

Multiple Paradigms of Nursing Science

Of the many controversies that have accompanied the growth of nursing as a discipline, few have been debated as long and as vigorously as the question of which paradigm should guide nursing science. Despite more than 20 years of discussion, the question remains unresolved. This article discusses the concept of paradigm, explores the paradigms that influence nursing science, and presents a comparison of the advantages and disadvantages of theoretical unification and mutiparadigmism. Additionally, the implications and consequences of mutiparadigmism for the present and future development of nursing as a science within a practice discipline are presented. Key words: *empirical methods, interpretative methods, multiple paradigms, nursing science, practice discipline*

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A DISCIPLINE is a community of interest that is organized around the accumulated knowledge of an academic or professional group.¹ The discipline of nursing represents the body of knowledge related to the study of caring in human health that encompasses both the science and art of nursing.^{1,2} Within the discipline, nursing science is devoted to answering questions of interest to the profession and adding to the body of knowledge. Nursing practice represents the art of the discipline.

The unique perspective of the discipline is exemplified by the metaparadigm, which describes, from a global perspective, the concepts and themes chosen as the focus of the discipline and those that differentiate it from others.³ The metaparadigm concepts of nursing generally are agreed to be person, environment, nursing, and health; however, these are not exclusive.²⁻⁵ The metaparadigm also reflects the shared values and beliefs of the discipline. For example, nurses subscribe to common values and beliefs including respect for persons, caring, autonomy of persons, health promotion, illness

prevention, professional competence, and ethical conduct.^{1,6}

While nursing scientists are in general agreement about the metaparadigm, they often are in disagreement about the paradigms of the discipline. This disagreement stems in part from failure to agree on a single definition of the term; as a result, writers often are describing different concepts. However, the debate also stems from the idea that the discipline must have a predominant paradigm in order to demonstrate progress as a legitimate science. Because primary paradigms in nursing are considered to represent fundamentally different patterns of knowing and perspectives of reality,³ these disagreements also focus on the ability of paradigms to answer questions and to explore reality in different ways, the relevance of different types of knowledge for the discipline, and the congruence between paradigm and metaparadigm concepts.

Of the many controversies that have accompanied the growth of nursing as a discipline, few have been debated as long or as vigorously as the question of which paradigm should guide nursing science. Despite more than 20 years of discussion, the question remains unresolved. This article discusses the concept of paradigm, explores the paradigms that influence nursing science, and compares and contrasts the advantages and disadvantages of theoretical unification and multiparadigmism. In addition, the implications and consequences of multiparadigmism for the present and future development of nursing as a science within a practice discipline are presented.

THE NATURE OF PARADIGMS

Many definitions of the word "paradigm" exist. Webster defines it first as "a pattern, ex-

ample, or model" and secondarily as "an overall concept accepted by most people in an intellectual community, as a science, because of its effectiveness in explaining a complex process, idea, or set of data."^{7(p979)} A paradigm also has been described as an abstract view or perspective of a discipline, a set of systematic beliefs, a world view, and a theory.⁸ Kuhn,⁸ who popularized the term, provided multiple descriptions of a paradigm in the first edition of his book, yet failed to precisely define it. In an effort to resolve the confusion that arose from his varying uses of the term, Kuhn later provided two definitions for a paradigm. In the primary sense of the word, a paradigm is a "disciplinary matrix," the ordered elements of which are held by the practitioners of a discipline. According to this definition, a paradigm includes symbolic generalizations (laws and definitions), shared beliefs, and shared values. In an alternate use, Kuhn defines paradigms in a more circumscribed manner as exemplars or shared examples. Exemplars are a part of the disciplinary matrix by which students learn to solve problems through the application of concrete solutions.

Nursing authors also have contributed to a lack of coherence about paradigms. Fawcett stated that "... paradigms are represented by diverse conceptual models of nursing that provide distinctive contexts for the metaparadigm concepts and themes."^{4(p2)} Newman⁹ states that paradigms are pervasive in nature and that a paradigm's values are deeply imbedded in its followers. Kim defines paradigms as "... general scientific perspectives and traditions,"^{10(p168)} because nursing science is developing from various research traditions and the discipline's problems require different perspectives. Lincoln and Guba define a paradigm as "... a sys-

tematic set of beliefs, together with their accompanying methods.”^{11(p15)} Hardy,¹² citing Kuhn, defines the paradigm as a gestalt or world view, a metaparadigm that is broader than theory and precedes it. The definition of paradigm as a world view or philosophy that reflects the values and beliefs embraced by a segment of the discipline does not seem useful for the development of nursing science because values and beliefs seldom are amenable to change and the nature of science is about change. The authors of this article prefer Kim’s definition because it infers methodologies that scientists apply to solve problems regardless of their philosophy and perspective or lens through which phenomena can be viewed. Kim’s definition of paradigm is used throughout this article.

