily associated with specific paradigmatic assumptions, and that paradigms can be associated with any method. As stated by B. Glaser and A. L. Strauss (1967), "There is no fundamental clash between the purposes and capacities of qualitative and quantitative methods or data. . . . We believe that each form of data is useful for both verification and generation of theory, whatever the primacy of emphasis" (pp. 17-18). Reichart and Cook (1979) identified several additional reasons for combining
different methodologies: (a) a variety of methods is useful for multiple purposes in conducting research, (b) each method can build on the other to increase data gathering potential, and (c) multiple methods can provide for triangulation which increases confidence in results. Therefore, the selection of a method should not be determined only by a paradigm; the decision is also subject to the research setting.

Paradigms do not determine the parameters of research in detail. General conditions of practice, rather than specific methods, are considered essential to satisfy paradigmatic assumptions. The paradigm of choice defines these conditions and, in turn, influences the selection of specific methods which lead to the realization of these conditions. Thus, different outcomes are implied as a result of the combination of particular methods (Smith & Heshusius, 1986).

Critical Research

Critical research is grounded in the Frankfurt School’s critical theory, specifically Habermas’ conceptualization of social processes. The purpose of this approach is to critique the positivistic tradition, thus developing a self-awareness of the distortions such a movement has propagated (Bredo & Feinberg, 1982). In so doing, research
results in the transformation of actors' practices as well as the social structures that inform their practices (Carr & Kemmis, 1986). Instead of being dominated by a technocratic ideology, actors become liberated as a result of critical practice (Bredo & Feinberg, 1982).

Initially, the emphasis of research is on the necessity of studying the particular actors' life world. The historical development of practices and social structures is then traced, and notations are made of the conditions that distort actions. In addition to the socio-historical context, particular determinants of the actors' life world are empirically investigated. The empirical results, in turn, are dialectically linked to the cultural processes which constitute them (Comstock, 1982).

In addition, research is conceptualized as participatory and collaborative. It is not possible for researchers to serve as "critical investigators" and to remain outside the practices which require change. Outsiders are limited in their ability to transform practices because they are not participants in the process. Instead, the research/practice dichotomy is transcended through a concrete, practical involvement of both researcher and practitioners (Carr & Kemmis, 1986).

In such a collaborative endeavor, the investigator participates in a hermeneutic dialogue with the actors and
attempts to elucidate the particular intersubjective understandings, values, and intentions that characterize their actions (Comstock, 1982). During the course of this "practical discourse"—"processes of enlightenment," participants eventually arrive at a consensus concerning the understanding of their actions as well as the action that is necessary to transform their practices. By maintaining a critical analysis of the resulting transformation and responding accordingly, the actors continue to participate in their own liberation (Carr & Kemmis, 1986).

Finally, critical research is evaluated in terms of accuracy. In this context, accuracy refers to the degree of similarity between the dialogue of the researcher and that of the practitioner (Comstock, 1982). A summary of the major characteristics of critical research is provided in Table 5.

Table 5

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Critical Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object of inquiry</td>
<td>Life world</td>
</tr>
<tr>
<td>Researcher’s role</td>
<td>Participatory and collaborative</td>
</tr>
<tr>
<td>Methodology</td>
<td>Hermeneutic dialogue</td>
</tr>
<tr>
<td>Reliability</td>
<td>Accuracy</td>
</tr>
<tr>
<td>Validity</td>
<td>Accuracy</td>
</tr>
</tbody>
</table>
Discussion of written language has also been focused primarily on methodology. With the emphasis on whole language, however, educators have become aware of the necessity of examining the philosophical paradigm—the holistic paradigm—which informs their practices. Therefore, the purpose of this chapter is to apply the ontological, axiological, and epistemological assumptions of the holistic paradigm to written language, and to address heuristic implications for the development of theories and models.

Longitudinal Nature of Written Language

The longitudinal assumption of the holistic paradigm implies that reading and writing are conceptualized in terms of dynamic processes rather than static states. As in Heidegger’s (1962) and Whitehead’s (1929) depiction of a temporal universe in terms of becoming, so written language is involved in an active process of becoming. A linguistic structure is in a constant state of flux, which, in turn, entails movement into a new unity. The creation of these
temporary relationships constitute a series of literacy events (see Figure 39).

