

Worldview Assumptions: Paradigm Shift in Progress?

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ABSTRACT

This paper is an empirical study of potential evidence in a paradigm shift from the traditional worldview (TWV) to the emerging worldview (EWV). In order to explore worldview assumptions broadly, we have chosen two major sources of academic and practitioner literature. All full-length articles from *Administrative Science Quarterly* and the *Harvard Business Review* from 1957 and 1997 are analyzed using narrative analysis. Analysis of four worldview dimensions coded—Level of Explanation (reductionism or holism), Causality (linear or mutual), Observation (objective or perspectival), and Interrelatedness (competition or cooperation)—suggest that a modest shift has occurred in the assumptions the authors of these articles made over the forty-year period. ASQ makes more EWV assumptions in 1997 than HBR. The greatest shift occurred in *Interrelatedness*, with a sizeable increase in *cooperation* in 1997 and a decrease in *competition*.

Introduction

The postmodernist worldview and its constructivist methodologies remain marginalized compared to the pervasive 18th-century, Cartesian model. Moreover, while authors and theorists suggest that a worldview shift has occurred (Begun, 1994; Capra, 1993; Wheatley, 1992), the question of whether the emerging paradigm has taken hold remains unanswered. These authors provide a fresh look at the change that is occurring, but for the most part, they still beg the question of whether people are *thinking* and *writing* differently. This study documents the extent of this alleged paradigm shift *in thinking* and *writing*, specifically in academic and practitioner literature.

In the past twenty years, a number of scholars and researchers have called attention to the importance of an individual's worldview, the set of deeply held beliefs and fundamental assumptions that serve as a mental map for providing coherence to what the world and life are and how they work (Gersick, 1991; Slife & Williams, 1995). An individual's worldview is more deeply ingrained than attitudes, opinions, traits, and values. It is also more difficult to access and much harder to change than any of these attributes.

The contents of worldview are often philosophical in nature and may include the following abbreviated list: determinism, equality, belief in the transcendent and hierarchical ordering. Although worldview includes a variety of such beliefs, a few assumptions make the greatest difference in ascertaining an individual's worldview. These assumptions pertain to observation, causality, and level of explanation (Dent,

1999). A fourth dimension, *Interrelatedness*, is also tested here. Although research in this area is in its infancy, it may be that worldview plays a critical role in the effectiveness of leaders and others working in organizations.

The literature suggests two primary worldviews, which we label the *traditional* (TWV) and the *emerging* (EWV) (Dent, 1999; Dooley, 1997). The *traditional* refers to long-held and established ontological and epistemological beliefs such as reductionism, linear causality, objective observation, and competition. The term *emerging* connotes novelty, but the worldview is not new in many contexts. It is relatively new, however, in organizational life in the Western world. EWV assumptions include holism, mutual causality, perspectival observation, and cooperation (Table 1). Rather than being opposites though, the emerging and traditional can be seen as a polarity (Johnson, 1992), in which the TWV emphasizes only one side, and the EWV incorporates (or includes) both traditional and emerging worldview assumptions. A number of writers have suggested that the acceptance of EWV assumptions is critical for a continuation in the increase of business performance and the quality of life (Begun, 1994). The word *dimension* used here denotes a phenomenon such as “causality.” For each dimension, we analyze two *assumptions*. For example, the dimension *Causality* holds the two assumptions labeled here as *mutual* and *linear* as indicated in Table 1 (henceforth, assumptions will be italicized and dimensions will be capitalized and italicized).

Table 1. *Contrasting Worldview Assumptions.*

Dimension	Traditional (TWV)	Emerging (EWV)
Level of Explanation	Reductionism	Holism
Causality	Linear Causality	Mutual Causality
Observation	Objective Observation	Perspectival Observation
Interrelatedness	Competition	Cooperation

The Significance of the Topic

A potential contribution of this study is to begin documenting the extent of this paradigm shift *in thinking* and *writing*, as we allude to above. This type of study is precisely what certain researchers (Abrahamson, 1996) have called for. Writers such as Begun (1994), Capra (1993) and Wheatley (1992) wax eloquently about the change that is occurring and point to variables such as the increasing use of holistic medical approaches and alternative organizational structures, but for the most part they still beg the question of whether people are *thinking* (or *writing*) differently. People could be going to different types of doctors simply as a matter of a pragmatic search to find something that works. Such a search does not mean that a change in thinking has occurred. Consequently, this research will serve as one test of the question, what evidence is there to support the claims of writers such as Begun, Capra, and Wheatley, who believe that an emerging worldview is taking hold?

In the field of leadership and decision-making, when decision makers hold assumptions that are not appropriate to the choices at hand, they are less likely, for example, to select an effective decision. Mismatches in assumptions have been implicated in the failure of a major business (Jacobs & Jaques, 1987, p. 34), the implementation of government social policy which attempted to increase the stock of low-cost housing but actually reduced it (Dent, 1997), and inadequate descriptions of actual leadership behavior (Fondas, 1997). Furthermore, worldview assumptions have important implications for how work is performed. One executive making TWV assumptions and another making EwV assumptions will have completely different approaches to learning (Vaill, 1996), leadership (Wheatley, 1992), strategic planning (Begun, 1994, p. 330), performance appraisal (Dent, 2000), organization structure (Wilber, 1995), problem solving (Ackoff, 1981), military strategy (Dent & Holt, 2001) and communication (White, 1990).

Although the focus of this work is on academic sources, this research has more than academic significance. For example, a sustainable future for the environment and society requires thinking beyond linear models (e.g., raw materials lead to production, which leads to distribution, which leads to waste) toward an integrative and mutually interrelated model in which companies view themselves in context of the whole system (e.g., identifying ways to remanufacture waste) (Bradbury & Clair, 1999). Bradbury and Clair suggest that this is only possible when organizations begin to *think* or *write* differently about their interaction with the environment.

Similarly, transnational cooperation through political, human rights, and environmental summits requires worldview shifts at the highest levels. World leaders such as Mikhail Gorbachev (Capra, 1993, p. 237) and Czech president Vaclav Havel have discussed the change in worldview (Woodward, 1994, p. 66). For Havel, the traditional view has roots in the 18th-century philosophy of individual rights and by a view of God as abstract and distant. Havel has written about “the declaration of interdependence” (Woodward, 1994, p. 66). It begins with the recognition that all human beings are connected together and to the universe. This recognition demands that human solidarity and responsibility to each other be seen as much more important than any individual rights.

Worldview Proxy Selection – A Practitioner and an Academic Journal

We analyzed articles from two top journals, *Harvard Business Review* and *Administrative Science Quarterly*, to detect a shift in worldviews. All full-length articles from both journals for the years 1957 and 1997 were selected for coding. The two time frames were chosen to capture points near the beginning and the end of the alleged paradigm shift (Banathy, 1998).