Paradigms are important to scientific communities because they not only answer the discipline’s most important questions—or puzzles, as Kuhn⁸ called them—but also shape the way scientists “do” research. The ontological and epistemological assumptions of a paradigm drive its methodologies. Scientists who share a paradigm “. . . are committed to the same rules and standards for scientific practice.”^{8(p11)} A paradigm is useful in that it provides scientists with a general orientation to phenomena, a way of organizing perceptions, criteria for selecting problems, guidelines for investigations and methods, and limitations on possible solutions. Thus, a paradigm provides a guiding framework for resolving problems, conducting research, and deriving theories and laws. For nursing scientists, paradigms direct the perspective from which research questions are asked, problems are investigated, research is designed as well as what methods are used and how data are collected, analyzed, and interpreted.²

PARADIGMS IN NURSING

Nursing science is characterized by two predominant paradigms that are broadly classified as the empiricist and the interpretative. These two paradigms represent fundamentally opposing views of knowledge development and reality. Several conceptual frameworks of nursing depict the metaparadigm concepts from the perspective of the different paradigms. The contribution of the primary paradigms to nursing science will be discussed and examples of conceptual frameworks that are derived from them will be presented. The cardinal features of the two paradigms are presented in Table 1.

Empiricism is based on the assumption that what is known can be verified through the senses.⁵ The ontological assumption of empiricism is that there is one reality, which is out there somewhere and can be validated through the senses. In the empiricist paradigm, knowledge is developed through sense observation of the natural world in order to verify and justify theories that describe, predict, and prescribe. Research studies in this tradition focus on the context of justification: Theories depicting reality are reduced into components that can be either validated or disproved empirically in order to justify the relationships set forth. Empiricism also has been described as reductionistic because parts rather than the whole of phenomena are examined and because of the positivistic emphasis on theory reduction.

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Table 1. A comparison of the empiricist and interpretative paradigms

	Empiricism	Interpretative
Alternative names	Mechanistic Positivism	Organismic
Nursing Paradigms	Particulate-deterministic Totality	Unitary-transformative Simultaneity
Ontology	One reality Reality is independent of context Truth can be determined Certainty is possible	Multiple realities Composite reality Meaning is grounded in experience Truth can never be determined
Epistemology	Reality can be verified by the senses Value-free observations Cognition and perception are separate entities	Knowledge is derived from experience, art, ethics Value-laden observations Cognition, perception and experience affect what is seen or conceptualized
Purpose	Verification and justification Theory testing Identify cause and effect	Shared meaning Discovery and meaning Theory generating Increase understanding and knowledge of lived reality
Human beings are:	Machines The sum of their parts Closed systems	Living organisms Holistic beings Greater than the sum of their parts Open systems
Researcher is	Observer Objective Uninvolved	The instrument Co-creating Involved in the process
Phenomena	Can be reduced to parts	Holistic view Irreducible Context dependent
Behavior	Predictable, linear	Probabilistic Unpredictable
Movement	Organism is passive or at rest Exterior forces cause movement	Active From within organism
Methodologies	Quantitative Observation Control	Qualitative Attention to context and interpretation Interview, observation
Research question	What is the relationship of A and B? What is the effect of A on B? Hypothesis testing	What is the meaning of . . . ? What is the structure of the lived experience?

Table 1 continues.

Table 1 (*continued*)

	Empiricism	Interpretative
Designs	Experimental Quasi-experimental	Emergent Phenomenology Grounded theory
Sample	Random selection Random assignment Convenience	Purposive Theoretical Volunteer
Data collection techniques	Instrumentation Observation	Interviews Observation Analysis of art, literature, documents
Data analysis	Deductive Statistical analysis	Inductive Interpretation Constant comparative method

Empiricism has its roots in the logical positivist school of philosophy. Logical positivism, also called logical empiricism and the received view, was espoused by a group of philosophers known as the Vienna school.^{11,13-14} Positivists disavowed religious and metaphysical explanations of reality and analyzed theories for logical patterns of reasoning that could be verified in reality.¹⁴ Logical positivism, however, was an extremist variant of empiricism because it espoused the idea that the only reality was that which could be observed in the world.^{13,15} Thus, the mind was not an object of study unless the mind could be associated with a physical reality, a position reminiscent of Descartes' theory of mind-body dualism. Positivism also was associated with an antiquated view of the universe that equated it with a machine operated by laws understood only by God.¹³ The purpose of science was to discover these laws, or prod-

ucts, in order to be able to explain and predict events in the world. Theories describing reality in formal language either could be verified or disproved by observation of objects in the world. Thus, science resulted in a product, a theory, that could be used to describe, predict, and prescribe.