Furthermore, the transition from one literacy event to another is not uniform in nature; written language is not a succession of discrete linguistic structures. Rather, based on the observation that time and space transpire simultaneously in nonequilibrium thermodynamics (Prigogine & Stengers, 1984), it can be inferred that there is a necessary and meaningful connection between literacy events, a complex interrelationship of processes. Written language processes, therefore, are historically situated; there is an integration of one reading and/or writing structure in the becoming of another. The present linguistic state, constituted in part by past events, is differentiated from the past by its history. Thus, because a literacy event is
not independent of its history, it cannot be understood when separated from its past (see Figure 40).

Relations Between Literacy Events

Figure 40. Historical view of written language.

Specifically, as a linguistic structure is confronted with new information (i.e., new meaning of state—to say), contradictions develop between it and the existing information (i.e., existing meaning of state—body of land). The structure resolves the oppositions through a dialectical process (Bidell, 1988) in which contradictory relationships are restructured. The present state synthesizes (assimilates) the new knowledge, while simultaneously changing so that it can accept (accommodate) the stimuli. In addition, as a literacy event reacts to new information from the environment, its equilibrium is affected. The resulting imbalance generates a developmental sequence leading from equilibrium to dis-equilibrium to
re-equilibration. Thus, written language processes emerge as a whole, constantly structuring themselves.

Due to the temporal and historical nature of this process, instructional implications suggest that it is important to ascertain the experiential backgrounds and abilities of readers before presenting new linguistic information (Goodman & Goodman, 1976; Smith, 1973; Weaver, 1988). Referred to as the "zone of proximal development" by Vygotsky (1978), what one already knows is used as a bridge to new understandings; new information is related to prior knowledge.

As new and existing linguistic information interact dialectically, resulting in a transition between literacy events, however, new qualities are generated, and the changes are not necessarily quantitative in nature (i.e., the new meaning of state qualifies the existing meaning). Having developed from a prior quality, the new quality is not an accumulation of the former quality, and it cannot be reduced to the quality of a prior state. Therefore, the new linguistic structure is the transformation of the past, not merely a replacement of the former state. This qualitative transformation, rather than a quantitative change, characterizes written language processes as developmental--open processes which cannot be understood as absolute or final (see Figure 41).
Due to the developmental nature of these transformations, reading and writing processes are viewed as successive approximations on a continuous continuum of development. Thus, risk-taking, prediction, and experimentation are inherent features of literacy events (Newman, 1991; Smith, 1971; Weaver, 1991). The errors or "miscues" which result from such growth are indicative of development (Goodman, Smith, Meredith, & Goodman, 1987; Mills & Clyde, 1990; Watson, 1989).

Finally, the development of written language processes can be further conceptualized as unilinear in nature. Applying structuralism's (Lane, 1970) representation of historical time as heterogeneous rather than homogeneous to literacy events, reading and writing processes are characterized as a series of temporalities or structural levels—graphophonic (sound and letter patterns), syntactic
(sentence patterns), and semantic (meanings). These linguistic levels are not independent, discrete stages, but are dialectically related. The entire structure changes as one part changes; the whole structure can be affected by one developmental sequence (see Figure 42).

![Diagram: Linguistic Levels Related in Literacy Events](image)

Figure 42. Structuralist view of written language.

Latitudinal Nature of Written Language

Maintaining a process orientation, the latitudinal assumption identifies one literacy event relative to others, and implies more enduring relationships. Specifically, a literacy event is characterized by a particular configuration of graphophonic, syntactic, and semantic features. The organization or interaction of these levels, however, has been conceptualized in several different ways.

Traditionally, written language processes have been separated into irreducible, individual parts or skills
(i.e., sounds, syllables, words) much as classical physical theory reduced material processes to atoms (Kitchener, 1982). Functioning independently, like the pieces of a machine, these isolated skills cannot operate in relation to the whole. In this view, a linguistic structure can be understood through a synthesis of skills. Produced by an addition of parts, literacy events are aggregates; they maintain a summative rather than a constitutive nature (see Figure 43).

