This groundbreaking volume demystifies nursing theory and presents a meaningful and useful adjunct to scholarly nursing practice. It provides students and faculty at the DNP level with specific strategies to develop their own theories in the context of practice or modify existing theories and integrate them into practice. This is a major innovation that counters the older paradigm in which students were presented with a theory and were required to model their practice accordingly.

Through inspiration and guidance, the text empowers students to purposefully participate in the process of practice theory and knowledge development, thereby creating the ability to reflect on and change practice where needed. The authors strive to help nurses make theory more relevant to their own practice, to become aware of and develop their own theoretical ideas in practice, to learn strategies for developing theory-based knowledge, and to advance practice while building creativity and self-confidence.

**KEY FEATURES:**

- Teaches strategies for developing theory-based knowledge that is practice-relevant and practice-based
- Actively involves the reader in the use of theory as a way to guide practice and knowledge development
- Provides the tools for all practitioners to partake in knowledge building
- Provides discussion questions and reflection points to assimilate content and enhance critical-thinking skills
Nursing Knowledge and Theory Innovation
Pamela G. Reed, PhD, RN, FAAN, is a metatheoretician and professor at The University of Arizona College of Nursing. She also served as associate dean for academic affairs from 1995 to 2002. She was educated as a clinical nurse specialist with a focus on psychiatric-mental health nursing across the lifespan. She teaches doctoral courses on nursing metatheory, philosophy of nursing science, and theory development and evaluation. Her research has focused on spirituality, well-being and mental health at end-of-life, and on nursing philosophy and the development of nursing knowledge. She has conducted more than 14 funded research projects and 8 training grants and has received various honors for her research, including an ANF Scholars Award and the DHHS HRSA New Investigator Nursing Research Award. Her research currently focuses on end-of-life family caregiver well-being and spiritual and scientific ways of knowing.

Dr. Reed has developed a nursing theory of self-transcendence used by researchers around the world. She has also produced two widely used research instruments, the Spiritual Perspective Scale and the Self-Transcendence Scale, and consults nationally on spirituality-related measurement and research. She has received eight awards for outstanding teaching and has been visiting scholar at New York University and Duke University Center for Spirituality, Theology and Health, among other universities. She was a contributing editor to Nursing Science Quarterly and, along with Dr. Nelma Shearer, edits the theory textbook Perspectives on Nursing Theory for doctoral education. She has presented more than 40 invited papers, including most recently several national papers on the practice of nursing science and on nursing knowledge production through theory and inquiry in practice. She has published more than 23 book chapters and more than 70 peer-reviewed articles. She is a member of Sigma Theta Tau International and is a fellow in the American Academy of Nursing. She resides with her family in Tucson, Arizona.

Nelma B. Crawford Shearer, PhD, RN, is a researcher, associate professor and codirector of the Hartford Center of Geriatric Nursing Excellence at Arizona State University College of Nursing and Health Innovation. Her teaching responsibilities focus on theoretical foundations of nursing at the graduate and doctoral level, including a course on theoretical foundations of doctoral education for advanced nursing practice. She is an American Nurses Foundation scholar and a John A. Hartford Foundation Institute of Geriatric Nursing Research scholar. In 2006, she received the Geriatric Nursing Research award from the Western Institute of Nursing in partnership with the Hartford Institute for Geriatric Nursing.

Dr. Shearer conducts research into the process of promoting health empowerment in older adults with the goal of optimizing their well-being. She has received funding from the National Institute of Nursing Research to test her theory-based health empowerment intervention with homebound older adults. In addition, she, as a coinvestigator with an ASU colleague, has received funding for research projects including the Hartford Foundation for Building Academic Geriatric Nursing Capacity in Arizona and the Southwest and funding for program grants through the HRSA Comprehensive Geriatric Education Program. She has published 15 peer-reviewed journal articles and several book chapters and, with Dr. Reed, edits the textbook Perspectives on Nursing Theory. She has delivered more than 25 scholarly presentations, many of which focus on the development and testing of her theory-based empowerment intervention. She is currently vice president of the Society of Rogerian Scholars International Organization and a member of Sigma Theta Tau International and the Western Institute of Nursing Research. She resides with her family in Tempe, Arizona.
Nursing Knowledge and Theory Innovation
Advancing the Science of Practice

Pamela G. Reed, PhD, RN, FAAN

Nelma B. Crawford Shearer, PhD, RN

SPRINGER PUBLISHING COMPANY
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We dedicate this book to our students and colleagues who share our interest in the synergy within the science and practice of nursing.
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Contributors

Catherine Johnson, PhD, PNP, FNP
Associate Professor, Mt. Carmel College of Nursing, Columbus, Ohio

Elaine G. Jones, PhD, RN, FAANP
Associate Professor, Director of Honors Program, The University of Arizona, College of Nursing, Tucson, Arizona

Lisa A. Lawrence, PhD, RN
Assistant Professor, Northern Michigan University, School of Nursing, Marquette, Michigan

Donna Behler McArthur, PhD, FNP-BC, FAANP
Professor, Director, DNP Program, Vanderbilt University, School of Nursing, Nashville, Tennessee

Cathleen Michaels, PhD, RN, FNAP, FAAN
Clinical Associate Professor, The University of Arizona, College of Nursing, Tucson, Arizona

Pamela G. Reed, PhD, RN, FAAN
Professor, The University of Arizona, College of Nursing, Tucson, Arizona

Gary Rolfe, PhD, MA, BSc, RMN, PGCEA
Professor of Nursing, School of Health Science, Swansea University, Swansea, Wales

Nelma B. Crawford Shearer, PhD, RN
Associate Professor and Co-Director, Hartford Center of Geriatric Nursing Excellence, Arizona State University, College of Nursing & Health Innovation, Phoenix, Arizona

Donna M. Velasquez, PhD, RN, FNP-BC, FAANP
Clinical Associate Professor, FNP DNP Coordinator, Arizona State University, College of Nursing & Health Innovation, Phoenix, Arizona
This book, as stated by the editors in their preface, is intended to highlight the need to consider knowledge development in nursing in the context of practice and to show ways for advanced nursing clinicians to participate in knowledge development. This intention and the offerings in the chapters emphasize the nature of nursing knowledge characterized as “human practice science” (Kim, 2010). Nursing’s knowledge system as a human practice science is concerned with developing knowledge for practice; the knowledge that is relevant to and needed in practice. As a human practice science, nursing has to address epistemic questions regarding specific human conditions within the nursing domains and those related to how to improve such human conditions from the nursing perspective. As stated by Rolfe in Chapter 4, the ultimate goal of nursing inquiry is to develop practice rather than simply to develop theory. This suggests a differentiation between the basic sciences and the applied sciences of which human practice sciences are examples in terms of both the aims of knowledge development and the sorts of knowledge to be developed in scientific disciplines. Epistemic questions for the basic sciences rest with humans’ fundamental search for understanding and explanations about the nature, whereas those for the applied sciences rest with human’s search for improving human lot and for correcting various inadequacies that occur in the nature.

Nursing as a knowledge system thus aims for gaining knowledge that can shape nursing practice to be consequential in influencing human’s healthful living. To develop knowledge that is intentionally relevant to nursing practice, it is necessary for the process of knowledge development to be embedded in nursing practice.

Unfortunately, the development of nursing knowledge during the past several decades has followed the course that has been mapped out and followed by various scientific fields within which the objectification of subject matters is the primary mode of scientific work. This, along with other social forces, has led to the separation of theorists/scholars/researchers/academicians from practitioners and has created a great chasm between theory and practice in nursing. Although such compartmentalization does not necessarily mean that the knowledge that has been developed and is being developed in nursing is not addressing important questions in nursing practice, there has been a great deal of anxiety regarding the significance of this objectified, generalized knowledge for influencing practice. The recent institutionalization of an educational route for advanced expert clinicians through the practice-focused doctoral preparation in nursing (DNP) has
stimulated a rethinking regarding this bifurcation between theory and practice, between researcher and practitioner, and between generalized knowledge and situated knowledge. It has been advocated that advanced expert clinicians prepared in such doctoral programs have to assume the role of bridging knowledge development with knowledge use in practice as well as to take up the pivotal position through which practice-relevant epistemic questions are raised and addressed for knowledge development. There are many models for the engagement of advanced expert clinicians in nursing knowledge development. Several models are presented in this book.

A major model is presented in Chapter 1 by Reed in which the practice-based knowledge development in nursing is viewed to require an integration of the practice of science and the practice of nursing within the six turns of the spiral path of knowledge development. In this model, shaping of clinicians’ engagement in nursing knowledge development is viewed to be accomplished by one’s positions and sensitivity in addressing knowledge development questions in practice. Another model advocated in Chapter 2 by Velasquez, McArthur, and Johnson suggests the practitioner-theorist-researcher role for clinicians in nursing knowledge development as contrast to the scientist-theorist-researcher role for academics, applying exploration, explication, engagement, and optimization as the major processes for practice-based knowledge generation. On the other hand, Rolfe in Chapter 4 recommends a specific epistemology of nursing as a reflexive science in which practice and research are integrated in producing “a science of the unique.” For Rolfe, the engagement of a practitioner in praxis is necessarily a knowledge-generating occasion in which an integration of theory, research, and practice occurs through reflection, reflexivity, and on-the-spot experimentation. Theory development by practitioners is proposed through the application of nontraditional modes of theoretical thinking unique to practice situations especially for formalizing personal theories and identifying key areas of inquiry arising from practice in Chapter 7 by Reed. Jones in Chapter 8 also suggests clinical scholarship for engagement in translational research and revisional theory development as one approach.