Positivism fell into disfavor in the 1960s when it was criticized for using defective methods of analysis and having little to do with actual science.¹⁴ Although discredited and recognized as a dead movement since the 1960s,^{6,16} many nursing scientists continue to react to contemporary empiricism as though positivism were flourishing. Gortner feels that empiricism has been given short shrift in nursing, because of "... continued fallacious identification with logical positivism."^{6(p482)} Modern empiricism, also called post-positivism, incorporates a historical approach to science along with empirical methods.⁶

Historicism is concerned with the values and beliefs of scientists as well as the sociological and historical context in which decisions regarding scientific research are made.¹⁶ Historical approaches incorporate the ideas of philosophers such as Laudan, who thought that science should be judged by the number of problems it solved rather than whether or not theories were verified.¹⁶ Thus, post-positivist empirical research retains the empiricist elements of precision, deductive reasoning, objectivity, theory testing, and substantiation of theoretical claims with valid data,¹⁷ while recognizing the impossibility of verification and the value-laden qualities of theory and observation.^{6,15} However, post-positivists also recognize that the purpose of scientific investigation in nursing is patient care; that the meaning of relationships can be clarified; that generalizable patterns can be ascertained without full prediction and control; that the conditions or context in which the phenomenon occurs is important; and that the researcher must prevent personal biases from influencing the outcomes of research.¹⁷

The methodology associated with empiricism is the scientific method. This method focuses on the experiment, control, objectivity, precise measurement, quantification of data, and description of results in statistical terms. Because empiricists believe that the senses can be used to verify reality, observation is the preferred method of data collection. The scientist uses tools and instruments to measure the phenomenon of concern while remaining a detached observer in order to prevent personal biases from influencing the study results.¹⁸ Numerical values are assigned to data in order to test relationships using statistical methods.

The empiricist paradigm is necessary if nursing science is to substantiate claims regarding nursing care and the responses of persons in health and illness situations, provide explanatory models, and test and generate theory.^{6,17} The value of the empirical approach to knowledge development lies in its ability to test hypotheses, compare interventions, produce generalizations, and generate confidence intervals that uncover influences.¹⁵ The ability to test hypotheses allows the relationships in theories to be tested and validated.¹⁸ Although no one study ever can verify a relationship, the data collected can offer strong support for the presence of a relationship. Establishment of valid relationships enables theories to be used to explain, predict, and prescribe notions that are essential and relevant for clinical practice.¹⁹ Control limits the problem being researched and attempts to limit extraneous factors so that relationships can be examined more precisely. Random assignment of subjects or treatments also allows factors that may affect the variable of interest to be equally distributed.¹⁵ Generalizability is an important goal of empirical research, as it allows relationships to be extrapolated to a larger population or different situation, a factor that is advantageous in nursing practice.¹⁸ Statistical methods allow for both exploratory and confirmatory analyses of data to describe the data and search for potential relationships.¹⁸ However, discovery of statistical significance does not indicate necessarily clinical significance.¹⁵

CRITICISMS OF EMPIRICISM

Objectivity and control are aspects of empiricism that have been criticized severely by many nursing researchers. In em-

pirical investigations, researchers control extraneous or confounding variables in order to increase the validity of study results. However, when studying humans, it is impossible to control many factors that might affect the outcome of a study. In addition, excessive control of variables in human studies can remove important contexts that influence a situation and contribute to its meaning. Excessive control produces an artificial situation that bears no resemblance to reality and thus decreases generalizability. Objectivity is also seen as preventing "... full recognition of the other as a person"²⁰ while experimental conditions can decontextualize the human experience. Thus, the traditional experimental method, in which persons respond to the environment like a machine rather than interacting with the environment, is seen as having a dehumanizing effect.²⁰