![Diagram of Parts are Primary](image)

**Figure 43.** Reductionistic view of literacy events.

Recently, there has been a general acknowledgement of the limitations of this reductionistic view of literacy events. This conceptualization is too fragmented to capture the dynamic nature of reading and writing processes; rather, it is important to mediate between the fragmented skills and the whole. Whitehead’s (1929) philosophy, as well as
quantum theory (Capra, 1991), implies that there are no “basic building blocks” or discrete skills which can be synthesized to generate a linguistic structure; a literacy event is more than the sum of its parts. Written language processes cannot be divided for there are only momentary relations which are involved in acquiring and relating new information to the whole and from which parts are not distinctly distinguishable—an "unbroken wholeness."

Skills, therefore, have no significance when isolated; they are understood only through their integrated activity within the whole. As Dewey and Bentley (1949) pointed out in their notion of transactions, linguistic skills are interdependent or internally related, which implies that a change in one part affects other parts. In this view, then, relations are primary and the parts and the whole are derived (see Figure 44).

![Relations are Primary](image_url)

**Figure 44.** Relational view of literacy events.
Furthermore, dialectics (Bidell, 1988), which maintains that contradictions are the most important characteristics of processes, notes that linguistic structures promote conflict. Reading and writing processes are characterized by their oppositional relationships. In part, the specific pattern of contradictions is what distinguishes one literacy event from another (see Figure 45).

![Contradictory Relations](image-url)

**Figure 45.** Dialectical view of literacy events.

The organization of these dialectical relations within literacy events, however, can be conceptualized in several different ways. Specifically, applying structuralism's (Lane, 1970) tenets to written language processes results in a view in which a series of interlocking skills are arranged in hierarchical levels. The sequence of linguistic levels is such that the characteristics of each level are included
in higher levels, but not in lower levels, because they are influenced by the general inclusiveness and abstract complexity of the relations between parts.

Models utilizing this hierarchical structure manifest either bottom-up or top-down processing. In bottom-up models, decoding of graphic symbols (lower-level processes) occur first; then, syntactic and semantic processes (higher-level) follow. Correct word identification, therefore, precedes and automatically ensures reading comprehension. In top-down models, reading comprehension is influenced more by the cognitive than the perceptual processes. If graphic cues do not correspond to syntactic and semantic processing, they are not likely to be employed in the reading process (see Figure 46).

Figure 46. Structuralist view of literacy events.
A linguistic hierarchy, however, reduces relationships to a single dimension—parts can only be related to what is above or below them—creating a homogeneous organization of skills. Recent developments in physics (Chew, 1968) imply that a literacy event is heterogenetic in nature, and that there is no distinction between levels, for every part is related to every other part. Written language processes are portrayed as a dynamic web of interrelated processes. To use Bohm’s (1980) terminology, each part "enfolds" the whole structure; the whole encompasses each part and each part encompasses the whole. Thus, neither bottom-up nor top-down processing plays a dominant role in reading comprehension. Rather, there is a cyclical interaction of perceptual and cognitive processes. Each level has the potential to influence all other levels (see Figure 47).

Figure 47. Circular view of literacy events.
Two instructional implications can be drawn from this latitudinal conception of written language processes. First, instruction is integrative (Pearson, 1989). There is a maintenance of the wholeness of literacy events; linguistic structures are not separated into isolated skills (Weaver, 1990). Second, instruction is authentic (Pearson, 1989). Reading and writing skills are developed in the context of complete and meaningful text (Edelsky & Draper, 1988)—"real" reading and writing (Goodman, 1986).

Expressive/Decentered Nature of Written Language

The expressive/decentered assumption of the holistic paradigm has further implications for the relationships which characterize written language processes, particularly in terms of the emphasis placed upon particular relationships. Similar to classical physics (Jantsch, 1980), bottom-up as well as top-down processing identifies an original, given unity or expressive center. Bottom-up processes originate in graphophonic cues; top-down processes originate in semantic cues.

Observations by Western Marxist philosophers (cited in Jay, 1984), as well as evidence in nonequilibrium thermodynamics (Zukav, 1979), however, suggest that reading and writing processes do not have a specific origin. A literacy event, characterized through the relationships
which link the parts, is not reducible to an expressive center. Rather, a linguistic structure is defined as a configuration of relations which has no particular origin—a decentered whole. No one part of this linguistic web has priority; all parts develop through relations with others.