From the perspective culminating from the proposals made in this book and the current epistemic culture of nursing as a scientific discipline, we can raise three questions:

1. Is there a specific and different role to be played by advanced clinicians in nursing knowledge development, adopting unique approaches that are embedded in practice? If so, what is the contribution by such efforts on the whole schema of nursing knowledge development?
2. Does nursing have to identify its discipline-specific methods for knowledge development to address the unique features of nursing practice and nursing’s epistemic concerns?
3. What would be required of advanced clinicians to advocate for and participate in the role in nursing knowledge development?

The first question is addressed by several authors in this book. Practice occurs in a specific clinical site that is unique and nonrepeating and in which clinicians are engaged in clinical actions both with clients and for clients. Clinicians have to meld
together the knowledge, skills, intuitions, experiences, understandings, and self to bring about accountability to one’s practice. Knowledge-based practice that goes beyond evidence-based practice is required at the base guided by the assumptions that (a) the knowledge for nursing practice refers to a body of specialized knowledge that is multidimensional, complex in its configuration, and derived from multiple sources, (b) the processes by which individual practitioners use and develop knowledge in practice are context-specific, situated, and individualistic in the sense that each practice instance is unique in its presentation of a client’s conditions, problems, trajectory, history, and context, and (c) the practitioner is the user, synthesizer, and generator of knowledge who must adopt certain attitudinal, cognitive, strategic, and action processes (Kim, 2006). This is a similar notion as the concept of theory-based practice mentioned by Reed in Chapter 12. It requires practitioners to apply creative, analytic, and dialogical methods to synthesize knowledge and experience to fit into specific clinical situations so that the knowledge-based practice becomes exemplary. In addition, such exemplary practice occasions are exactly the sites from which practice-based knowledge development can occur as demonstrated by Reed in Chapter 12. In practice-based knowledge development, identification of various practice models “created” in specific clinical situations can lead to the development of theories for practice and formalization of knowledge synthesis; respecifications of general theories addressing specific clinical and contextual requirements may emerge as revisions of theories; or testing of situation-specific theories (Im & Meleis, 1999) in practice may result in clinical validation or modification. Practice-based knowledge developed by such modes thus can bridge the generalized knowledge to practice.

The second question is taken up by Rolfe in Chapter 4 as well as in his earlier work (Rolfe, 2006), and by other authors in the literature, notably by Gadow for local narratives (1995) and Newman for research as praxis (1997). In this stance, nursing knowledge is viewed to be embedded in practice of specific, existential frames from which knowledge both emerges and is formalized. Nursing knowledge from this perspective is local, unique, and situated and is generated as informal theories, local narratives, and praxis itself. Practitioners in practice are at the center of knowledge development as engagers in praxis that integrates research into practice.

The third question is a critical question for the preparation of advanced expert clinicians, as the question assumes that such practitioners are not simply users of knowledge but are knowledge generators as well. Such practitioners need to develop an attitude and methods for an active role in knowledge development. Johnson and Reed advocate mindfulness practice in Chapter 5 as a way for practitioners to stay tuned to one’s own practice, acknowledging knowledge integration and knowledge creation in practice. Schön in his work on reflective practice (1983) proposes ways for practitioners to be open and critical of one’s practice through reflection-in-action and reflection-on-action, which can be used as methods for discovering knowing in practice. Similarly, Argyris, Putnam, and Smith (1985) advanced action science as a method for practitioners to engage in the Model II learning and engage in an ongoing examination of one’s own practice for knowledge generation. Critical reflective inquiry suggests one approach by which practitioners can assume a self-critiquing stance regarding one’s practice and engage in developing knowledge
from practice (Kim, 1999). The concept of scientist-practitioner advanced for clinical psychologists from the Boulder Agenda of the 1940s is still viable as a model to incorporate the researcher role with the practice role for clinicians. Advanced expert clinicians need to become competent in applying research methods that are specifically appropriate for the practitioner-scientist role, such as case-study methods, action research, fieldwork methods, quasi experiments, and narrative analysis as well as various theory revision approaches applicable in one’s own practice, some of which are presented in this book.

This book, departing from offering the traditional theory-development approaches, points to the areas that need to be deeply investigated by students in DNP programs, practicing expert clinicians, and clinical nursing researchers to be both inculcated into the role of clinician in nursing knowledge development and introduced to various extant and noble approaches appropriate for practice-based knowledge development.

Hesook Suzie Kim, PhD, RN

References

Preface

How does nursing knowledge come into being? This is not a new question nor can it be answered simply by referring to the scientific method or evidence-based practice. The current shift in nursing toward educating many more doctoral-level practitioners compels us to revisit this question from a 21st-century perspective. Science, philosophy, theory, and practice exist in a complex relationship that generates knowledge for nursing. However, the knowledge-generating capacity of the context of practice and practicing nurses has not been fully recognized. The burgeoning of graduate-level practicing nurses presents new opportunities for building nursing knowledge to meet society’s health care needs. In addition, emphasizing the practice lens in nursing’s network of knowledge enriches the theory base for addressing nursing problems.

Focus of the Book

The focus of this book is nursing knowledge and theory development in practice. A doctoral-level nurse, whether PhD or DNP prepared, is expected to both use and develop knowledge (Dracup, Cronenwett, Meleis, Benner, 2005, p. 179). In terms of knowledge development, it is generally thought that researchers and theorists provide the new knowledge and theories for the practicing nurses to apply, evaluate, and perhaps modify in their practice. New knowledge, whether from published evidence or existing theories, flows primarily from outside the context of the nurse’s practice. Practicing nurses also look within practice for knowledge, for example, in terms of their immediate observations, interactions with patients and families, conversations with colleagues, and expert judgment. However, what goes unrecognized in health care and unclaimed by nurses is the theoretical thinking that occurs in this process and nurses’ capacity to develop theory for practice in practice. Theoretical thinking allows problems and their explanations to emerge in practice with patients and families, rather than to exist as predescribed problems and prescribed solutions.

The innovation in knowledge development proposed in this book is intended to inspire and support nurses’ theoretical thinking in practice and expand our repertoire of strategies for theory development. Few writings in nursing have addressed how nursing knowledge comes into being in practice; instead, theory texts have addressed creative applications of theory to practice and testing theory in research. The literature is dominated by a focus on application, not origination, of knowledge in practice because, in part, scientific knowledge traditionally has been developed out of the contexts in which it is used and is not directly applicable to practice. In addition, the concern over the amount of knowledge developed...
is being replaced with concerns about how knowledge is developed amid the proliferation of research findings and other evidence for practice (Stehr, 2004). Thus, a frontier in knowledge development is the production of nursing knowledge and theory in the patient-centered context of nursing practice.

A Call for Transformation

The perspectives on knowledge development in this book support the four key recommendations for educating nurses outlined by Benner, Sutphen, Leonar, and Day (2009) in their call for radical transformation of nursing programs. That is, this book encourages development of contextualized knowledge for practice; promotes more deliberate strategies to link theory to practice; supports the emphasis on clinical imagination in exploring new ways of reasoning and theorizing in practice beyond the focus on critical thinking; and supports the transformation of practicing nurses’ identity by encouraging and guiding their participation as knowledge producers beyond that of knowledge users in practice. Innovative theoretical thinking in practice and the various knowledge sources from which it draws must not be eclipsed by any of the more familiar reasoning processes of critical thinking, problem solving, or decision making (Lester & Piore, 2004).

Intended Audience of the Book

This textbook is intended for a graduate-level nursing students, particularly students enrolled in Doctor of Nursing Practice (DNP) programs. The book is also intended for PhD nursing students, as they increasingly are bringing to their research a practice-centered focus. It will also be useful for nurse practitioner students or master’s-level nursing students enrolled in a theory course or planning their master’s research project. Doctorally prepared nurses and faculty will also find this book relevant in their scholarly work.

Structure of the Book

This book presents a new philosophic stance and historical, practical, and theoretical perspectives regarding practice-based theory and knowledge development. Five chapters were developed as Interludes where readers can pause and explore specific aspects of knowledge development in reference to their own nursing practice and research.

The Spiral Path. Chapter 1 presents a model of the geography of nursing knowledge and how theory evolves, with emphasis on theoretical thinking in practice. The model is presented in the form of a spiral path that integrates six elements in knowledge development: philosophy of nursing, philosophy of science, practice of science, practice of nursing, theoretical thinking, and theory. The model is open to modification. A new philosophic perspective, called intermodernism, is discussed in reference to each element of nursing knowledge in the spiral path. Intermodernism is a philosophy of science that sits between modernism and postmodernism.