Some nursing scientists criticize positivism because it does not recognize other forms of knowing besides that which can be verified. Nurses always have recognized the knowledge embedded in practice. Carper²¹ identified four fundamental patterns of knowing in nursing: empirics, ethics, esthetics, and personal knowledge. Empirics, or the science of nursing, is concerned with describing, explaining, and predicting phenomena of concern. Esthetics, or the art of nursing, is the expressive and perceptive aspect of nursing that can defy expression. Ethics focuses on moral questions of right and wrong and what ought to be done. Personal knowledge "... is concerned with the knowing, encountering, and actualizing of the concrete, individual self."^{21(p251)} The four are not isolated entities but interrelate to form a whole that is greater than the sum of the parts. Thus, knowledge acquisition

does not occur as a result of one isolated way of viewing the world but through the simultaneous interaction of the four patterns. Logical positivism ignored aspects of nursing knowledge that were acquired through means other than empirical methods and thus negated a rich source of nursing knowledge.

Prior to the 1950s, nursing research activities were limited.¹⁸ In the 1950s and 1960s, empiricism was the predominant approach to developing nursing knowledge. Strongly influenced by the medical model and education in other disciplines, early nursing scientists favored the empiricist paradigm because they were eager to establish the scientific basis of the profession and demonstrate that nursing was a unique, professional discipline.²² However, many nursing scientists became frustrated with the positivistic approach and began questioning its use because it often did not reflect the values and beliefs of nursing nor the discipline's focus on holism, person-centered care, and understanding of human experiences in health and disease. Desiring a more humanistic approach that could address the concerns of nurses and their patients, many researchers turned to the methods proposed by phenomenological and existential schools of philosophy that are concerned with the meaning of human experience and understanding the day-to-day experience of individuals.²⁰

THE INTERPRETATIVE PARADIGM

The interpretative paradigm in nursing science evolved for several reasons. First, many early nurse scientists were educated in disciplines such as philosophy, sociology, and anthropology that exposed them to alter-

nate ways of viewing the world and the methodologies associated with those paradigms. Second, to some nurse scientists, empiricism did not recognize the esthetic, ethical, and personal knowledge inherent in nursing. Interpretative traditions acknowledge that reality has multiple meanings and that knowledge can be derived from sources other than the senses. Thus, other patterns of knowing important to nursing are given credence by interpretative approaches. Third, the interpretative approach was seen as more congruent with the language and beliefs of nursing. Where nursing spoke of holism, individualism, autonomy, and self determination, the dominating scientific/medical model spoke of reductionism, objectivity, manipulation, prediction, and control.²² A fourth reason for embracing the interpretative paradigm is that nursing wished to establish a theoretical base for the discipline. The interpretative paradigm provided methods for generating theory that are representative of nursing views rather than borrowed from other professions.²² Finally, a qualitative approach offers new perspectives and methodologies for answering the questions of the discipline.²³

The interpretative paradigm is characterized by the ontological assumptions that reality is complex, holistic, and context-dependent.^{11,24} The focus of investigation is on human experience; thus, subjectivity rather than objectivity is emphasized.¹² Because reality and human experience are variable, multiple ways of knowing are valued to uncover the knowledge that is embedded in human experience. Tacit or intuitive knowledge is recognized in addition to that which is expressed in language or can be observed.¹¹ Therefore, the methodology includes techniques that result in ex-

tended contact of the researcher with the participant and in mutual interaction. A natural setting is selected because “. . . wholes cannot be understood in isolation from their contexts . . .”^{11(p39)} nor can they be separated into parts for study. Inductive reasoning is used to identify patterns of meaning in the data.¹¹

Broadly grouped under the term qualitative research, interpretative methods include phenomenology, hermeneutics, grounded theory, ethnography, and others. The general goal of interpretative methods is to understand and derive meaning from the human experience; however, instrumentation and conceptualization are other identified purposes.²⁴ Common features of these research traditions are a holistic approach to questioning, a focus on human experience, purposive sampling, sustained contact with participants, the involvement of the researcher in the process, emergent design, negotiated outcomes, and special criteria for trustworthiness.¹¹ In-depth interviews with open-ended questions and participant observations are used for data collection. Data analysis proceeds through analysis of written narratives to extract the meaning of the experience.²⁴

A strength of the interpretative paradigm is the usefulness of this approach for generating theories. When little is known about a subject, qualitative methods are useful in identifying patterns of experiences and the relationships between them. Relational statements reflecting these relationships can be written and used to develop new theories.¹⁸ For example, grounded theory methods can identify basic social structures or processes (BSP) through the method of constant comparative analysis. These BSPs are then linked into a theory.²⁴