Thus, instead of prioritizing one of the parts or relations within the literacy event and relegating others to a position of secondary significance, a decentered view maintains that there is dynamic interaction of all parts. Despite the fact that one relationship may assume a significant part while representing the whole, the purpose is not to suppress the other relations. It is impossible to determine if one relationship is more significant than others; therefore, each relation is an expression of the whole (see Figure 48).

Figure 48. Decentered view of literacy events.
Another defining feature of a literacy event is its boundaries—its relationship to the environment. This relationship serves to further identify the spatial (latitudinal) composition of a linguistic structure and to distinguish one structure from another, temporally and historically (longitudinal). In general, written language processes maintain open rather than closed boundaries. As dynamic states maintain an active exchange of energy and matter with the environment in quantum theory (Bohm, 1980), so reading and writing processes maintain open-ended relations and, thus, permeable boundaries with the immediate context.

Relations, spatial as well as temporal, therefore, ultimately define the boundaries of literacy events—as relations change, so do boundaries. Specifically, linguistic structures are depicted as preserving a somewhat independent context; the relations outside of the whole are not significantly related to the structure within. However, this independence is restricted; as the whole interacts with the environment, some of the relations become more significant to the structure within. The incorporation of these new relations leads to reorganization of the literacy event and, thus, a new structure which redefines the boundaries (see Figure 49).
Causality and Written Language

As implied by each assumption thus far, relationships of one kind or another are the significant determinant of the features of written language processes. These relationships can be reconceptualized in terms of causality—the specific effects that graphophonic, syntactic, and semantic relationships exert upon one another. In particular, literacy events can be viewed in terms of linear or nonlinear causality.

The relationships which characterize the traditional model of reading and writing processes, in which a linguistic structure is reduced to separate, additive skills, are determined through linear causality. Based on the classical model of science’s observation that the final state (effect) of a closed system is determined by the initial conditions (causes) (Capra, 1991), linguistic
processes are conceptualized as linear or unidirectional interactions in this view. A newly formed linguistic structure (effect) is contingent upon the prior linguistic structure (cause), creating a one-to-one relationship between cause and effect. Because a specific cause can elicit a particular effect, a future literacy event can be predicted with absolute certainty from a preceding state. In such an additive system, in which the whole is determined or predictable from the parts, specific skill sequences can be identified (see Figure 50).

![Figure 50. Linear view of literacy events.](image)

Developments in relativity theory (Garrison, 1988), Heisenberg’s (1958) uncertainty principle, and quantum theory (Zimmerman, 1989)—however, imply that a literacy event can move in many alternate directions in an open, nonequilibrium relationship. A linguistic structure is not
determined by a preceding event. Governed by probability, as opposed to predictability, causation is reciprocal or circular in nonlinear relationships. Each event can be both a cause and an effect. Causality is nonlocal; linguistic events can affect other events indirectly despite the fact that they are separated by space and time (see Figure 51).

![Figure 51. Nonlinear view of literacy events.](image)

Social Beings and Written Language

The final ontological assumption of the holistic paradigm to be applied to written language addresses the nature of the relationship between the human actor (subject) and reading and writing processes (object). Conceptualizations in both social (Jaeger & Rosnow, 1988) and physical theory (Capra, 1991) indicate that social beings are actively involved in the subjective construction of literacy events. In dynamic and open relationships,
objects are not separate from subjects; there is an interdependence of the actor and the linguistic structure. In fact, literacy events are only meaningful when interacting with subjects (see Figure 52).

![Figure 52. Subjective view of literacy events.](image)

Insights from Habermas' (1979) theory of communicative action, as well as Gadamer's (1975) hermeneutical theory, further qualify the relationships between subjects and literacy events. Rather than being a purely subjective or individualistic interaction with a linguistic structure, the relationship emerges "intersubjectively" or interactively between social beings. There is a cooperative or collaborative negotiation of common meanings of the event—a dialogical as opposed to monological view. Interpretation of the event entails the "fusion of horizons" of
collaborating subjects with the linguistic structure (see Figure 53).

Figure 53  Intersubjective view of literacy events.