The subsequent chapters are stops along the path to address special areas with an emphasis on practice in nursing knowledge. Interlude chapters focus on strategies and perspectives that facilitate knowledge development and theoretical thinking in practice. The chapters are written from each author’s first-hand experience in a particular dimension of knowledge development.
Chapter 2 squarely addresses the roles of PhD and DNP nurses in knowledge development, and the authors propose a conceptual model, outlining how each role contributes in unique and shared ways to the development of nursing knowledge. Chapters 3, 5, 7, 9, and 11 are interludes designed to present a specific approach that fosters theoretical thinking and theory development. These approaches range from creating a Mandala to clarify one’s philosophy of nursing and practicing mindfulness to sensitize one to theoretical concepts embedded in practice, to a community-based praxis approach in theory development and specific steps in reformulating a practice-based nursing concept. Two other chapters discuss philosophical and practical dimensions of practice-based theory development. An additional chapter provides a historical perspective and future projections on clinical scholarship in nursing.

The chapters in this book will help students to (a) become aware of their own philosophical and theoretical ideas and knowledge embedded in their practice and (b) learn strategies for developing theory-based knowledge—strategies that are practice relevant and practice based. The book balances theoretical and philosophical ideas with the practical. In addition, it includes examples of concrete strategies that can be used by nurses in their work with individuals, groups, and communities. Although the chapters elaborate on various aspects of knowledge development, they neither exhaust the possibilities nor bring closure to how nursing knowledge comes into being. This remains very much an open topic that requires continued inquiry and dialogue.

Summary

This book is unique in its contribution to the theory textbook literature with its focus on expanding nursing’s knowledge-building capacity by engaging practicing nurses in theory and knowledge development. Scholars within and outside of nursing are calling for a more active role of practitioners in developing new knowledge for a discipline. Moreover, nurses themselves increasingly recognize the importance of theoretical knowledge in understanding and communicating the complex problems that confront them in their practice.

In sharing the ideas in this book, we seek to inspire and equip nursing students with the tools to make theory more relevant to their own practice, to become aware of and develop their own theoretical ideas in practice, and in doing this advance practice while building creativity and confidence in their own knowledge. Recognition of the theoretical thinking that occurs within evidence-based practice invites continued dialogue concerning how we think about nurses’ scholarly practice and educate nurses at graduate and doctoral levels.

References


Many people have contributed to making this book a success for nursing. We first thank the contributors whose timeless ideas and insights about nursing are recorded between the covers of this book. Their chapters comprise the substance of the book, and together, provide the practice lens for exploring new thinking about knowledge development in nursing.

We thank our students—past, present, and future—who helped inspire the creation of this book. It is our hope that the chapters will further students’ learning and equip them with the tools to make theory more relevant to their own practice, to develop their own theoretical ideas in practice, and in so doing advance practice while building nursing knowledge. Special acknowledgment goes to Kathryn Bevacqua, Media Specialist, University of Arizona College of Nursing, whose creative work on the models for the Chapters 1 and 2 figures and the book cover is pure evidence of knowledge production through expert artistic practice.

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The Spiral Path of Nursing Knowledge

Pamela G. Reed

How does that which we call nursing knowledge come into being?

In the late 19th century, Britain’s Florence Nightingale professionalized nursing practice by enacting her theoretical ideas about the significance of the physical and social environment in human health and well-being. Nightingale’s focus on facilitating the person’s inner processes of healing by tending to the environment, along with her expertise in statistics and other ways of knowing, made her a compelling leader for nursing science and practice. As the 20th century progressed, new leaders in theoretical thinking energized nursing’s advancement in education, research, and practice. Hildegard Peplau’s (1952) theory of interpersonal relations introduced a major scientific treatise on the nurse–patient relationship, which remains a defining focus of nursing practice. Martha Rogers’ (1970) work on the theoretical basis of nursing presented progressive ideas about human complexity and person–environment processes that are still unfolding today in contemporary theorizing and science. Many other notable theorists—including some of you—have joined and will join these three historical icons to advance the role of nursing in the knowledge and practice of health care.

Nursing has a rich history of theoretical thinkers. Nursing scientist scholars who were first educated in theory-based or theory-enriched disciplines like sociology, psychology, anthropology, and education provided an abundance of theoretical thinking and conceptual systems of, and for, nursing. Nurses educated in graduate-level nursing programs followed and produced theories and theory-related writings about nursing. Because of this, we may take for granted what some fields (e.g., McQueen, 2007) still quest for—a theoretical basis for the profession.

The purpose of this chapter is to provide an overview of a path of nursing knowledge that encourages new or renewed participation among nurses, particularly practicing nurses, in developing knowledge for the discipline. It is a path of rather than to, knowledge because there is no ultimate goal or final theory in knowledge development. The theories of today need to be sensitive to the given situation and changing problems and experiences, yet also illuminate patterns that broaden understanding of nursing phenomena. The path offers up a tentative yet useful form...
of knowledge called “theories,” but invariably spirals us forward through the process of knowledge building.

The linchpin of this path is the practice of nursing, that is, the practice of facilitating processes of health and well-being within and among human systems across a diversity of environments. The integral link between practice and knowledge is not new, and emphasizing this link in nursing’s network of knowledge presents some challenges for science and theory development. However, the challenges are worthwhile given their potential for furthering nursing’s unique and innovative contributions to human health and health care. This chapter is a beginning in what I hope will become an extended dialogue about innovations in developing nursing knowledge. Authors of subsequent chapters take up the dialogue from their various practices and perspectives.

**THE SPIRAL PATH**

Along the hiking trails in mountains where the ancients once walked, you can spot petroglyphs, ancient carvings or inscriptions, embedded in the rocks and boulders. Some of these depict a spiral form, which is found on every continent. I used this spiral form to symbolize a process of knowledge development in nursing (see Figure 1.1). To the ancient people, the spiral form represented one of various ideas that can apply to the process of knowledge development: an energy; a life-giving source like water; a process of emerging or transcending; a portal or gateway from the mundane to the eternal realms; or perhaps most relevant to the career of being a nursing student or scholar is its symbolization of a life journey and the challenges for growth faced along the way.

The petroglyph that inspired the spiral design resembles a foot path, earthy and imperfect, of various turns. It is not a perfect spiral like the artificial depiction you might find in a catalog, but rather, it is imperfect to represent the natural, dynamic, and often messy processes of nursing practice, science, and theorizing.

The spiral path has six turns—there could be more or fewer. Each turn corresponds to a particular focus and tool of inquiry for knowledge development. The components of the Path are not arranged hierarchically, unlike other models of the structure of nursing knowledge. Instead, the spiral is an ongoing and nonlinear path, open to influences that can be incorporated for innovative and unpredictable change. The Path, rather than being a series of concentric circles, is a spiral form to convey continuity across the dimensions; from everyday knowledge work to scientific theories, knowledge construction is a “fundamentally continuous” process, as described by the practicing scientist Fleck in his book on comparative epistemology, *Genesis and development of a science fact* (cited in Smith, 2005, p. 26).

The spiral path is a way of thinking about how various components of knowledge development are organized and related. What are listed here may be modified or expanded, depending on your context of nursing science and practice, and depending upon what you would like to emphasize—a pragmatic turn? an ethical
turn? or a spiritual turn? It is likely, though, that any approach to knowledge development involves a dynamic network or web of components that includes philosophical, empirical, and theoretical dimensions of the discipline.

Knowledge development is, above all, an emergent process, paralleling the process of change that its creators undergo over time—open and ongoing, developmental and sometimes decremental, patterned yet unpredictable, complex yet organized, bringing forth outcomes that are greater than the sum of its various turns, but still influenced by each turn. The scientific knowledge produced, as indicated by the theory circle, is not necessarily cumulative nor is it unchanging or unchangeable, but it is relevant to the practice situation or problems to which it is linked. And of course, other forms of knowledge inhabit the Path. Nursing knowledge is enriched by many patterns of knowing, which inform, and are informed by, the scientific pattern represented by the theory component of the Path.

THE CONTEXT OF THEORY

Theory is a central component in the path of nursing knowledge. Theory is the "vehicle of scientific knowledge, and one way or another become[s] involved in most aspects of the scientific enterprise" (Suppe, 1977, p. 3). Theory exists within a context of philosophical, empirical, and theoretical dimensions, and has a path of inquiry whereby theory emerges out of nursing practice and research. Theory also functions reflexively to inform nurses’ practice and research. This path of inquiry is
Nursing Knowledge and Theory Innovation

represented in Figure 1.1, which highlights key aspects of the philosophical, empirical, and theoretical dimensions of knowledge development.

**Philosophical Dimension**

The philosophical dimension consists of conceptual components that influence knowledge development, including philosophy of science, the nursing metaparadigm, and philosophy of nursing as well as personal beliefs and values. These philosophical components express the conceptual perspectives that influence (or at least are related to) the substantive focus of theories (ontology) and the process focus on empirical methods and patterns of knowing and warranting knowledge (epistemology) in a discipline. The philosophical dimension broadly describes the way things are from a certain perspective of reality, and the way things should be from a certain perspective of morality. In Figure 1.1 of the Path, these dimensions are represented by the Philosophy of Nursing and the Philosophy of Science.