CRITICISMS OF THE INTERPRETATIVE PARADIGM

Although anti-positivist perspectives have been embraced by many nursing researchers, they are not without their limitations for developing knowledge in nursing. While the interpretative paradigm emphasizes humanistic approaches, it ignores the reality of physiological problems that are an integral part of a discipline that deals with health and disease.^{6,25} Nursing is not a social science and must acknowledge that physiological and psychosocial phenomena are at the core of the discipline. Nursing science must address the complex clinical problems that practicing nurses deal with daily. Research traditions that rely solely on interpretation and gaining understanding are not amenable to testing theory.⁶ Practitioners need theories that help guide their practice and answer questions posed by clinical situations. Although qualitative methodologies such as grounded theory can present theories describing the knowledge embedded in practice, testing of these nascent theories by empirical methods is required.

Interpretative methodologies have been criticized for a lack of rigor, primarily on the basis of criteria used to judge quantitative studies.¹⁸ However, quantitative criteria are inappropriate for evaluating the rigor of qualitative studies.^{11,18} Issues that have been cited as reflecting a lack of rigor include failure to adhere to the philosophy of the method being used, inadequate time spent collecting data, failure to identify values and beliefs that may impinge on the study, and poorly developed methods.¹⁸ Credibility, transferability, dependability, and confirmability are the appropriate criteria for judging qualitative methodologies.¹¹

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The results of qualitative studies have been characterized as "... a set of interesting stories" that result in isolated findings that do not advance the discipline because they do not form the basis for further work.²⁵ Although nursing is concerned with the uniqueness of individuals, in daily practice, nurses must identify patterns, look for commonalities, and establish priorities. While the results of qualitative research may serve to uncover some of the aesthetic, ethical, and personal knowledge of nurses, practice demands that this knowledge also be put to use. Knowledge that does not help nurses meet society's needs, understand and explain the concepts and relationships of the metaparadigm and conceptual models, and predict events and effects does not contribute to the discipline.

Various writers have suggested other names for the empiricist and interpretative world views in nursing. Parse characterized the world views of the empiricist and interpretative paradigms as the totality and simultaneity paradigms.^{3,26} The simultaneity world view regards the person as more and different than the sum of its parts, an open being, free to choose, in rhythmic interaction with the environment.^{3,26} In the totality paradigm the person is the sum of bio-psycho-social-spiritual parts, and interacts with the environment in a linear manner.²⁶ Newman⁹ proposed the particulate-deterministic, interactive-integrative, and unitary-transformative perspectives. In the first world view,

phenomena can be viewed as isolated, reducible entities with measurable properties that have an orderly relationship. The second paradigm is related to the first except that the context of phenomena is considered and reality is understood to be multidimensional. In the third paradigm, human beings are considered to be evolving as unitary self-organizing fields.⁹ Fawcett,²⁶ attempting to integrate these different models, coined the reaction, reciprocal interaction, and simultaneous action world views. Despite the differences in names, the totality, particulate-deterministic, interactive-integrative, and reaction world views are representations of the empiricist or mechanistic paradigm, while the others are derived from the interpretative or organismic tradition.

IS NURSING SCIENCE A MATURE SCIENCE?

Does the fact that nursing science lacks a predominant paradigm mean that nursing is not a mature science? Nurses too often attempt to measure the success of the discipline with criteria proposed by others that only serve to highlight the limitations of nursing science and fail to acknowledge its successes.²⁷ Zbilut states that "perhaps nursing has become a full-fledged professional discipline inasmuch as it succumbs to academic fashion."^{28(p188)} Many nursing scientists subscribe to Kuhn's⁸ depiction of a mature science. Kuhn characterized science as having three distinct phases: pre-paradigmatic, normal science or post-paradigmatic, and transformative periods that he calls "revolutions." The pre-paradigmatic stage is characterized by "... debates over legitimate methods, problems and standards of solution . . ."^{8(p48)} and the lack of primacy of

a particular world view. Change from pre- to post-paradigm science is characterized by multiple schools of thought giving way to one and science finding a more satisfactory method of "solving puzzles." A period of "normal science" exists when one paradigm emerges as the predominant way of solving problems, members of a scientific community accept the paradigm as foundational, and use the world view espoused by the predominant paradigm to solve problems. Debates about methods, questions for study, and ways of answering questions disappear during periods of normal science. Revolutions occur following a crisis, when scientists begin to see the world differently and debates emerge about the paradigm. Gradually, one paradigm supplants that previously in favor and a new period of normal science begins.