Because “texts can be treated as traces of an author’s worldview, preserved at a point in time and immune to retrospective construction,” (Barley, Meyer, & Gash, 1988, p. 27) the sample consisted of full-length articles from the journal *Administrative Science Quarterly* (ASQ) and the *Harvard Business Review* (HBR) due to their reputations in both academic and practitioner circles. ASQ is considered the leading organization

journal for academics, publishing path-breaking research in macro-level organizational analysis (Usdiken & Pasadeos, 1995). ASQ is the most cited organizational journal of traditional academic work (Stablein, 1993, p. 5), while HBR is considered the leading organization journal for practitioners (Ewing, 1990, 215). A greater percentage of CEOs and other industry leaders read HBR than any other similar periodical. An important feature of this study is to inquire into the thinking of both the world of the practitioner and the world of the academic, and how each contributes to the implicit discourse of worldview assumptions. The interplay of these two sources has long been a subject of interest (Thompson, 1956). Because ASQ represents the leading journal for organization theorists, one would expect the greatest shift in worldview from academicians that contribute content to its pages. Likewise, authors writing in the *Harvard Business Review* should demonstrate a large shift in worldview given its broad circulation among corporate managers, executives, and consultants.

Administrative Science Quarterly, published by Cornell University, began circulation in 1956. Over the past forty years, this leading organization journal for academics has become known for its analytic rigor and theory development. According to the ASQ mission, the journal is “dedicated to advancing the understanding of administration through empirical investigation and theoretical analysis.” The journal maintains a broad view on subjects in order to advance new theory that produces further research and improved practice.

The *Harvard Business Review* began publication in 1922, much earlier than ASQ. The Harvard Business School publishes it and its editorial board is composed mostly of faculty members who are appointed by the Dean (Ewing, 1990, 213). HBR had a paid circulation of approximately 225,000 in 1998 (*Wall Street Journal*, 1998) and it is considered to be a major force in management thinking (Ewing, 1990, 215). According to its promotional materials, “HBR brings its readers original research and firsthand perspectives from leading business thinkers around the world. Focused on the issues confronting top managers in today’s complex environment, HBR applies the best research and practice to the strategic challenges and operating problems of the day.”

Hypotheses

In Western society, the TWV is conventional wisdom, as described by Galbraith (1976). Nearly all of the Fortune 500 companies, for example, can be shown to be structured and acting in accordance with the traditional worldview (Gergen, 1995). Consequently, in many ways, the TWV assumptions capture Western society’s “default” assumptions. In this study, these assumptions hold unless an author specifically indicates otherwise.

Three sets of hypotheses are presented. The first set explores the *time* dimension by making comparisons in the emerging and traditional worldview assumptions across the forty-year timeframe. The second set focuses on *comparison*; that is, it looks at differences and similarities between the two journals. The third set is essentially measures of *velocity*. This set of hypotheses makes predictions about which journal is changing faster than the other in worldview assumptions.

Worldview Shift over Forty Years

The first group of hypotheses contends that despite advances in *emerging* worldview, TWV assumptions are still prevalent. Several empirical and theoretical studies pose the ascendance of the EWV. For example, Elsbach, Sutton, and Whetten (1999) suggested changes have occurred in that the dialogue of the field now includes EWV assumptions that wouldn't have been part of the dialogue in an earlier generation.

The decision theory school (which includes all TWV assumptions) predominated in the 1950s and the system oriented school (which allows for some EWV assumptions) did not appear until the 1960s (Holt, 1999). Hoskisson, Hitt, and Wan (1999) note that the field of strategic management did not focus on boundary relationships in 1957, but does now. They also note that many recent studies use as a unit of analysis the relationship "action-reaction" rather than a discrete entity. Gibson and Tesone (2001) note, for example, that the multi-perspective approach of 360-degree performance appraisals was simply not a topic in the 1950s when MBA was a dominant goal setting and evaluating approach.

H1a: 1957 articles will make primarily TWV assumptions and 1997 articles will still make predominantly TWV assumptions.

H1b: 1997 articles in both journals will contain more EWV assumptions than 1957 articles in both journals. In other words, there will be a modest increase in EWV assumptions.

Some studies show both the ascendance of the EWV and the present dominance of the TWV assumptions. Carson, et al (1999) found that the *Business Periodicals Index* had spikes in the 1950s on the subjects of MBO, PERT, and employee assistance programs. The 1990s spikes were employee empowerment, horizontal corporations, vision, reengineering, agile strategies, and core competencies. The former list consists of approaches based almost entirely on TWV assumptions. The latter list includes more EWV assumptions, but still includes topics based on TWV assumptions. Reengineering, for example, makes the assumption of linear causality. Researchers of the management of research and development (R&D) have noted that the phases of progress are such that in the 1950s linearity was the prevailing mindset, while in the 1990s, nonlinearity entered the scene; although the linear model remained everywhere present (Niosi, 1999). Hoskisson, Hitt, and Wan (1999) found that in the field of strategic management, for example, both scholarly and practitioner works in the 1950s consisted primarily of inductive case studies with little attempt at generalization. However, over time, the field became more science-based, meaning that studies employed statistical tools based largely on linear relationships. The following hypotheses follow from these works.

H1c: Mutual causality will appear substantially less frequently than linear causality for both journals in both years.

Comparison of ASQ and HBR

Two primary schools of thought have formed for explaining the discourse that takes place in and between the academic and practitioner communities. The first has centered on the conventional wisdom that the more basic research of academia leads to innovations in practice (Duncan, 1974; Beyer, 1982). In this way, practitioners rely upon academicians to make theoretical breakthroughs, which can then be applied to practical use. The second school of thought takes the opposite view. It is interesting to note that both views make linear, mostly unidirectional assumptions about knowledge diffusion. Consistent with the subject of this paper, perhaps a school of thought will arise offering a mutually causal explanation for this discourse. From this perspective, the moneyed, practitioner community dictates the agenda for academia and other basic research by determining which research is funded (Clegg, 1981; Boje, Gephart, Jr., & Thatchenkery, 1996). From a pragmatic view however, inventive practitioners may lead the way (Galbraith, 1980) because academic trendsetters are rare (Carson, et al, 1999). Consequently, the innovation first arises in practitioner discourse before it is more fully explored in scholarly work.

Other data points are added to this backdrop. In a study of articles on organizational culture, Barley, Meyer, and Gash (1988) found that, over time, the academic articles became more like the practitioner articles in the way the subject matter was addressed. Offermann (2001) also sees congruence as more academics are involved in practical work and more practitioners are involved in scholarly work. Abrahamson (1996) contends that under ambiguous business conditions, norms of progress encourage practitioners to try something different to create the appearance of progress. Dean and Bowen (1994) found that the academic community had essentially ignored the Total Quality Management movement that dominated practitioner discourse for a time. Hambrick (1994) has lamented that academic research “has yet to reach or influence many executives” (p. 14). Finally, Maguire and McKelvey (1999), in a large survey of books on complexity science, discovered that trade books were more likely than academic books to make EWV assumptions. On balance, then, the second group of hypotheses suggest that EWV assumptions are more likely to appear in HBR (which is more practitioner-oriented) than ASQ.