**Empirical Dimension**

The empirical components are the observables used in knowledge generation as obtained directly or indirectly through the senses, for example, through the nurse’s personal life experiences, nursing practice and other professional experiences, the patient’s assessed needs and perspectives, research methods of observation and measurement of variables in the theory, and empirical findings from research. Of course, because our body and mind are not distinct Cartesian entities, anything obtained through the senses is already interpreted, as influenced by conceptual (philosophical and theoretical) dimensions. These dimensions, represented by the Practice of Science and the Practice of Nursing in Figure 1.1, sit between the philosophical and theoretical dimensions in the Path figure because these material, embodied practices are considered to be a linchpin in nursing knowledge development.

**Theoretical Dimension**

The theoretical dimension in the path of knowledge involves both a process and product, that is, theoretical thinking and the conceptual structure called a theory, respectively as represented toward the center of the Path in Figure 1.1. Theories are open systems, which are amenable to change and possible improvement by critique, modification, and refinement through ongoing theory development and evaluation. Theory development is influenced by both the philosophical and empirical dimensions. Theories link the everyday world of practice and the philosophical perspectives of reality.

**METATHEORY**

Metatheory is a word that ties together the three areas addressed in the Path. Metatheory refers to the study of how the philosophical, theoretical, and empirical components in the structure of knowledge work together to produce nursing theory. It is a term used across disciplines, and sometimes it is used to refer to an
overarching theory. But most often it is used, as described here, in the broader philosophical context of knowledge development rather than as a specific theoretical perspective. Metathterapy is not a theory per se but rather a domain of conceptual tools that inform development of substantive theory, theoretical concepts, and research design.

Nursing metatheory identifies the domain of nursing that addresses the philosophical perspectives, substantive focuses, and methods concerning nursing knowledge. Metatheory encompasses all of the elements that are used in developing nursing knowledge, especially the following: philosophies and methods of science; nursing ontology and epistemology; the nursing metaparadigm and the conceptual models that elaborate on the metaparadigm concepts; middle range and other levels of theories; and the nurses’ personal values and professional practice domain (Reed, 2010). These metatheoretical tools inform and influence the development of theories and theoretical concepts (Sibeon, 2007).

It is important to attend to these metatheoretical components, which are represented in the Path of Nursing Knowledge, because they account for the human context of science. While theory and knowledge development are addressed here as primarily scientific activities, nonetheless they are human activities—replete with personal values, fallibility, and biases, and influenced by historical, cultural, and social contexts. This fact, along with the inability to remove the challenges and doubts that it interjects into our quest for knowledge, is regarded amusingly by Smith (2005) as the scandal of philosophy of science, and it has nearly paralyzed the creativity and productivity of some philosophers and scientists! But as nurses, we embrace the human messiness of knowledge development, as we do in our nursing interactions with people in the midst of wellness and illness, living and dying. Indeed, the context of discovery is very much a part of the metatheoretical concerns about the development and justification of scientific knowledge and theories. And so, let’s take a brief tour around this path of nursing knowledge, one step at a time.

PHILOSOPHY OF NURSING

The Path begins anywhere, but we will start at the outmost circle, with the turn toward our own philosophy of nursing. Scholars tell us that all knowledge begins and ends with philosophy and nurses are philosophers! Whenever you wrestle with questions about what is morally right or wrong in a patient care situation, when you reflect on what you believe relative to your choices and actions as a practitioner or a teacher or researcher, when you reflect on what you value and its influence on your science or practice, when you’re faced with gray situations where there is no one right answer or approach—you are engaging in philosophical inquiry, whether or not you have been formally prepared in the logic and theory behind it.

Philosophers confront questions that cannot be answered by scientific inquiry, but philosophical inquiry nonetheless can provide a window into understanding what evidence you choose to believe in and why, what health goals you pursue
Refl exivity is an important attitude, from a stance both within and outside the situation, to consider explanations, values, and influences on your beliefs and goals in nursing. You can construct your own philosophy of science by engaging in philosophical inquiry, reflecting on and writing down the following elements: your ontological and epistemological views, your metaparadigmatic statement about nursing, and the personal values and professional and life experiences that may influence these views.

**PHILOSOPHICAL INQUIRY**

Philosophical inquiry is a tool in knowledge development because it raises awareness of factors that influence or inspire your knowledge development in practice and research. Questioning is a key practice within philosophical inquiry. To question is to “decline to take for granted” (Smith, 2005, p. 7). Some of the purposes of philosophical inquiry are as follows:

- To question seemingly self-evident assumptions, beliefs, values
- To expose hidden assumptions and distorted means of thinking
- To provide a context and comprehensive views of the discipline for research and practice
- To address questions that science cannot address (metaphysical, ontological, epistemological, ethical)
- To help ensure that science does not violate the values of the nursing profession
- To keep the discipline open to change through use of reason and reflection

I can learn something about your philosophy of nursing by asking you to respond to questions like the following: **What is nursing? What are the elements of a human being that nursing should attend to? Which ones are the most important? Is there an underlying order to the universe or is it mostly chaos and we make it seem orderly by our beliefs or research methods we impose on the world? Is there a Truth out there or is it found within each individual or group? How do you define health, and is it ethical to apply your definition to patients and research participants?** Philosophers dare to interrogate themselves and others with questions about disciplinary values that are not supposed to be questioned, for example, values about professionalism in nursing, the morality of promoting compliance, the inherent goodness of the nurse–patient relationship, or the scientific value in quantifying spirituality. These questions relate to one of the six areas of philosophical inquiry listed in Table 1.1.

**ONTOCILOGY**

Ontology addresses the substance or subject matter of the discipline, and in so doing, defines what the discipline considers relevant focuses for knowledge development and practice. (Incidentally, epistemology addresses the methods of or how
1. The Spiral Path of Nursing Knowledge

The term ontology has been defined in various ways but at a disciplinary level, it refers to the nature of being (human) and what is considered real and relevant (to a discipline). Without an explicit ontology, that is, without a clear picture of what substantive focuses we value for practice and inquiry, we risk some sense of identity within the discipline and we risk privileging method and other extraneous factors over substance in our inquiry and knowledge development (Yanchar & Hill, 2003).

Metaparadigm

The broadest ontological element is the metaparadigm. The metaparadigm is a highly abstract framework that outlines the central focuses of knowledge development in a discipline. The nursing metaparadigm—at least currently—consists of four concepts: person, health, environment, and nursing practice. It is open to change!

The nursing metaparadigm originated in the early 1970s with nurses in education and curriculum development. Lorraine Walker (1971) defined nursing in terms of (1) the persons providing care, (2) persons receiving care for health problems, (3) the environment in which care is given, and (4) the end state of care, well-being. Yura and Torres (1975) then identified four overall themes based upon a survey of 50 BSN programs. They identified the following four concepts: (1) man, (2) health, (3) society, and (4) nursing.

Margaret Hardy, a noted nursing sociologist and philosopher from Boston University, was one of the first nurses to use the term “metaparadigm” in the nursing literature, published in Advances in Nursing Science in its inaugural year (1978). She described a metaparadigm as representing the broadest consensus within a discipline about its entities of interest and substantive focus. Then, in an Image: The Journal of Nursing Scholarship article, Jacqueline Fawcett (1984) drew from themes published earlier, and from her previous theoretical writings on central concepts of nursing, to formalize the nursing metaparadigm as comprising the four central concepts: person, health, environment, and nursing.

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TABLE 1.1
Areas of Philosophical Inquiry

<table>
<thead>
<tr>
<th>1. Metaphysics</th>
<th>nature of reality, existence, and substance of the universe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>What is the nature of a realm of reality beyond the empirical universe?</td>
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<tr>
<td>2. Ontology</td>
<td>nature of being of a discipline</td>
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<td></td>
<td>What is the focus or substance of a discipline?</td>
</tr>
<tr>
<td>3. Epistemology</td>
<td>nature of knowledge and truth</td>
</tr>
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<td></td>
<td>How is knowledge formed and warranted in a given discipline?</td>
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<tr>
<td>4. Axiology</td>
<td>nature of values in science</td>
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<tr>
<td></td>
<td>How does the science handle values in its practice and science?</td>
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<tr>
<td>5. Ethics</td>
<td>nature of human conduct</td>
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<tr>
<td></td>
<td>What morals and codes of conduct govern scientific practices in the discipline?</td>
</tr>
<tr>
<td>6. Aesthetics</td>
<td>nature of beauty</td>
</tr>
<tr>
<td></td>
<td>What is considered “beauty” in nursing? Is being healthy beauty? Are the practices of nursing care expressions of beauty?</td>
</tr>
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</table>
Given these four metaparadigm concepts, we can say that nursing ontology describes beliefs about the nature of human beings and health, the environment, and nursing practice. These concepts are not particularly helpful in guiding knowledge development until they are linked together and elaborated in various conceptual constructions, such as conceptual frameworks and metaparadigmatic statements. For example, Newman, Sime, and Corcoran-Perry (1991) put forth their metaparadigmatic statement: *Nursing is caring in the human health experience.* Historical and contemporary nursing theories and conceptual models are a rich source for learning about nursing ontology and the diversity of perspectives on the four metaparadigm concepts. As part of your philosophical inquiry in the substance of nursing, try developing your own metaparadigmatic statement of nursing.