Mature science develops through revolutions that provide a transition from one paradigm to another.⁸ According to Kuhn,⁸ a mature science is characterized by

1. the scientific community's acceptance of a paradigm,
2. approaches to solving the discipline's problems that are driven by the paradigm,
3. the presentation of knowledge as research articles in scientific journals rather than books, and
4. the development of a language that is unintelligible to the uninitiated.

A predominant paradigm is the most important criterion.

Using these criteria, nursing science is at a pre-paradigmatic stage, because several paradigms are extant. There is vigorous, ongoing debate within the nursing scientific community about the appropriateness of philosophies and methodologies for direct-

ing and conducting research as well as about the questions of relevance to the discipline. However, nursing does meet Kuhn's requirements for shared values, a unique language, scientific journals, and reporting of research findings in articles. A review of the numerous scientific nursing journals indicates that nursing has developed a language of its own and that a significant body of scholarly activity has been accumulated. However, Kuhn,⁸ a physicist by training, has been criticized as providing an inaccurate account of the history of science and evaluating science from a positivist perspective due to his emphasis on facts, empiricism, experimentation, and natural science. This positivist perspective is inappropriate and too narrow for a human science such as nursing that confronts a variety of problems.^{27,29} Other ways of evaluating scientific progress may be more useful to nursing science.

Meleis²⁷ proposed a theory of integration for evaluation of progress in nursing science that is more congruent with the tortuous path by which the discipline has developed. Diversity, theory development, competition, creativity, innovation, openness, flexibility, and change are characteristics of a mature discipline according to Meleis. She states nursing has achieved disciplinary status when evaluated by these criteria.²⁷

Fawcett⁴ identified three areas of success in nursing research and suggested yardsticks for measuring future progress in nursing science. She recognized "hallmarks of success" that nursing has achieved as identification of the boundaries of research, the types of research required by the discipline, and the types of research activities appropriate for nurses with differ-

ent educational preparation. Goals for the 21st century are elimination of obstacles to nursing research, acceptance of multiple methods of inquiry, and utilization of research findings in practice. Whether or not nursing science achieves these goals or nursing scientists are in agreement about these criteria, they are important because they provide a nursing perspective of what is important to the discipline rather than applying qualifications developed by those unfamiliar with the history and advances of nursing science.

SINGLE OR MULTIPLE PARADIGMS?

Kuhn's⁸ conceptualization of an overarching paradigm that directs the scientific endeavors of a discipline is the basis for the idea of theoretical unification in nursing. This idea is reminiscent of the positivist philosophy of theoretical reduction and reflects his philosophical underpinnings. Paradigmatic supremacy represents the outmoded positivist viewpoint that considers theory reduction an important goal of science.¹⁶ This philosophy assumes that there is one inclusive theory that can reveal the characteristics of reality.¹⁶ However, the concept of unification suggests the mingling of paradigms rather than the dominance of one over the other. Given that the empiricist and interpretative paradigms represent opposing ontological and epistemological views, it is impossible to reconcile the differences underlying the two paradigms to form a unified paradigm.

Several authors suggest that theoretical unification is beneficial to the profession. The advantage of one paradigm lies in its

simplicity and parsimony, as there are fewer concepts and relationships to be examined.¹⁶ Hardy suggests that one possible reason for adopting a predominant paradigm is to define the boundaries of the profession or "turf."^{12(p92)} Others believe that a unified focus "... has the potential for claiming the shared vision of nursing."^{2(p5)} Reed believes that accepting multiple paradigms is contrary to the idea of holism and "... nursing may be sacrificing coherence for diversity."^{30(p78)} Reed³⁰ advocates a "meta-narrative" or overarching ideal of nursing to direct knowledge development in the profession. While a metanarrative offers potential for discourse and reflection, it does not offer resolution for the differences between the interpretative and empiricist paradigms.

A disadvantage of theoretical unification or the ascendancy of one world view is the narrowness of vision afforded by such a perspective. Kuhn describes the paradigm as an "inflexible box,"^{8(p24)} which directs periods of normal science. In this respect, the purpose of normal science is not to examine new phenomena; rather, the aim of normal science is to articulate "... the phenomena and theories that the paradigm already supplies."^{8(p24)} Because a paradigm directs the work of a community of scientists, selection of one perspective narrows the focus of vision to examining in detail only those phenomena it recognizes. However, when the paradigm becomes too restrictive, scientists "behave differently" and change the nature of their research problems. Thus, theoretical unification can be likened to the idea of the young child who enthusiastically scribbles in a coloring book, only to be told to stay within the lines. Initial enthusiasm for the task quickly

becomes discouragement. The challenges confronting practitioners of nursing art and science are too numerous and pressing to permit disenchantment for change or challenge to occur by the unqualified acceptance of a single paradigm.