H2a: HBR will contain a greater percentage of EWV assumptions in 1997 than will ASQ. Naturally, the following corollaries stem from this hypothesis:

H2b: Holism will be greater in HBR in 1997 than in ASQ in 1997.

H2c: Mutual causality will be greater in HBR in 1997 than in ASQ in 1997.

H2d: Perspectival observation will be greater in HBR in 1997 than in ASQ in 1997.

H2e: Cooperation will be greater in HBR in 1997 than in ASQ in 1997.

Velocity: Rate of Worldview Shift

The final set of hypotheses addresses the relative rates of change of the two journals. Several research findings and theories support these hypotheses. For example, Hoskisson, Hitt, and Wan (1991) note that the academic field of strategic management is increasing its use of multi-perspective theoretical frameworks. Scholars lead on esoteric subjects such as constructivism and cooperation, but lag on topics that are seen by practitioners as progressive, such as taking a holistic perspective (Abrahamson, 1996). Weick (1999) asserts that the constructivist viewpoint seems to be ascendant in academic writings. There is also more acceptance of the importance of cooperation among academic writers than practitioner writers.

Holism is an important part of two management theories that have been more a part of the practitioner discourse than the academic discourse—the Japanese management school and the environmental management school (Holt, 1999). Both were only noticeable in the literature after the 1957 era. The notion of holism (seeing the big picture, thinking outside the box, systems thinking, etc.) is a pervasive theme in practitioner books (Ackoff, 1981; Capra, 1982). Therefore, we offer the following hypotheses about which assumptions are changing at a greater rate in the journals.

H3a: Perspectival observation should be increasing more rapidly in ASQ than HBR.

H3b: Cooperation will be increasing more rapidly in ASQ than HBR.

H3c: Holism will be increasing more rapidly in HBR than ASQ.

Narrative Analysis and Methodology

The research method for this study is narrative analysis, which is similar to content analysis in that both go beyond the manifest meaning to a deeper level of interpretation. This technique is appropriate if one assumes that beliefs are embedded in linguistic form. Narrative analysis differs from content analysis in that it is an attempt to capture ideas rather than words. Content analysis as often described (Weber, 1985) is inadequate for this purpose because it is, for example, overly reductionist. Narrative analysis endeavors to balance *holism* and *reductionism* and combines aspects of qualitative and quantitative research. In general, though, a positivist research design, such as the one used here, cannot escape from making assumptions of *reductionism* and *linear causality*.

Narrative analysis requires that the articles be read by people, rather than a computer because beliefs are often manifest in use-in-context, implicit contrasts, meta-messages, and grammatical form rather than in the content itself. Singleton, Straits, and Straits (1993) suggest that unless the recording unit is the word, word sense, or phrases such as idioms and proper nouns, the computer software available at this time is not useful (p. 383). Computer software is of limited value because assumptions are implicit rather than explicit. The coders had to make judgments, for example, about terms such as

“influence,” “effect,” “play a role,” “determine,” “driven by,” and others which were sometimes coded as linear causal and sometimes not. Coders occasionally could only know how to interpret the earlier parts of articles by reading later parts of the article. Consequently, coding could not be conducted sequentially or out of the context of the entire article. The approach taken here is consistent with the sub-discipline of linguistics known as pragmatics, which focuses on content-within-context rather than just content (Levinson, 2000).

Narrative analysis allows the researchers to be the instruments of data collection, analysis, and interpretation. Miles and Huberman (1984) suggest four characteristics critical to the trustworthiness of the author as coder: (1) the degree of familiarity with the phenomenon and context; (2) a strong interest in the conceptual area; (3) an ability to take a multi-disciplinary approach; and (4) good investigative skills. In any research method, the researcher is a source of bias; therefore, the role and assumptions of the authors have been made explicit in this article. Both authors have research, knowledge, and practical management experience consistent with what is necessary to conduct this study.

The unit of analysis for this study is the article. Barley, Meyer, and Gash (1988, p. 45) contend that “knowing that an idea occurs in a paper may carry more information about the author’s perspective than does the frequency at which the idea occurs.” Dent and Powley (1999) found that using the paragraph as the unit of analysis in comparing different time periods can be affected by a change in style of writing. In 1957, research in the fields of social, organizational, and business inquiry was emerging. Articles in ASQ at that time, for the most part, do not reference a base of existing knowledge. In 1997, each of the articles introduces the topic of the paper with an extensive literature review, which generally takes the form of specifying linear cause and effect relationships found in prior research, resulting in huge linear causal scores if each paragraph is counted. Using the article as the unit of analysis also removes the problem of differing lengths of the articles.

Sample

We coded all full-length articles from ASQ and HBR for 1957 and 1997. Again, the two time frames were chosen to capture points near the beginning and the end of the alleged paradigm shift (Banathy, 1998). ASQ published 20 such articles in 1957 and 24 in 1997; HBR published 54 and 37, respectively, equaling 135 articles. A limitation of the study is that the specific editor, or the tenure as editor (being a first year editor or last year editor), can heavily influence a journal’s contents.

An unusual feature of this study is that the entire universe of articles, not a sample, was coded. Consequently, we do not have to resort to non-parametric statistics that make inferences from a sample to the total population. All of the articles were coded for the eight assumptions of the four dimensions listed in Table 1. Assumptions were collapsed into their respective dimensions for some of the analyses below.

Coding Manual

A coding manual outlining specific coding rules for the worldview assumptions was devised for this study. The purpose of the coding manual is to make explicit the contextual markers that identify each of the underlying assumptions. A couple of important example guidelines are discussed here. For example, an attempt was made to show the possible change in assumptions in the clearest light. Consequently, for the assumption of *competition*, instances in which competition between two organizations in the same industry was mentioned were not coded. Such instances were so frequent in both the 1957 and 1997 articles that it would have obscured the *Interrelatedness* dimension in other settings. Similarly, only “pure” instances of *linear causality* and *mutual causality* were coded. If an author assumed circular causality, for example, no score was tallied. Table 2 outlines the critical research streams for each dimension, definitions for each assumption, and example guidelines from the coding manual for each assumption.

Table 2. *Worldview Assumptions, Their Definitions, and Coding Guidelines.*

Dimension	Worldview Assumption	Definition	Coding Guidelines
Level of Explanation: Garfinkel (1991), Oppenheim and Putnam (1991), Clemson (1984), Vaill (1989), Ackoff (1981), Slife and Williams (1995), and Capra (1982).	Reductionism	The belief that an entity can be divided into its composite parts and that a cumulative explanation of the composite parts fully explains the entity.	Do not code <i>reductionism</i> if the article suggests breaking something apart in order to create new autonomous wholes. If the article promotes dividing something apart which then has to be re-integrated, that should be coded for <i>reductionism</i> .