**Worldviews**

A second way to understand or clarify your own nursing ontology is to examine the various worldviews used in nursing to frame perspectives about human beings and their health and health care practices. Nursing worldviews may also be called philosophies, discourses, or paradigms. They propose differing beliefs about human beings, health, practice, and other nursing concepts. Some regard worldviews or identification with any overarching perspective as a bias that can corrupt our thinking. Worldviews or “Weltanschauung” typically have been depicted as expressing an implicit, unexamined understanding about the world (Crotty, 1998). But everyone holds some kind of worldview. Articulating our worldviews and critically examining them with openness to other views is a useful process in knowledge development.

Worldviews, in fact, are applied widely across disciplines to understand systems from the cellular to individual to organizational levels. In nursing, worldviews range from mechanistic to developmental views of human health processes, from particularistic to holistic views of person–environment interactions, and from reactive to transformative views of human change. These frameworks originated in various disciplines and fields, including philosophy (e.g., Stephen Pepper’s, 1942, *World hypotheses*), lifespan developmental psychology (Lerner, 1986; Reed, 1995), complexity sciences (e.g., see biologist Stuart Kauffman, 1995, and Gaustello, Koopmans, & Pincus, 2009), and nursing (see Fawcett, 1993, for a succinct overview of extant nursing worldviews). Reflecting on your own beliefs and values and/or considering which, if any, worldviews align with your thinking is a form of philosophical inquiry. Doing this can help uncover areas of interest for research as well as expose biases that influence your path to knowledge development.

**EPISTEMOLOGY**

Epistemology refers to the study of the nature of knowledge, including what is warranted as scientific knowledge in a discipline. Epistemological views have implications for selecting methods of theory development and research on the discipline’s subject matter.
Several *patterns of knowing* are involved in producing nursing knowledge, for example, personal, practice, and ethical approaches with patients and families; empirical approaches that include scientific inquiry (Carper, 1978); sociopolitical approaches that inform nurses about sources of oppression in society and science (White, 1995); and emancipatory knowing that reveals injustices and why they endure, and what might be done to remove them (Chinn & Kramer, 2008).

Patterns of knowing may be used together to generate a theory. Alternatively, as Fawcett, Watson, Neuman, Walker, and Fitzpatrick (2001) suggested, each pattern may be used to generate a specific kind of theory, for example, empirical theory or ethical theory. Overall, nurses employ a diversity of research methods to obtain quantitative and qualitative data about the complex domain of nursing phenomena.

Epistemological views are also expressed in *philosophies of science*. These philosophies relate to how problems of study are conceptualized, and underlie methods of research and theory development.

**PHILOSOPHY OF SCIENCE**

The path to knowledge development is influenced by our philosophies of science. Philosophy of science is a field of study focused on the nature and practice of science, and the growth of scientific knowledge, including the formulation, justification, and evaluation of scientific theories. The field consists of philosophies of science that propose differing beliefs about science and truth, knowledge and reality, and how all of these are related. And as with philosophy of nursing, philosophies of science may constrain our thinking, but they also enable our knowledge development, or “what we call facts to be known, what we call reality to be brought forth and experienced” (Smith, 2005, p. 59). So, clarifying your philosophy of science is a crucial, if not pivotal, event along this path of knowledge development.

There are many philosophical views regarding science described in the literature. Not all are elaborated here, for example, critical theory, critical social realism, and postcolonialism. Major philosophies of science that have influenced science and knowledge development in nursing include positivism, postpositivism, constructionism, and postmodernism. These have emerged across the history of science.

**A SHORT HISTORY OF SCIENCE**

The path to knowledge changes over time as individuals, societies, and cultures change. And some historians suggest that we cannot say one perspective is better than another at achieving “truth.” Understanding something about the history of science as it relates to your philosophy of nursing provides a context for you to clarify your own preferred philosophy of science.

From the 11th to the 15th centuries, scientists (who were mostly astronomers) worked to align their observations with the accepted theory based on the Aristotelian geocentric view of the universe (Oakley, 2000). Interestingly, science began by
looking outward far away from earth, and then worked inward toward human affairs (Magee, 2001). The path was mostly anti-empirical and followed the methods of scholasticism; people did not study nature but instead employed logic, reason, and argument to understand and interpret the wisdom in the theology of the sacred texts and the philosophical views of the ancient Greeks such as Plato and Aristotle.

The key to modern science was a shift from testing ideas by argument and discussion to testing ideas by direct observations, measurement, and experimentation (Ferris, 2010; Losse, 2004). The Aristotelian and religious worldviews of the Middle Ages gave way to the new scientific and heliocentric worldviews of the 16th century. The progression of modern science was fueled significantly by 17th century artisans working away with their own hands and ideas (Conner, 2005). Francis Bacon (1561–1626), mathematician and philosopher, is widely attributed with founding the scientific method that would launch modern science, but Conner (2005) reminds us that the evolution from earlier to modern approaches in knowledge development also occurred among the people in their daily practices of their work, generating indigenous knowledge that benefitted society.

A critical mass of thinkers occurred in the 18th century, building on the foundations of knowledge development from 17th century mathematicians and scientists as represented in the following events: the rationalism of Descartes, the scientific method and separation from metaphysics by Bacon, the abstractionism and mechanical discoveries about the universe by Newton, and the empiricism of John Locke. Knowledge was based on what could be “proved logically, tested scientifically, or verified empirically” (Ritchie, 2010, p. 3). This excluded other ways of knowing that derived from art, literature, religion, or personal insight. And it reinforced divisions between rationality and feeling, propositional truth and experience, verifiable history and personal meaning. Science during this time was built on the study of closed, physical systems, which were amenable to mathematical calculations, assumptions about invariant natural laws, and making precise predictions.

**Positivism**

The scientific revolution of the 17th century helped foster 18th century enlightenment ideas about social progress, human reason, and intellectual freedom. Also during this time, positivism emerged as a philosophy of science in part through the demarcation of scientific discourse from other ways of knowing. It promised progress toward increasingly accurate causal explanations of the world and the unification of all scientific inquiry. This philosophy was based upon an objectivist epistemology, which holds that meaning and reality exist independent of observers’ values. Auguste Comte popularized the term “positivism” to distinguish knowledge that would come by speculation or reference to natural law as opposed to knowledge arrived at by direct experience. Comte and the members of the Vienna Circle held an interest in applying strictly empiricist methods of the natural sciences to the social and human sciences. They were interested not only in knowledge but also in precise methods to obtain knowledge. The tenets of positivism include beliefs in the following events and perspectives:
1. The Spiral Path of Nursing Knowledge

- Objective reality exists independent of culture and observer
- Truth is based on achieving correspondence between theoretical concepts and observables
- Ability of science to attain value-free knowledge of reality
- Clear demarcation between science and all other ways of knowing, especially that concerning religion
- The context of justification, not the context of discovery, of knowledge is the appropriate concern of science
- Observational evidence is valued over theoretical explanations as a basis for scientific inference
- Knowledge comes principally from experience and inductive reasoning
- Scientific results reveal regularities that can be generalized
- Scientific knowledge is built as theories accumulate in a linear manner

Postpositivism

Additional emphases of logic, mathematics, and the use of language transformed positivism into logical positivism during the early 20th century. Postpositivist scientists challenged and tempered the positivist claims of certitude and precise observations without negating its basic objectivist perspective. That is, postpositivism retained the positivist view of reality as "out there" independent of human experience. The tenets of postpositivism state the following:

- Theory and data are not separable; theory influences perception of the "facts"
- Truth is based on achieving theories' correspondence with a reality that is observable yet cannot be fully known
- Science produces inexact knowledge about reality
- Observational evidence underdetermines scientific theories
- Conjecture and deductive reasoning are used in theory development
- Theories are tested by falsification, not verification
- Scientific results are probabilistic
- There are many paths (and methods) but still only one truth, one reality

Twentieth-century discoveries led scientists to question some of their positivist assumptions. For example, discoveries, during the 1920s, in physics about the structure of the atom and scientists' inability to determine its subatomic particles' positions with accuracy stimulated questions about their views of reality, the nature of these particles, and science. Scientists began to realize that there was a gap between what they could directly verify by observation and the entities and concepts described in their theories. Their objects of study were too fast, too large, or too small to be directly observed (e.g., electromagnetism, gravity, evolution, embryo, and ego) and description of these proposed entities required conceptual innovations. Scientists began to realize that they were more actively constructing scientific knowledge than they were passively "receiving" it from nature above.

The noted postpositivist philosopher Karl Popper proclaimed that all observation takes place within the context of theory and is shaped by theory. The received view, coined by Hilary Putnam to describe the relationship between the reality
and the theorist, became the *perceived view*, to emphasize the role of perception in observing reality. The scientist and historian Thomas Kuhn (1962) put forth the idea that scientists in fact make sense of the world by looking through a conceptual apparatus called paradigms, which are based in history and change over time. By the 1960s, these and other influences weakened the dominance of objectivist epistemology, although vestiges still remain in science today, along with constructionist views of reality and knowledge.