The existence of multiple paradigms in nursing science indicates a strong and flourishing science. Multiple paradigms are indicative of a "healthy" scientific community because they encourage creativity, stimulate debate and the exchange of ideas, provide diversity of views,^{10,31} promote productivity,¹ and keep open avenues of inquiry.³¹

Creativity is a vital and necessary source of ideas in science. Multiple paradigms stimulate creativity by providing different points of view from which to examine a problem or question.¹³ Because nursing deals with human behavior, one viewpoint is not sufficient to explain the variety of phenomena and relationships nurses encounter.²⁷ Theoretical unification focuses vision in one plane, like a microscope, but multiple paradigms expand vision, like a wide-angle lens. Because the goal of nursing science is not simply to add to the discipline's knowledgebase, but to develop theories that explain, predict, and prescribe numerous ways of conceptualizing ideas and examining phenomena are beneficial. Multiple paradigms encourage "thinking outside the box" rather than in the box like theoretical unification.

Debate is stimulated by the existence of multiple paradigms. According to the theory of integration, it is debate and competition of theories and ideas that make a discipline scholarly.²⁷ Compendiums of articles such as *Perspectives in Nursing Theory*³² offer a window through which to view debate

within the discipline. A review of these articles reveals the intensity with which authors have supported and defended their particular world view, resulting in clarification, codification, and modification of views. The active exchange of opinions and ideas through discourse stimulates growth and development.³¹ Just as a growing organism achieves maturity through rapidly dividing and multiplying, so can a discipline grow through a multiplicity of paradigms. Selection of one world view can be considered analogous to the loss of variability that accompanies aging and death in complex physiological systems.³³

Diversity of view points has been likened to a cable that is strengthened by multiple strands.³⁴ Nursing is a complex profession with many providers with differing educational preparation and areas of specialization caring for many types of clients in varying situations. How can one paradigm for nursing science possibly reflect this diversity? Just as people have been urged to celebrate their differences, so should nursing science rejoice in the fact that within nursing is a rich and varied assortment of threads that, when woven together, draw a strong, resilient, whole tapestry. The problems of nursing are so diverse that multiple answers and solutions to a question can be appropriate. Multiple perspectives encourage appreciation of the uniqueness of individual nurses and patients by finding multiple answers to common problems. Problems may be erroneously considered solved and questions answered if one perspective for developing knowledge is selected.

Different paradigmatic views may increase productivity. Reliance on one perspective may limit a scientist to repeatedly

investigating the same problem from the same approach in different populations. However, applying different viewpoints provides new insights to formulate new ideas to old questions. For example, the continual use of a phenomenological approach will result in many studies about the meaning of an experience. However, for both the discipline and the investigator to advance in knowledge, those studies must be used as a foundation on which to build others that generate and test theory. Other perspectives are needed to channel these initial findings into further studies. In addition to maximizing the strengths and minimizing the weakness of each method, combining or triangulating methods can involve more than one investigator in a research project, resulting in more discussion, more ideas, and more projects.³⁵

Different paradigmatic views may increase productivity.

Premature closure also may result from the selection of one paradigm. Cognitive dissonance may not be noted if only those phenomena that are congruent with a single perspective are examined.³ In other words, a single perspective is similar to wearing blinders: phenomena that might attract attention are not seen, as they are outside the field of vision. Thus, opportunities to go somewhere more interesting or follow a different path are thwarted.

Multiple paradigms also have disadvantages for nursing science in that practitioners may become confused and divided over the conflicting claims of different view points.³⁰ Many in the profession find continuing de-

bate over such matters inconclusive, frustrating, and not germane to the business of nursing. Students can become confused if exposed to new, untested ideas, and even experienced practitioners may find the seemingly never-ending debate mystifying.²⁸ For example, it is difficult to reconcile the pragmatic aspects of everyday nursing with ideas espoused by interpretative paradigms. If each individual is unique, why are standard care plans devised? What does it mean for a person to be an open system and how can this be evaluated? Why do nurses assess patients systematically if they are holistic beings? How can the accomplishments of empiricism be accepted while its methods are condemned as controlling and dehumanizing? If empiricism is abandoned, what will replace it?