	Holism	The belief that an entity can be best understood by considering it in its entirety. The entity has "characteristics which belong to the system as a whole and don't belong to any of its parts" (Clemson, 1984, p. 24).	Anytime the unit of analysis is listed as a relationship or an interaction, it should be coded for <i>holism</i> .
Causality: Kitcher (1991), Schwartz and Ogilvy (1979), Clemson (1984) Slife and Williams (1995) and Lincoln (1985).	Linear Causality	The expectation that the relationship between two (or more) phenomena is relatively linear (or that, for the relationship, a linear model, using few variables, serves as a useful approximation) and that temporal precedence of cause prior to effect is clearly distinguishable.	Linear causality should be coded for situations in which causality is not asserted, as long as the statement is written uni-directionally and linearly, such as, "If the money supply is increased, unemployment will not decrease."

Table 2. *Worldview Assumptions, Their Definitions, and Coding Guidelines (continued).*

Dimension	Worldview Assumption	Definition	Coding Guidelines
	Mutual Causality	The expectation that the relationship between two (or more) phenomena is heavily influenced by the presence of feedback loops. In other words, a variable may appear on both sides of the equation (meaning that cause and effect are, at least to some degree, a function of each other).	An author could write “productivity is dependent on labor and capital,” which would be coded for linear causality. Phrases such as “intertwined,” “inextricably linked,” etc. are likely indicators of mutual causality.
Observation: Popper (1985a), Popper (1985b), Prigogine and Stengers (1984), Waldrop (1992), Clemson (1984), Weick (1979), Lincoln (1985), Schwartz and Ogilvy (1979), and Briggs and Peat (1989).	Objective Observation	The belief that phenomena or information in the world are independent of the method of observation of those phenomena or information. Moreover, the phenomena or information are not altered by the act of observing.	Any statement that puts detachment, objectivity, lack of bias, etc. as a possibility (or a desirable thing) should be coded for objective observation.

	Perspectival Observation	The belief that phenomena or information in the world are dependent upon the method of observation. Moreover, the phenomena or information may be changed by the act of observing.	The mere mention of “perception” does not automatically imply coding for perspectival observation. The reference must suggest differences in perception are possible.
Interrelatedness: Wheatley & Kellner-Rogers (1996)	Competition	“That the world is hostile, that we are in a constant struggle for survival, that the consequence of error is death, that the environment seeks our destruction” (Wheatley & Kellner-Rogers, 1996, p. 11) Also, situations framed as win/lose.	Any situation that is posed as win/lose “the outcome will be success for some and failure for others...” should be coded for competition. Any win/win framings should be coded for cooperation.
	Cooperation	“We are here to create, not to defend ... [that we are in] a world that delights in its explorations. A world that makes it up as it goes along. A world that welcomes us into the exploration as good partners” (Wheatley & Kellner-Rogers, 1996, p. 11) Also, situations framed as possibly win/win.	Cooperation should not be coded unless it is seen as a natural state rather than something imposed. In other words, do not code cooperation for a sentence such as “it is important for marketing and sales to cooperate with each other.”

Coding Examples

An example of an article that was difficult to code (i.e., uncovering the author's underlying assumptions) is Swett and Hupp (1957). The body of their paper relates then-current tax law cases. As a result, scoring could occur depending on how the author wrote it. In this case, the author's assumptions are only revealed in the introduction and conclusion of the article. A second example is the article entitled, "Are Cooperatives Good Business?" by Joseph G. Knapp (1957). By the title, one might assume that this article would be indications for cooperation. Yet, the article overall is scored for *competition* because it does not assume that cooperation is a natural state of affairs. It explains procedures that can be put into place to encourage cooperation, but the article makes it clear that cooperation will not naturally arise. A final example that illustrates the difficulty in coding for underlying assumptions is Rubenstein (1957). In this article, the author sometimes laments the difficulty in showing direct, linear causal chains. Yet, his worldview is clearly traditional on this dimension: although he often writes phrases that suggest that with R&D, one cannot be sure that X inputs will give Y outputs, he believes that such a formulation is desirable and natural. Consequently, this article is coded for *linear causality*.

Reliability and Validity

The coding process was refined in many ways. An iterative process was used in which sample articles were read to obtain clarification about the coding process and the guidelines for the coding manual. Any problems with any aspect of the coding were surfaced and resolved at this point. Both authors jointly went through articles. When differences arose, a contextual marker was either created or revised. This process continued for several iterations until many articles consecutively were read without a difference of coding interpretation.

The primary question of internal validity is, "Does the classification relate to the causes or consequences hypothesized?" This study assured construct validity by selecting dimensions from previous research and relevant theories, and by using assumption definitions from previous research and relevant theories. Many of the classical threats are not applicable when there is not a knowing subject. The primary question of external validity is, "Do the findings depend upon the specific data, methods, or measurements of this particular study?" According to Berelson (1952), if there is high agreement about definitions, "the problem of validity is no problem at all" (p. 169); in this study, clear definitions were taken directly from earlier work in which these suitable definitions were offered.

Interrater Agreement and Reliability

All of the articles were coded by the first author and half of the sample was coded by the second author. Not surprisingly, with the article as the unit of analysis, high levels of interrater agreement and reliability were achieved. Cohen's Kappa was used to calculate the interrater agreement (Fleiss, 1981; Shrout & Fleiss, 1979). In each case,

the Kappa value was at least 0.85 and all statistics were highly significant. Fleiss (1981) considers Kappa levels above 0.75 as excellent. Cronbach's alpha was the metric used to assess interrater reliability. Each dimension had a reliability metric of at least 0.92, suggesting high levels of reliability (Table 3). Given that the agreement and reliability were so high, there was no need to run further analyses such as those suggested by Demaree and Wolf (1984) and James, Demaree, and Wolf (1993).

Table 3. *Intercoder Agreement and Reliability by Dimension.*

Dimension	Cohen's Kappa	Cronbach's Alpha
Level of Explanation	0.91*	0.95
Causality	0.92*	0.96
Observation	0.85*	0.92
Interrelatedness	0.88*	0.94

* $p < .00001$; $N=67$.

Results

The research findings report coding data for the full set of articles from 1957 and 1997. Generally, we found more instances of EWV than TWV assumptions over time. The only exception is *Observation* in ASQ. Furthermore, in 1997, TWV assumptions remain strongly present in both journals, particularly *linear causality*. These raw percentages suggest that by 1997, ASQ articles were including fewer TWV assumptions (except for *objective observation*) and more EWV assumptions. This situation also holds true for HBR—all TWV assumptions decreased whereas all EWV assumptions increased. Table 4 shows the coding tallies for ASQ and HBR for 1957 and 1997.