**Constructionism**

Constructionism rejects the view that there is an objective truth and observable reality *out there*, waiting to be discovered. Meaning and knowledge are not discovered but rather are constructed through social interactions between people and between person and environment. Nevertheless, as one writer pointed out, Kuhn’s paradigm-shifting revolutions did not completely remove the relevance of science done under a previous paradigm; space shuttles still fly according to Newton’s laws (Ferris, 2010).

From constructionism, we understand that theory development is a product of social processes between people and their environment (e.g., between the researcher and participants, nurse and patient, the nursing discipline and society). Theory involves interpretation and meaning-making out of our observations. Basic tenets of constructionism include the following:

- Science is a process rather than an event of linear progress
- Knowledge is a product of social interchanges among people, their environment, and culture
- Truth is influenced by nonobservational factors (e.g., social, psychological, historical) that influence the context of discovery, as well as the empirical factors under study
- Acceptable theories achieve coherence within a system of knowledge
- A diversity of research methods are used to study social processes
- Historical and cultural influences are realities of research
- Scientists eschew foundational views but depend upon shared ideas and values
- Knowledge is built by consensus across paradigms
- The practitioner is obligated to confront pragmatic implications and to justify why something is meaningful or useful rather than to justify whether it is true

**Postmodernism**

Popper and Kuhn’s critiques of positivist science “somewhat unwittingly” laid the foundation for postmodernism (Ferris, 2010, p. 247). In postmodernism, science is regarded as a culturally influenced approach that is not necessarily any better than other forms of discourse (e.g., poetry and fiction) in conveying truths (Ferris, 2010, pp. 247–249). Postmodernism resists description. Crotty (1998) applied the epistemological view of subjectivism to describe the relationship between theorist and reality underlying postmodernism as well as poststructuralism, a perspective that is related to, but distinct from, postmodernism. Subjectivism emerged in the latter half
of the 20th century. In subjectivism, meaning is imposed on the focus of study by the inquirer. Meaning does not emerge out of the interaction between people but instead emerges more from within (Crotty, 1998). Not all postmodernists adhere to this subjectivist view. Some are especially concerned with the detrimental effects that one’s inquiring or scientific gaze has on another.

Postmodernism cannot be summed up in a list of tenets. There are many differences across philosophical views. In general, however, postmodernists eschew four key ideas that are found in either or both postpositivism or constructionism:

- Foundationalism—in *epistemology*, a belief in an unchanging foundation or one view of truth
- Essentialism—in *metaphysics*, the view that people have an “essence”—characteristics that constitute universal features of human nature
- Realism—in *metaphysics*, the belief in a reality that exists independent of historical or social context
- Representationalism—in *philosophy of language*, the view that neither scientist nor artist can reproduce or “mirror” reality. Postmodernists may employ a method called *deconstruction* (from poststructuralism) to reveal the “foolishness” of modern science attempts to represent reality through research findings

Postmodernism’s iconoclastic and pluralistic attitudes opened up new possibilities for nursing knowledge development (Reed, 1995). This philosophy of science helped dislodge nurses from dichotomous thinking about science and art, qualitative and quantitative data, empirical and spiritual, facts and values, and theory and practice. This process is not unlike the interpretive method of the hermeneutic circle, where one spirals back and forth between dichotomous or contradictory elements (e.g., part and whole, what is understood and what is not understood, illness and wellness) to gain better understanding of a concept or situation. Nurses entertain the possibility of multiple interpretations, meanings, and methods in knowledge development, and with all scientists of modern philosophical views, postmodernists share a value for skepticism; an enthusiasm for discovery; and a desire for emancipation from ignorance, prejudice, and oppressive authority.

Judd (2009) explains that even Bacon (1561–1626), philosopher and founder of the modern scientific method, was an exemplary model for breaking the rules in the interest of knowledge development. Bacon’s empirical method and spirit of experimentation separated him from the beliefs of medieval church scholars and Aristotle’s principles of natural philosophy to inspire liberal intellectual thinking in a new practice of science.

**INTERMODERNISM: A PLACE BETWEEN MODERNISMS**

As we travel around the path from Philosophy of Nursing and Philosophy of Science, let’s stop just before the next turn where *philosophy* transitions into *action* to consider one final philosophical perspective as it relates to our efforts to produce nursing
The postmodern discourse on science may have led you to question the value of traditional scientific approaches in knowledge development, if not to construe science itself as a hegemonic practice incongruent with nursing's humanistic and holistic goals. It is not uncommon to read that the terms "postmodernism" and "science" together create an oxymoronic phrase! The two discourses do have some distinct differences. However, the use of reason, questioning, and skepticism that drove the scientific revolution of the 17th century is still valued today, and helps science to endure as a critical, open, and reflective practice that generates knowledge for a discipline. Nevertheless, I suggest that we extend our thinking to consider a place between modernisms—between modern and postmodern views—that may better fit 21st century nursing and support practices of nursing science not represented by the other paradigms. I call this perspective intermodernism.

Intermodernism builds on an initial formulation of a philosophy of nursing science called neomodernism that I presented several years ago (Reed, 1995, 2006), and some have since applied this perspective to advanced practice, science, and research (e.g., Arslanian-Engoren, Hicks, Whall, & Algase, 2005; Liehr & Smith, 2007; Whall & Hicks, 2002).

Intermodernism is a heterodox philosophy of science in that it departs somewhat from traditional views yet finds wisdom in existing philosophies. The term "intermodernism" indicates an approach that does not abandon useful categories of science yet creates a space for us to think about what features we would like or need in a philosophy of science to facilitate knowledge development through our practices of science and nursing care.

Intermodernism is reflected in the overall structure of the spiral path as well as in each element in the path. This is depicted by the arrow in Figure 1.2. The entire knowledge process represented by the spiral path—the nonlinear, nonhierarchical arrangement of elements; the absence of an end point and the openness of theorizing; and the distinct yet merged areas of practice, science, and theory—all emanate from an intermodern view of knowledge development.

You may construct a diagram depicting your own view of the structure of nursing knowledge, identifying the dominant perspective that ties together the various elements, or you may substitute new terms where mine sit on the spiral. The primary intent is to encourage thinking and theorizing among nurses about the question, "How does that which we call nursing knowledge come into being?"

The intermodern path accounts for various contingencies that postmodernists informed us about in our search for truth, the unavoidable influences on our theorizing and knowledge development. The turns of the path represent a number of these—for example, personal beliefs; life experiences; socioeconomic factors; and professional experiences, expertise, and worldview—and are regarded as opportunities to enrich rather than constrain knowledge.

THE MIDDLE WAY

Intermodernism is a new term to describe a philosophical perspective of nursing science, but it does not veer too far off the familiar path of science and knowledge
Intermodernism and the Spiral Path of Nursing Knowledge Development.

development. It honors the wisdom of the middle way. Intermodernism bridges the limitations of a strictly modern view and a strictly postmodern view of knowledge and science. There is an increasing number of scholars from various disciplines attempting to bridge modernism and postmodernism, to broaden approaches to knowledge development beyond boundaries of postpositivism but without the nihilism or other limitations of postmodernism (Mouzelis, 2008). These disciplines include biology, economics, fine arts, literature, psychology, and several health care fields such as health promotion and occupational therapy.

The intermodern view maintains a focus on the person (and other living systems or organizations) as having innate value, emotional and moral senses, and other internal attributes, yet acknowledges the reality of contextual influences (e.g., historical, political, sociocultural) on individuals, families, and communities.

Intermodernism is similar to post-postmodern views, which preserve strands of stability while avoiding radical extremes (Hickman, 2007). Post-postmodernists “tend to be interested in political philosophy, taking democracy and its ideals as a model for addressing philosophical issues.” They are pluralist in outlook, but also value “disciplinary structure in scholarship. Fields such as epistemology, theology, philosophy of science, and the history of ideas,” which were marginalized by postmodernism, have gained renewed interest (Routledge Encyclopedia of Philosophy, 2000, pp. 700–701).

The middle way is pluralistic, encouraging a diversity of ideas. Intermodernism avoids some of the extremes in postmodern philosophy found, for example, in
Kuhn’s *revolutions* and Foucault’s *ruptures* (Smith, 2005). Through paradoxical rather than dialectical thinking, differences in theories and methods can coexist without being resolved into one synthesis. Instead of the Kuhnian perspective that paradigms are incommensurable and therefore logically must compete through revolution for scientific progress to occur (Stepin, 2005), pluralism allows for new thinking; different paradigms and theories can coexist and still undergo change without being integrated or subsumed into one right view.

However, intermodernists are not so pluralist to the point of relativism where they fail to identify with some shared values in their science community and commit to a common paradigm to facilitate knowledge development, if even within the nurse’s particular practice or academic community. Shared values, for example, include personal autonomy, self-development, agency, humanism, and justice.