IMPLICATIONS OF MULTIPARADIGMISM FOR NURSING SCIENCE

A change of perspective is required for nursing science to reconcile the philosophical differences between the two extant paradigms. A perspective that emphasizes inquiry rather than paradigmatic supremacy or unification is more advantageous to nursing as a discipline. Dzurec and Abraham³⁶ noted that there were few real differences between quantitative and qualitative methods of research. Although specific techniques may vary between methods, "... the findings generated by both ... are based on description, probability, and inference."^{36(p74)} The results of both empirical and interpretative studies are due to interpretation of raw data by the investigator.³⁶ The authors argue that neither method is more scientific than the other and that the process of inquiry is the

same despite the methods used to acquire knowledge. Therefore, nursing scientists can take heart in the thought that careful adherence to the principles and philosophy of the method they chose will result in valid and reliable findings that will add to the body of knowledge of the discipline.

Integration of qualitative and quantitative methods has been suggested as advancing nursing science.^{20,35,36} Research traditions from the empirical and interpretative paradigms are complementary as each presents a different approach.¹⁵ Qualitative methods can describe phenomenon of interest in nursing and generate theories that propose relationships between identified concepts. Quantitative methods can test the relationships of qualitatively developed theories and suggest whether the theory should be accepted or revised. The different perspectives presented by the empiricist and interpretative paradigms can examine different dimensions of a phenomenon.

Collaboration towards solving problems is more beneficial for the discipline than acrimony and competition over which tradition is most useful.¹⁶ Collaboration will result in increased opportunities for all nursing scientists. For example, critical multiplism, a strategy similar to triangulation, has been recommended as an approach for nursing research.³⁴ This strategy is "... based on the premise that ... thoughtful choices are the approach most likely to yield an objective body of knowledge."³⁴ Multiple-multiples are involved: of researchers, institutions, frameworks, research questions, issues, methods, and data collection and analysis modes. The approach increases efficiency by spreading the workload and increases utility by studying more than one question at a time.³⁴ Methods such as this offer greater

opportunities for collaboration and discourse than traditional, single-investigator approaches.

When paradigms are associated with values and beliefs, polarization occurs between different views, with little hope of bridging the gulf between the sides. Acceptance of multiple paradigms as perspectives and research traditions rather than as values has the potential to lessen the division between the academic and scientific communities. Practicing nurses often are blind to the relevance of theoretical arguments for the everyday practice of nursing. However, clinicians readily understand that there are many ways to accomplish the same goal and that a nurse uses whatever method he or she is most comfortable with or whatever works best in a particular situation.

Presenting research as a system of inquiry that can be accomplished in several ways may also improve the palatability of research in educational programs. Both baccalaureate and masters students often are overwhelmed by research courses and rate their usefulness to practice as low. However, student interest in research may be spurred by courses that emphasize principles of sound inquiry rather than the vagaries and quirks of different paradigmatic approaches. Just as students learn sound principles of nursing care on which to build their nursing practice, so must they learn basic principles of inquiry that recognize the equality of all methods. Presenting a system of inquiry rather than a philosophy also will require that instructors provide a more balanced view of different research traditions.

A variety of paradigms allows the development of more theories for nursing. Different perspectives of nursing practice

enhance the ability to understand and interpret the meaning in different practice situations, identify relationships, and develop theories. Laudan³⁷ recommends a process of integration of different research traditions with the goal of expanding the number of theories in order to solve the problems of the discipline.

The feasibility and importance of a multi-paradigmatic approach ultimately will be established through its usefulness in practice. If differing perspectives can generate and test theories that provide faithful representations of practice and are useful in practice settings, they will flourish. As a pragmatic profession, nurses choose the method that works best to provide the critical services clients require. Practice will indicate those aspects of a perspective that are not useful and discard or revamp them into a new variant. Applying different paradigms together in practice situations can help to determine whether the perspective offered by opposing perspectives results in different nursing actions. According to history, often that which is not useful does not survive. If the multiparadigmatic approach is not congruent with practice, it too, may become obsolete or extinct.

SUMMARY

The discussion about theoretical unification or multiparadigmism is reminiscent of the debate over single or multiple conceptual frameworks for nursing. Interestingly, that debate has been abandoned as the discussion shifts to paradigms. The war of words over single or multiple paradigms cannot be won easily. However, multiparadigmism is an approach to the development of nursing knowledge that offers greater

promise for the discipline than theoretical unification. Multiparadigmism recognizes the differences inherent in opposing world views while celebrating the possibilities that each offers and the way that each com-

plements the other. Downplaying paradigmatic differences while enhancing the value of scholarly inquiry through multiple approaches is paramount for the advancement of nursing science.

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