Table 4. *Worldview Assumptions in Administrative Science Quarterly and Harvard Business Review articles, 1957 and 1997.*

Administrative Science Quarterly					
Worldview Assumption	1957	Percent	1997	Percent	1997-1957
Reductionism	19.0	95	16.7	83	-2.3
Holism	11.0	55	13.3	67	2.3
Linear Causality	20.0	100	19.2	96	-0.8
Mutual Causality	3.0	15	4.2	21	1.2
Objective Observation	12.0	60	14.2	71	2.2
Perspectival Observation	14.0	70	15.0	75	1.0
Competition	18.0	90	13.3	67	-4.7
Cooperation	4.0	20	7.5	38	3.5

ASQ 1957 N=20; ASQ 1997 N=24; for comparison, all columns are adjusted to N=20.

Table 4. *Worldview Assumptions in Administrative Science Quarterly and Harvard Business Review articles, 1957 and 1997 (continued).*

Worldview Assumption	Harvard Business Review				1997-1957
	1957	Percent	1997	Percent	
Reductionism	16.7	83	14.6	73	-2.1
Holism	7.4	37	13.0	65	5.6
Linear Causality	20.0	100	18.9	95	-1.1
Mutual Causality	1.5	7	1.6	8	0.1
Objective Observation	18.9	94	14.1	70	-4.8
Perspectival Observation	5.6	28	9.7	49	4.2
Competition	17.4	87	15.1	76	-2.3
Cooperation	4.4	22	7.6	38	3.1

HBR 1957 N=54, HBR 1997 N=37; for comparison, all columns are adjusted to N=20.

By 1997, although the TWV assumptions were still appearing more often than EWW assumptions (except for *Observation* in ASQ), the gap was generally narrowing. The closest dimension was *Level of Explanation*—*reductionism* and *holism* were appearing with nearly the same frequencies. The clear “outlier” is *mutual causality*. It appears less often in both journals in both years coded. It increased only slightly over the forty-year period, despite calls for its importance (e.g., Whitehead, 1938). However, *linear causality* appeared in all articles of both journals.

The largest drop in TWV assumptions in ASQ from 1957 to 1997 was *competition*, and the largest drop in HBR was *objective observation*. The EWW assumption with the biggest increase in ASQ over the forty-year period is *cooperation*, and the biggest increase in HBR was *holism*. *Perspectival observation* was also over 20 percent higher in HBR from 1957 to 1997.

When comparing assumptions between ASQ and HBR (Table 5), 1957 ASQ articles had more instances of worldview assumptions except for *objective observation*, *cooperation*, and *linear causality*; the latter was at the maximum value for both journals. The greatest difference in the journals was in the *Observation* dimension. ASQ was far more *perspectival* than HBR. The second largest difference was in *Level of Explanation*: ASQ had more instances of both *reductionism* and *holism*.

By 1997, ASQ still had more appearances of worldview assumptions (emerging or traditional) leading in each case except for *competition* and *cooperation*. The gap between the journals though, had generally narrowed (as indicated by the lower mean of the absolute value of the date in the 1997 column of Table 5).

Table 5. *Comparison of Worldview Assumptions in Administrative Science Quarterly and Harvard Business Review articles, 1957 and 1997.*

Worldview Assumption	1957 (ASQ-HBR)	1997 (ASQ-HBR)	Difference (1997-1957)
Reductionism	2.3	2.1	-0.3
Holism	3.6	0.4	-3.2
Linear Causality	0.0	0.2	0.2
Mutual Causality	1.5	2.5	2.5
Objective Observation	-6.9	0.1	7.0
Perspectival Observation	8.4	5.3	-3.2
Competition	0.6	-1.8	-2.4
Cooperation	-0.4	-0.1	0.4

The rightmost column in Table 5 is a measure of the rate of change, showing which journal is moving more quickly toward EWV assumptions. In some cases, ASQ is moving faster than HBR and in other cases HBR is moving faster than ASQ. Because the far right column is calculated by subtracting 1957 from 1997 and HBR from ASQ, it can be interpreted as follows: For a TWV assumption (*reductionism*, *linear causality*, etc.) a negative number means that ASQ is moving faster than HBR in *reducing* the instances of that assumption. Likewise, if the number is positive, HBR is moving faster than ASQ in reducing the instances of that assumption. For a EWV assumption (*perspectival observation*, *cooperation*, etc.) a negative number means that HBR is moving faster than ASQ in *increasing* that assumption. Conversely, if the number is positive, ASQ is moving faster than HBR in increasing instances of that assumption. The results indicate that ASQ is moving faster than HBR in reducing *reductionism* and *competition* and increasing *mutual causality* and *cooperation*. HBR is moving faster than ASQ in reducing *linear causality* and *objective observation*, and in increasing *holism* and *perspectival observation*.

From a different angle—analyzing ASQ and HBR separately—we collapse the worldview assumptions into their respective dimensions (Tables 6 and 7). In this analysis, we made an evaluation of which assumption predominated in a given article. For example, if an article had the presence of both *reductionism* and *holism*, the coder had to make a judgment about which seemed to be the stronger assumption for the author. Consequently, for a given article, only one assumption in a dimension could be tallied. These judgments were made using guidance provided in the coding manual. These data are somewhat consistent with those presented in Table 4. In ASQ, the TWV assumptions predominate except for *Observation* in both 1957 and 1997. In all cases, the EWV assumptions gained ground over the forty-year period. The largest gain was in *Interrelatedness*, which added 23.5 percent to the 1957 score. (Note: negative numbers in the far right column indicate an increase in EWV since the calculation made involved subtracting EWV from TWV).

Table 6. *Worldview Dimensions in Administrative Science Quarterly, comparing 1957 and 1997.*

Dimension*	1957* *	Perce nt	1997* **	Perce nt	(1997- 1957)	Percent
Level of Explanation	16.0	80	14.2	71	-1.8	-8.0
Causality	18.0	90	17.5	88	-0.5	-2.5
Observation	9.0	45	8.3	42	-0.7	-3.5
Interrelatedness	18.0	90	13.3	67	-4.7	-23.5

* Assumptions were collapsed into dimensions by subtracting TWV-EWV; ** N=20 -- all columns are adjusted to N=20; *** N=24.

The story for HBR (Table 7) is somewhat similar. The TWV assumptions predominate in all cases in both 1957 and 1997, and the EWV assumptions gained ground over the forty-year period, except for *Causality*. There were large gains in the other three dimensions with *Observation* adding 25.5 percent to its 1957 score.

Table 7. *Worldview Dimensions in Harvard Business Review, comparing 1957 and 1997.*

Dimension*	1957* *	Perce nt	1997** *	Perce nt	(1997- 1957)	Percent
Level of Explanation	14.4	72	10.3	51	-4.2	-21.0
Causality	18.9	94	19.5	97	0.6	3.0
Observation	17.0	85	11.9	59	-5.1	-25.5
Interrelatedness	15.9	80	13.0	65	-3.0	-15.0

* Assumptions were collapsed into dimensions by subtracting TWV-EWV; ** N=54 -- all columns are adjusted to N=20; *** n=37.