**PATTERN IN THE UNIVERSE**

Insofar as at least one universe of nursing is the human system in the context of health-related events and experiences, intermodernism affirms that despite some postmodern proclamations to the contrary, the perception or belief in an underlying order is a foundation of the practice of science. Scientific inquiry is based, in part, upon the idea that there exist laws, tendencies, or patterns inherent in the phenomena of interest to a discipline. Scientific progress is related to the extent that a discipline’s theories describe and explain these phenomena and help solve conceptual and practical problems.

Moreover, Carter and New (2004) suggested that the positivist aim to discover universal laws has been exaggerated since many of the laws are not invariant but rather refer to “tendencies” or probabilities that events will occur according to a given principle. Whether you believe that order or pattern resides in nature, in the perceived object, or in the perceiving subject depends upon your philosophical views about the natural and social worlds, and other values and beliefs. These views, in turn, will influence the methods you use in your practice of science to build or test nursing knowledge.

The following are 11 tenets of the intermodern perspective:

- **In-between-ness:** Theorists work in-between modernism and postmodernism, between extremes and contradictions, yet somehow outside of traditional methods. Thinking can be “[r]adical without being revolutionary, eccentric without being trivial” and is valued for its “departure from ‘high’ modernism …” (Bluemel, 2004, p. 66).

- **Nursing:** Acknowledges modernist descriptions of nursing as a practice and a scientific body of knowledge, but also defines nursing ontologically as inherent processes of well-being within and among human systems (Reed, 1997). Understandings of nursing go beyond modernist descriptions that separate the practice of science from the practice of nursing care to conceptualize nursing as a process that may occur (1) externally in interactions with professional
nurses to facilitate well-being or (2) individually and even internally where person's themselves engage their inner resources for well-being.

- **Truth:** Defined neither by theories' *correspondence* with one source of truth nor necessarily by theories' *coherence* with a cluster of other theories, but through the *coordination* of multiple theoretical ideas focused on addressing a similar problem. In addition, local truths are valued but an external “corrective” or paradigm is regarded as useful in determining just what is emancipating, good, healthful, and other value-laden truths used in nursing. In this way, nursing offers a “grounded” hope, unlike some postmodernists who offer an “ungrounded hope” from a highly relativist view of truth (Hickman, 2007).

- **Empiricism:** A new empiricism based on a broadened perspective of what comprises nursing evidence. It includes both objective and subjective data and valorizes the perspectives of patients and families as central in the discovery and justification of knowledge. In addition, there is a network of human, non-human, and hybrid elements that informs knowledge development (Latour & Woolgar, 1986).

- **Reality:** Found neither “out there” independent of the thinker (realist) nor completely within the thinker’s mind (idealist). Rather, reality emerges and acquires its specificity *through* the practitioners’ interactions and actions in health care and knowledge development. Acknowledges an underlying pattern, diversity, and innovation.

- **Methods:** Systematic methods are important to the scientific enterprise, but it is also recognized that science is a messy process, a “mangle of practice” (Pickering, 2005), a fact illuminated by the field of science studies. Knowledge development in nursing practice then exemplifies both the systematic and messy nature of science.

- **Openness:** Being open to critique, self-correction, and change and an ongoing reflection on one’s theory and practice are essential in knowledge development. Openness is congruent with the open, self-organizing nature of human systems in process with their environments.

- **Discovery:** The context of discovery—the dynamic situations and influences under which knowledge is created—achieves an importance much greater than it had in modern science, which focused on the context of justification of theories. Discovery involves multiple ways of knowing that inform and extend empirical knowing. Abductive reasoning, which is more than the mere combination of inductive and deductive logic, is a dominant pattern of practitioners. Scientific “findings” are constructed more than discovered, but they are “neither arbitrary nor are they constructed out of nothing” (Hickman, 2007, p. 28).

- **Epistemology:** Promotes a new and expanded epistemology in which science and practice partner to create knowledge. There is a reimagining of practice in the context of theory as a *source* not just as *repository* of knowledge. Practice is a pattern of knowing that informs empirical knowing and knowledge development. Knowledge development is pragmatic and performative, found in experience and in the doing, as well as in the reflecting and thinking. Technology
Nursing Knowledge and Theory Innovation

provides new tools; instruments; equipment; machines; biotechnology; and other
means for observing the unobservable, for facilitating wholeness in a posthu-
man culture, and for generating nursing knowledge (and “thing knowledge”;
Baird, 2004; Locsin, 2009) about nursing processes that promote well-being.

• Romanticism: Recognizes the reality of the human quest for meaning, good-
ness, and beauty. Metaphysical views are included in what are considered
focuses for empirical study and theorizing in nursing. Spirituality and purpose
in life, for example, can be studied empirically as expressions of human expe-
riences related to well-being. Embraces both the scientific view and belief in
an ever-present mystery in what can be known (Raymo, 2008; Tauber, 2009).
Nonepistemic (social, cultural, emotional) as well as epistemic (having to do
with knowledge) values are involved in scientific inquiry. Human beings and
indeed the universe are simply too complex and broad to be fully understood
by common-sense observation or objectivist scientific study.

• Nightingale: A scientist and scholarly practitioner, and a symbol to remind
us to strive for the following events: (1) reclaim the health and unitary focus
of person–environment and inner healing capacity espoused by Nightingale;
(2) value and build upon nursing’s indigenous knowledge, found in classic
theorists and scholars, and in lay persons in their everyday health experiences;
(3) decolonize our discipline of practices and paradigms that rob nurses of
opportunities to build knowledge and provide care from a nursing perspective
of health, illness, and end-of-life.

This list of tenets of intermodernism is not necessarily complete. You may
think of other potential tenets as you continue to read and reflect. In the following,
notice the presence of this philosophical perspective in the final sections on The
Practice of Science, The Practice of Nursing, and Theoretical Thinking. There are
other examples of intermodernism in knowledge development throughout other
chapters as well. Intermodern ideas permeate this book. You may extend this list of
tenets as you discern them in your studies and your work in nursing.

THE PRACTICE OF SCIENCE

The practice of science refers to the systematic methods and strategies of know-
ledge development commonly used in research. The practice of science in the con-
text of nursing care will require generating new scientific methods, for example,
from theories of complex adaptive systems, and refining or modifying older qualita-
tive methods such as grounded theory methodology to be more applicable to the
complex environment, interactions, and activities that occur in practice. Regardless
of the method used, it is understood that no data are “raw” in the modern sense
(as direct indicators of reality, pure and devoid of influences) and that science is a
mangle of social processes (Pickering, 2005).

Scientific discovery is “an extended process consisting of cycles of generation,
evaluation, and revision” (Darden, 2009, p. 53). The close relationships among theory
generation, evaluation, and revision show that the positivist distinction between the contexts of discovery and justification is not a useful one. It follows, then, that construction of a distinction between knowledge generation and knowledge evaluation to distinguish between PhD and DNP education and roles, respectively (American Association of Colleges of Nursing, 2004), may be a misguided principle in the practice of nursing science; this potentially could restrain nursing's full capacity for knowledge development.

WEARING TWO HATS: RESEARCHER AND PRACTITIONER

In 20th century nursing, science was modern and clean, or so it seemed. It was clear: Nurses wore only one hat at a time and did not confuse their roles of clinician or researcher—and more often, a nurse always only wore one hat, with the nurse researcher developing the knowledge that was then handed down to the clinician to apply in practice. However, as Latour (1993) explained, we have never been modern. New thinking about knowledge development in nursing brings scientific inquiry and nursing practice together more closely where nurses' observations and interactions with people in health-related situations provide opportunities for knowledge development, testing, and evaluation. But the complexity of nursing care requires creative and new approaches to knowledge development.

One reason for this complexity is that the phenomena of central concern to nursing—human beings and their health-related processes and experiences—is not easily divided for education and practice purposes into basic and applied focuses between the bench scientist and clinical practitioner. Contexts of nursing practice, that is, places where nurses interact with patients to promote health or where people engage their own health processes to help themselves heal, are also laboratories of nursing science. Because we do not easily divide the human being and health experiences into parts, our discipline cannot easily make coequal divisions, for example, between the scientists and engineers, or bench scientists and practitioners—and the practices of knowledge development cannot be separated into basic, foundational science versus the applied, technological knowledge.

ENGINEERS, NURSES, AND INNOVATION

In elaborating on the innovative thinking of engineers in his latest book, Petroski (2010) elaborates a description of the engineer that can be applied to the practitioner scholar in nursing: It is the engineer's ability not just for the “observational and predictive thinking” used in traditional science, but for “conceptual and constructive thinking” that creates new knowledge in the context of engineering problems (p. 15). Granted, all knowledge builds upon foundational conceptual knowledge and past theories in some way, but the innovative and original knowledge of engineers that Petroski (2010) champions reaches beyond the translation or application of knowledge produced by the bench science of the physicist or chemist. The knowledge developed by the engineer “cannot be taken off nature's shelf; they are pure creations of engineering” (author's emphasis, Petroski, 2010, p. 22).
So, there is a nonlinear relationship between the practice of science and the practice of nursing care that fosters the emergence of new knowledge. As with Galileo’s discoveries with the telescope, practice advanced science. Galileo’s practice with the telescope provided the needed context to (1) improve the telescope and (2) lead the way to scientific understanding of (and theorizing about) underlying principles. The pragmatics and problems of practice stimulate the practice of science. As Petroski (2010) explained, “Pure science and pure truth are things of the past.” Science is no longer “unfettered by practical concerns” free to pursue natural phenomena not connected to practice (p. 114). He witnessed that the linear model of R&D (Research and Development) has been reversed (Development and Research). And so it may be with the practice of science in the discipline of nursing, given a new emphasis on what Petroski (2101) labeled “real-world directed research” (p. 118). Solutions to problems involving complex systems will require involvement of complex systems of knowledge development. The theories generated by practicing nurses must go beyond that based on traditional principles and laws. “Principles may inspire…but they do not create the situation or structure” needed to develop knowledge (p. 174).