Goals and Written Language

The axiological assumption of the holistic paradigm implies that written language processes are related to specific goals. The application of hermeneutical tenets (Gadamer, 1975) to the literacy event suggests that a linguistic structure is associated with the practical goal of understanding rather than with technical explanation. Concerned with the meaningful, purposeful, and functional uses of reading and writing processes, social beings are directly involved with interpreting events. The goal of understanding transpires when the historical context of the literacy event is actively related to the intersubjective discourse of shared meanings by a linguistic community.
Knowledge and Written Language

The final category of assumptions to be applied to written language is epistemology—the nature of knowledge. Based on the hermeneutical theories of Gadamer (1975), Rorty (1979), and Habermas (1979), it can be inferred that the knowledge associated with a particular literacy event originates in a social context. Stemming from practical activity, knowledge is not composed of value-free skills that are developed in the absence of interpretation. Rather, linguistic knowledge is the result of historically-situated, communicative interactions among social beings.

Specifically, knowledge of reading and writing processes is rooted in open-ended, intersubjective communicative practice; to understand such knowledge, we must understand the social practices by which it is justified. Thus, the notion of truth, in terms of the relationships which characterize literacy events, is contingent upon the context of social consensus; knowledge is "true" if justified by the norms of a linguistic community. Understanding of linguistic relationships cannot be validated by any notion of correspondence between it and transcendental, absolute foundations.
PART FOUR: SUMMARY

CHAPTER 12

SUMMARY OF THE STUDY

The general application of the ontological, axiological, and epistemological assumptions of the holistic paradigm to written language in the preceding chapter provides heuristic implications for the development of specific theories and models. In particular, the main features of each assumption can be summarized diagrammatically. The conceptual model derived from such an activity can, then, be utilized as a heuristic device for the interpretation of written language.

First, theories and models should reflect dynamic, temporal processes which are historical in nature. In such a conception, the transition from one event to another is characterized through dialectical relationships, promoting qualitative development. Furthermore, this development is unilinear with different levels interacting (see Figure 54).

Within each event, however, there is no distinction between levels. The relations, which are primary as well as contradictory, form a web of interrelated processes; the relations are heterogenetic, for every part is related to
Figure 54. Historical nature of processes: Unilinear levels dialectically related in qualitative development.

...every other part. Thus, since no relationship maintains priority, the whole is decentered. In addition, processes are open and nonlinear (see Figure 55).

Figure 55. Contradictory relationships of events maintain the decentered, open, and nonlinear nature of processes.

Finally, with a practical goal of understanding, the social context is also a significant feature of theories and
models. Social beings should be portrayed as maintaining an active involvement in the construction of processes. In particular, events are historically situated and characterized through intersubjective communication (see Figure 56).

Figure 56. Relationship of social beings to processes through intersubjective communication.
REFERENCES


Edelsky, C., & Draper, K. (1988). Reading/'reading'; writing/'writing'; text/'text.' In A. Petrosky (Ed.),
Reading and writing: Theory and research (pp. 75-99).
Norwood, NJ: Ablex.


Kitchener, R. F. (1985). Holistic structuralism, 
elementarism, and Piaget’s theory of "relationalism."

Kitchener, R. F. (1986). *Piaget’s theory of knowledge: 
Genetic epistemology and scientific reason*. New Haven, 
CT: Yale University Press.

Kneller, G. F. (1964). *Introduction to the philosophy of 

Kuhn, T. S. (1962). *The structure of scientific 

automatic information processing in reading. *Cognitive 
Psychology*, 6, 293-323.

LaBerge, D., & Samuels, S. J. (1985). Toward a theory of 
automatic information processing in reading. In 
H. Singer & R. B. Ruddell (Eds.), *Theoretical models and 
processes of reading* (3rd ed.) (pp. 689-718). Newark, 
DE: International Reading Association.

*Introduction to structuralism* (pp. 11-39). New York: 
Basic Books.

Lawler, J. (1975). Dialectical philosophy and 
developmental psychology: Hegel and Piaget on 


Poplin, M. S. (1988). The reductionistic fallacy in learning disabilities: Replicating the past by reducing


Smith, J. K., & Heshusius, L. (1986). Closing down the conversation: The end of the quantitative-qualitative...