The next analysis—detecting velocity at the level of the dimension—consists of collapsing the worldview assumptions into their respective dimensions (note: Table 8 presents data comparing the two journals as was done in Table 5, but in this case the coding was of a single dimension for each article, as was done in Tables 6 and 7). Table 8 reflects how the worldview dimensions have changed over the forty-year period relative to the two journals. The rightmost column provides a measure of which journal is moving “faster” toward including EWV assumptions. If the number is positive, HBR is moving faster than ASQ. Conversely, if the number is negative, ASQ is moving faster than HBR. As can be seen, the results are mixed with ASQ moving faster toward the EWV assumption on the dimensions of *Causality* and *Interrelatedness*. HBR is moving faster on *Level of Explanation* and *Observation*.

Table 8. *Comparison of Dimensions in Administrative Science Quarterly and Harvard Business Review articles, 1957 and 1997.*

Dimension	1957 (ASQ-HBR)	1997 (ASQ-HBR)	Difference (1997-1957)
Level of Explanation	1.6	3.9	2.3
Causality	-0.9	-2.0	-1.1
Observation	-8.0	-3.6	4.5
Interrelatedness	2.1	0.4	-1.7

Findings

Several authors have suggested that a paradigm shift is occurring in the worldview of people in organizations (Oliver & Gershman, 1989). A comparison of ASQ and HBR articles from 1957 to 1997 provides limited evidence of such a shift. The findings, supported by descriptive statistics, sustain a portion of our hypotheses.

The first set of hypotheses compares EWV and TWV assumptions across the 40-year timeframe.

H1a: 1957 articles will make primarily TWV assumptions and 1997 articles will still make predominantly TWV assumptions.

As Tables 4, 6, and 7 shows, the 1957 articles do make more explicit TWV assumptions than EWV assumptions with the exception of the *Observation* dimension in ASQ. The 1997 articles still make predominantly TWV assumptions, again, with the exception of *Observation*.

H1b: 1997 articles in both journals will contain more EWV assumptions than 1957 articles in both journals. In other words, there will be a modest increase in EWV assumptions.

Tables 4, 6, and 7 show that all of the EWV assumptions did increase from 1957 to 1997 in both journals. Our results imply that a modest shift is occurring in the assumptions of *holism*, *perspectival observation*, and *cooperation*.

H1c: Mutual causality will appear substantially less frequently than linear causality for both journals in both years.

Proponents of *mutual causality* (Follett, 1924) will be especially disappointed that Tables 4, 6, and 7 showed no meaningful increase in instances of *mutual causality* over the 40-year period in either journal. Although, as described above, there are a number of studies that have found that the linear causal model was not effective; overall, a shift to a more expansive causal modeling does not appear in the journal articles coded.

The second set of hypotheses compares ASQ and HBR with each other.

H2a: HBR will contain a greater percentage of EWV assumptions in 1997 than will ASQ.

This hypothesis is mostly not supported. In the instances of assumptions in 1997, ASQ is higher than HBR on every EWV assumption with the exception of *cooperation*, which is essentially a tie (Table 4). When the assumptions are collapsed into dimension ratings (Tables 6 and 7), HBR is more EWV than ASQ on *Level of Explanation* and they are essentially tied on *Interrelatedness*. ASQ, though, is more EWV than HBR on *Causality* and *Observation*.

H2b: Holism will be greater in HBR in 1997 than in ASQ in 1997.

This hypothesis is not supported. Table 4 shows that *holism* appeared in 67 percent of the 1997 ASQ articles and in 65 percent of the HBR articles.

H2c: Mutual causality will be greater in HBR in 1997 than in ASQ in 1997.

This hypothesis is not supported. Table 4 shows that *mutual causality* appeared in 21 percent of the 1997 ASQ articles and in 8 percent of the HBR articles.

H2d: Perspectival observation will be greater in HBR in 1997 than in ASQ in 1997.

This hypothesis is not supported. Table 4 shows that *perspectival observation* appeared in 75 percent of the 1997 ASQ articles and in 49 percent of the HBR articles.

H2e: Cooperation will be greater in HBR in 1997 than in ASQ in 1997.

This hypothesis is not supported. Table 4 shows that *cooperation* appeared 38 percent of the time both in 1997 ASQ and HBR articles.

The third set of hypotheses make predictions about which journal is changing faster than the other in worldview assumptions.

H3a: Perspectival observation will be increasing more rapidly in ASQ than HBR.

This hypothesis is not supported. Tables 5 and 8 show that HBR is increasing more rapidly than ASQ in perspectival observation. This finding is partially explained by the difference in 1957 “starting point.” Perspectival observation already appeared in 70 percent of the 1957 ASQ articles. Yet, it appeared in only 28 percent of the HBR articles. Consequently, it was “easier” for HBR to make a more rapid increase.

H3b: Cooperation will be increasing more rapidly in ASQ than HBR.

This hypothesis is slightly supported. ASQ went from 20 to 38 percent (1957 to 1997) while HBR went from 22 to 38 percent. Therefore, ASQ's rate of change is slightly higher. Table 8 shows that ASQ made a larger rate change in the *Interrelatedness* dimension because of a larger reduction in *competition* than HBR.

H3c: Holism will be increasing more rapidly in HBR than ASQ.

This hypothesis is supported. As shown in Tables 5, HBR increased its rate of the *holism* assumption more rapidly than ASQ. Table 8 shows that HBR also increased the rate of the *Level of Explanation* dimension more rapidly than ASQ.

Pattern Observations

We turn our attention briefly to pattern observations regarding *Administrative Science Quarterly* and the *Harvard Business Review*. Reading all of these articles was an enlightening exercise. Furthermore, reading and analyzing academic and practitioner literature would be a fruitful activity for any organizational researcher. In addition to the data reported earlier, we discovered a number of interesting patterns of the journals and of the changes over a forty-year period. For example, the style of articles from both journals in 1957 had greater resemblance than the articles from both journals in 1997 in format and reporting style. Articles in 1957 reported observations rather than presented in-depth literature reviews and statistical analyses of findings.

Furthermore, the articles from each journal in 1997 diverge in content, format, statistical analysis, and style. Articles from both journals in 1997 also differ along several other dimensions. As HBR's audience is managers and practitioners, articles are written such that content may be grasped quickly. HBR has become managers' source for actionable ideas. Significant findings are outlined in charts and tables, while major, bullet-point headings signpost readers easily from section to section. Additionally, HBR does not, as does ASQ, present in-depth statistics nor does it present extensive literature reviews.

A noteworthy observation about the 1997 HBR articles is that many of them serve the role of identifying some dynamic heretofore described or thought of as one-dimensional, and then pointing out the value in segmenting the concept. For example, Gilmore and Pine (1997) argue that customization, generally, is not enough for success. An organization must decide to be a collaborative, adaptive, cosmetic, or transparent customizer. Likewise, Vishwanath, and Mark (1997) contend that market share alone does not drive profitability. Rather, an organization must know whether its product or service is hitchhiker, high road, low road, or dead end. A typical HBR article pattern is to critique the dynamic as one-dimensional; offer a replacement, multidimensional concept; and provide an example of each dimension from a major organization.

Comparing ASQ articles from 1957 and 1997, we note that recent articles tend to be more quantitative and driven by statistics. Later articles include considerable literature reviews that serve as the backbone of present research. Earlier articles in both journals did not draw upon prior research because the presence of past literature was limited.

The 1997 ASQ articles are often on topics more esoteric than HBR. There is a much greater emphasis on theory development, and quantitative statistics about cases at hand are used to bolster theory development.

Conclusions

The general findings are that the TWV was dominant in both journals in 1957 and remains so in 1997, although the gap has greatly narrowed. The EWV assumptions are ascending. In 1957, there was a large difference between the worldview assumptions of ASQ and HBR with ASQ somewhat higher in emerging worldview assumptions. This gap has also greatly narrowed. These findings have tremendous implications for the content of these journals, as well as the dialogue surrounding organizational practice.

If the EWV assumptions continue to increase, the field will likely see more theory development and discussion of ideas and approaches that include EWV assumptions. Examples include appreciative inquiry (assumes *perspectival observation*), 360 degree feedback (assumes *holism* and *perspectival observation*), scenario planning (assumes *holism* and *mutual causality*), and servant leadership (assumes *holism* and *cooperation*). In the *Academy of Management Review's* special issue on theory development, the editors note that all nine articles selected could be clustered around three themes, each of which includes EWV assumptions (Elsbach, Sutton, & Whetten, 1999). This special issue addressed the development of the field over the previous 10 years. The three themes are "metatheorizing and the development of metatheories" (*holism*), "theories of process and time" (*mutual causality, holism*), and "new approaches for building 'thick' theory" (*perspectival observation, holism*). The assumptions authors make frame the language and models operative in organizations and organizational research.

An expression in vogue today is "internet time." It connotes the rapid changes that can occur over very short periods. There are many popular books suggesting that humans' ways of thinking are also changing rapidly. This study reviewed changes over a forty-year period and suggests that a change in thinking over the timeframe 1957-1997 as evidenced in the leading academic and practitioner journals has been modest at best. This, of course, is scant evidence and many additional studies need to be conducted to confirm or disconfirm this finding. Other sources could be coded and other timeframes could be used.

Different research methodologies, which may not be chronological, could also offer evidence on the question of worldview shift. Organizational members could be given a survey instrument of worldview assumptions to surface current philosophical assumptions in use. Case studies could be conducted in organizations to determine whether organizational practice seems to be more consistent with EWV assumptions today than in the past. Participants could be studied in simulated settings in which they make decisions that reveal their underlying thought patterns. Significantly more work needs to be performed to determine whether worldview assumptions are in fact changing.

References

- Abrahamson, E. (1996). Management fashion. Academy of Management Review, 21(1), 254-285.
- Ackoff, R. L. (1981). Creating the corporate future: Plan or be planned for. New York: John Wiley & Sons.
- Banathy, B. H. (May-June 1998). Evolution guided by design: A systems perspective. Systems Research and Behavioral Science, 15, 161-172.
- Begun, J. W. (1994). Chaos and complexity: frontiers of organization science. Journal of Management Inquiry, 3(4), 329-335.
- Berelson, B. (1952). Content analysis in communication research. Glencoe, IL: The Free Press Publishers.
- Beyer, J. M. (1982). The Utilization of Organizational Research [Special Issue]. Administrative Science Quarterly, 27(4), 588-590.
- Boje, D. M., Gephart Jr., R. P., & Thatchenkery, T. J. (1996). Postmodern management and organization theory. Thousand Oaks, CA: Sage Publications.
- Bradbury, H., & Clair, J. A. (1999). Promoting sustainable organizations with Sweden's natural step. Academy of Management Executive, 13(4), 63-74.
- Briggs, J., & Peat, F. D. (1989). Turbulent mirror: An illustrated guide to chaos theory and the science of wholeness. New York: Harper and Row.
- Capra, F. (1982). The turning point: science, society, and the rising culture. New York: Simon and Schuster.
- Capra, F. (1993). A systems approach to the emerging paradigm. In M. Ray & A. Rinzler (Eds.), The new paradigm in business: Emerging strategies for leadership and organizational change. New York: G. P. Putnam's Sons.
- Carson, P. P., Lanier, P. A., Carson, K. D., & Birkenmeier, B. J. (1999). A historical perspective on fad adoption and abandonment. Journal of Management History, 5(6), 320-333.
- Clegg, S. (1981). Organization and control. Administrative Science Quarterly, 26(4), 545-562.
- Clemson, B. (1984). Cybernetics: a new management tool. Tunbridge Wells, Kent, England: Abacus House.

Dean, L. W., & Bowen, D. E. (1994). Management theory and total quality: Improving research and practice through theory development. Academy of Management Review, 19(3), 392-418.

Demaree, R. G., & Wolf, G. (1984). Estimating within-group interrater reliability with and without response bias. Journal of Applied Psychology, 69(1), 85-98.

Dent, E. B. (1999). Complexity science: A worldview shift. Emergence: A Journal of Complexity Issues in Organizations and Management, 1(4), 5-19.

Dent, E. B., & Holt, C. G. (2001). CAS in war, bureaucratic machine in peace: The U. S. Air Force example. Emergence: A Journal of Complexity Issues in Organizations and Management, 3(3), 90-107.

Dent, E. B., & Powley, E. H. (1999). Administrative Science Quarterly: Canary of worldview shift? In Castell, et al. (Eds.), Synergy matters: Working with systems in the 21st century. New York: Kluwer Academic/Plenum Publishers.

Dooley, K. J. (1997). A complex adaptive systems model of organization change. Nonlinear Dynamics, Psychology, and Life Sciences, 1(1), 69-97.

Duncan, W. J. (1974). Transferring management theory to practice. Academy of Management Journal, 17(4), 724-738.

Elsbach, K. D., Sutton, R. I., & Whetten, D. A. (1999). Perspectives on developing management theory, circa 1999: Moving from shrill monologues to (relatively) tame dialogues. Academy of Management Review, 24(4), 627-633.

Ewing, D. W. (1990). Inside the Harvard Business School: Strategies and lessons of America's leading school of business. New York: Times Books.

Fleiss, J. L. (1981). The measurement of interrater agreement. Statistical methods for rates and proportions. New York: John Wiley and Sons.

Fondas, N. (1997). Feminization unveiled: Management qualities in contemporary writings. Academy of Management Review, 22(1), 257-282.

Follett, M. P. (1924). Creative experience. New York: Longmans, Green and Co.

Galbraith, J. K. (1976). Affluent society (3rd ed.). Boston: Houghton Mifflin Company.

Galbraith, J. R. (1980). Applying theory to the management of organizations. In W. M. Evan, (Ed.), Frontiers in organization and management. New York: Praeger.

Garfinkel, A. (1991). Reductionism. In R. Boyd, P. Gasper, & J. D., Trout, (Eds.), The philosophy of science (pp. 443-459). Cambridge: The MIT Press.

- Gergen, K. J. (1995) Global organization: From imperialism to ethical vision. Organization, 2(3/4), 519-532.
- Gersick, C. J. G. (1991). Revolutionary change theories: A multilevel exploration of the punctuated equilibrium paradigm. Academy of Management Review, 16(1), 10-36.
- Gibson, J. W., & Tesone, D. V. (2001). Management fads: Emergence, evolution, and implications for managers. Academy of Management Executive, 15(4), 122-133.
- Gilmore, J. H. & Pine II, B. J. (1997). The four faces of customization. Harvard Business Review, 75(1), 91-101.
- Hambrick, D. C. (1994). What if the academy actually mattered? Academy of Management Review, 19(1), 11-16.
- Harmon, W. (1998). Global mind change (2nd ed.). San Francisco: Berrett-Koehler.
- Holt, K. (1999). Management and organization through 100 years. Technovation, 19, 135-140.
- Hoskisson, R. E., Hitt, M. A., & Wan, W. P. (1999). Theory and research in strategic management: Swings of a pendulum. Journal of Management, 25(3), 417-456.
- Jacobs, T. O., & Jaques, E. (1987). Leadership in complex systems. In J. Zeidner (Vol. Ed.), Human Productivity and Enhancement: Organizations, Personnel, and Decision Making: Vol. 2. New York: Praeger.
- James, L. R., Demaree, R. G., & Wolf, G. (1993). An assessment of within-group interrater agreement. Journal of Applied Psychology, 78(2), 306-309.
- Johnson, B. (1992). Polarity management: Identifying and managing unsolvable problems. Amherst: HRD Press, Inc.
- Kitcher, P. (1991). The pragmatics of explanation. In R. Boyd, P. Gasper, & J. D. Trout, (Eds.), The philosophy of science (pp. 317-328). Cambridge: The MIT Press.
- Knapp, J. G. (1957). Are cooperatives good business? *Harvard Business Review*, 35(1), 57-64.
- Levinson, S. C. (2000). Presumptive meanings: The theory of generalized conversational implicature. Cambridge, MA: MIT Press.
- Lincoln, Y. S. (Ed.). (1985). Introduction. Organizational theory and inquiry. Beverly Hills: Sage Publication.

Maguire, S., & McKelvey, B. (1999). Complexity and management: Moving from fad to firm foundations. Emergence: A Journal of Complexity Issues in Organizations and Management, 1(2), 19-61.

Martin, W. F., & Lodge, G. C. (1975, November). Our society in 1985 - business may not like it. Harvard Business Review, 53(6), 143-152.

Miles, M. B., & Huberman, A. M. (1984). Qualitative data analysis: a sourcebook of new methods. Beverly Hills: Sage Publications.

Niosi, J. (1999). Fourth-generation R&D: From linear models to flexible innovation. Journal of Business Research, 45, 111-117.

Offermann, L. R., & Spiros, R. K. (2001). The science and practice of team development. Academy of Management Journal, 44(2), 376-392.

Oliver, D. W., & Gershman, K. W. (1989). Education, modernity, and fractured meaning: Toward a process theory of teaching and learning. Albany: State University of New York Press.

Oppenheim, P., & Putnam, H. (1991). Unity of science as a working hypothesis. In R. Boyd, P. Gasper, & J. D. Trout (Eds.). The Philosophy of Science (pp. 405-428). Cambridge: The MIT Press.

Popper, K. R. (1985a). Truth and approximation to truth. In D. Miller (Ed.). Popper selections (pp. 181-198). Princeton: Princeton University Press.

Popper, K. R. (1985b). Realism. In D. Miller (Ed.). Popper selections (pp. 220-225). Princeton: Princeton University Press.

Prigogine, I., & Stengers, I. (1984). Order out of chaos: Man's new dialogue with nature. Toronto: Bantam Books.

Rubenstein, A. H. (1957). Setting criteria for R&D. Harvard Business Review, 35(1), 95-104.

Schwartz, P., & Ogilvy, J. (1979). The emergent paradigm: Changing patterns of thought and belief. Menlo Park, CA: SRI International.

Shrout, P. E., & Fleiss, J. L. (1979). Intraclass correlations: Uses in assessing rater reliability, Psychological Bulletin, 86, 420-428.

Singleton, R., Straits, B., & Straits, M. M. (1993). Approaches to social research (2nd ed.). New York: Oxford University Press.

Slife, B. D., & Williams, R. N. (1995). What's behind the research: Discovering hidden assumptions in the behavioral sciences. Thousand Oaks, CA: Sage Publications, Inc.

Stablein, R. (1993, July). Research residue: An analysis of organizational and managerial journal publications and authorships. Paper presented to the 11th EGOS Colloquium, Paris.

Stone to step down from post as editor of Harvard Review. (1998, October 29). Wall Street Journal, p. B5.

Swett, R. D., & Hupp, J. W. (1957). Legal hazards of interstate business. Harvard Business Review, 35(4), 81-88.

Thompson, J. D. (1956). On building an administrative science. Administrative Science Quarterly, 1(1), 102-111.

Usdiken, B., & Pasadeos, Y. (1995). Organizational analysis in North America and Europe: A comparison of co-citation networks. Organization Studies, 16(3), 503-526.

Vaill, P. B. (1989). Managing as a performing art: New ideas for a world of chaotic change. San Francisco: Jossey-Bass.

Vaill, P. B. (1996). Learning as a way of being: Strategies for survival in a world of permanent white water. San Francisco: Jossey-Bass, Inc.

Vishwanath, V., & Mark, J. (1997). Your brand's best strategy. Harvard Business Review, 75(3), 123-129.

Waldrop, M. M. (1992). Complexity: The emerging science at the edge of order and chaos. New York: Simon and Schuster.

Weber, R. P. (1985). Basic content analysis. Beverly Hills: Sage Publications.

Weick, K. E. (1985). Sources of order in underorganized systems: Themes in recent organizational theory. In Y. S. Lincoln (Ed.). Organizational theory and inquiry. Beverly Hills: Sage Publications.

Weick, K. E. (1999). Theory construction as disciplined reflexivity: Tradeoffs in the 90s, Academy of Management Review, 24(4), 797-806.

Wheatley, M. J. (1992). Leadership and the new science: Learning about organization from an orderly universe. San Francisco: Berrett-Koehler Publishers.

Wheatley, M. J., & Kellner-Rogers, M. (1996). A simpler way. San Francisco: Berrett-Koehler Publishers.

White, O. F. (1990). Reframing the authority/participation debate. In G. L. Wamsley, et al (Eds.). Refounding public administration, (pp. 182-245). Newbury Park, CA: Sage Publications.

Whitehead, A. (1938). Modes of thought. NY: Free Press.

Wilber, K. (1995). Sex, ecology, spirituality: The spirit of evolution. Boston: Shambala.

Woodward, K. L. (1994, July 18). More than ourselves: Havel's declaration of interdependence. Newsweek, p. 66.