Thus, the practice of nursing science involves use of systematic methods to examine, evaluate, refine, and extend theoretical ideas. Theories will identify important concepts but also reach beyond description of concepts or assessment of clinical phenomena to elucidate new connections. The practice of science in the 21st century will likely involve designing new ways to gather and analyze clinical data to inform our theorizing.

THE PRACTICE OF NURSING

In looking at the spiral path, you will notice that there is no clear demarcation between the practice of science and the practice of nursing. This is the reality of practice-based knowledge development. The practice of nursing is an art of combining the contingencies of the moment, including diverse patterns of knowing, with systematic and scientific knowledge to create a caregiving situation. Similarly, Georgia O’Keeffe created her works of art from an inner creative vision but also knew the science of her practice, that is, the technical skills, methods, and basic theoretical concepts of composition, balance, and color.

And out of a nurse’s caregiving situation theory can emerge. This is the central thesis of this chapter and book. That is, with ample reflection on practice situations coupled with their fund of clinical knowledge and some understanding of theories and theory development, nurses can produce compelling knowledge in practice! This may be more easily done than explained. “Theory is created at the moment of action through a complex, and as yet inadequately understood, process of reflecting in action” (Clarke, James, & Kelly, 1996, p. 176). An intermodern conceptualization of the practice-theory link differs from modernist views of nurses who were expected to act on theories formed prior to the practice without reference to the particular practitioner or context. However, scholars were not any clearer in explaining how
knowledge was produced in practice 15 years ago when nurses were expected simply to apply theory to practice.

Knowledge development in practice is like Neurath’s boat image: Otto Neurath was a philosopher of science who likened theory building to the rebuilding of a ship at sea:

We are like sailors who have to rebuild their ship on the open sea, without ever being able to dismantle it in drydock and reconstruct it from the best components. (Neurath, 1983, p. 92).

His image does little to elucidate the process of knowledge development in practice except to emphasize the inextricable link between theory and practice.

INQUIRY INTO KNOWLEDGE DEVELOPMENT IN NURSING PRACTICE

A few scholars have taken on the challenge of explaining practice-based science and practice-based theory development, creatively extending Dickoff and James's (1968) classic thesis on “practice theory” (e.g., Diers, 2004/1985; Doane, Browne, Reimer, MacLeod, & MacLellan, 2009; Doane & Varcoe, 2005; Kim, 1993, 1999). These efforts are on the rise. From an intermodern stance, the question behind this challenge is not the classic epistemological concern “What is nursing knowledge?” but instead “How does that which we call nursing knowledge come into being?” The answer requires philosophical, ethical, and empirical inquiry.

The answer will not be found by the modern approach to theory that dichotomizes knowledge production and application research in educating doctoral nurses, practitioners, academicians, or administrators. The answer is not found in using the discourse of application when relating theory and practice. The applied idea for moving theory into practice worked when we held a postpositivist of science, which separated or at least attempted to separate knowledge development and knowledge use, science and values, the context of discovery and the context of justification, mind and body, health and health care, science and technology, theory and practice, and nursing and practice.

The answer will be found beyond (modern) notions of theory, with new interactions between nurses’ practices of science and nursing care. Much more research into contexts of health caregiving as contexts of discovery will be needed to address empirical, epistemological, and ethical issues that arise when practicing nurses practice science. Practice is an undertheorized context of knowledge development (Rolfe & Gardner, 2006).

TRANSFORMING PRACTICE KNOWLEDGE INTO NURSING KNOWLEDGE

Although practice is an undertheorized context of knowledge development, Peplau’s (1952, 1988) classic works provide excellent insights into how knowledge and theory may be generated in practice. Peplau was known for her theory on the
interpersonal relations published in 1952. However, what many nurses do not know of Peplau is her cycle of inquiry whereby she described practice as a process of transforming practice knowledge into nursing knowledge.

Peplau presented the nurse–patient relationship as a context for conceptual innovations. Her strategy for practice-based inquiry has some similarity to that described by contemporary scholars (Brown, 2009). A key point is building on existing knowledge and theories while bringing in new ideas from clinical experiences to innovate concepts for theory development. Existing theories provide a base for developing and evaluating new ideas. Knowledge builds on itself.

Peplau’s Cycle of Inquiry

Nursing practice typically has been viewed as a context for applying but not developing knowledge, but the therapeutic relationships that are integral to nursing practice are also a means for testing and building theory. Peplau’s work elevated nursing practice to the level of scholarship; that is, she connected nurse–patient interactions to theoretical ideas and concepts. She synthesized ideas from theories of Sullivan, Maslow, and Fromm. Yet her approach to inquiry for nursing let the patient and the “voice of nursing” (Johnson, 1993) be heard above the theory. In doing this, Peplau introduced an approach to knowledge development that was anchored in nursing practice, and in the science and art of the nurse–patient interaction. Development and testing of explanations through the interpersonal process between patient and nurse were done for therapeutic purposes—but, according to Peplau, this interpersonal process was also a strategy for generating nursing knowledge. Steps 1, 2, and 3 describe her strategy of transforming practice knowledge into nursing knowledge. These steps, incidentally, are also an early example—ahead of its time—of abductive thinking in developing nursing knowledge.

STEP 1: OBSERVATION OF FUNDAMENTAL UNITS. Knowledge development, according to Peplau, begins with observations made in the context of practice. For Peplau, this context was primarily the nurse–patient relationship. Observation preceded conceptual interpretations. Peplau (1952) outlined various methods of observation that yielded knowledge, including spectator observation, role-playing, and random observation. However, Peplau (1952, 1992a) emphasized participant-observation, in which a nurse uses self as both the instrument and object of observation while participating in the interpersonal process with a patient.

According to Peplau, a nurse enters a situation with theoretical understanding, personal bias, and previously acquired nursing knowledge. Patients enter with their knowledge and with the powers and capabilities of a developing human being. Patients possess the principle data for inquiry in the form of underdeveloped or unused competencies, subconscious meanings, and personal knowledge. Nurses possess knowledge of methods to help patients make use of their competencies and to regain well-being.

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1 Portions of this text were adapted from Reed (1996) with permission from John Wiley & Sons.
Peplau (1992b) explained that, while on a “philosophical level” human beings may not be reducible, elements about human beings can be studied and measured to develop nursing knowledge at the “theoretical level” (p. 88). Scientists and scholars agree that knowledge production, at least in part, involves placing boundaries around phenomena. Relevant “units of observation” according to Peplau are those that are meaningful and useful to patients, measurable, and definable, and that can be replicated and compared with other data (Peplau, 1952, p. 270). Fundamental units of inquiry within Peplau’s theory (1952, 1988) are processes and patterns and the problems that can emerge from them.

**Processes** refer to behaviors that develop over time in observable phases (Peplau, 1987, 1992a). She included nursing therapeutic processes, such as the four-phased interpersonal relationship, as that which “co-operates with and assists” other processes to move the patient toward health (p. 125).

**Patterns** are comprised of separate thoughts, feelings, or actions that share the same theme or aim (Peplau, 1987, 1992a). Patterns that are shared by two or more people are called “pattern-integrations,” and they may be mutual (when both parties exhibit the same set of behaviors), complementary, or antagonistic.

Thus, building knowledge entails observation of human processes and patterns, fundamental units of study. The problems that arise from these may also be studied, while drawing from knowledge about the underlying processes and patterns to produce theoretical explanations.

**STEP 2: PEELING OUT AND TESTING THEORETICAL EXPLANATIONS: PEPLAU’S ABDUCTIVE APPROACH.** Once initial observations are made by a nurse in an interpersonal relationship, theoretical concepts are then “peeled out” and drawn into the interpersonal process to explain observed phenomena (Peplau, 1973; Letter to Geraldine Ellis cited in Welt & O’Toole, 1989; Peplau, 1988). This process is not unlike abductive reasoning described in the section on Theoretical Thinking. Peeling out refers to abstracting concepts from clinical knowledge and from existing scientific theories and conceptual frameworks; these concepts represent the phenomena observed in practice, and are subsequently connected together in a logical way to formulate a conceptual or theoretical framework. Peplau (1988) identified this as part of a nursing process of “interpreting observations.” This process includes such investigative activities as creative invention, decoding, subdividing data, categorizing data, identifying layers of meaning at different levels of abstraction, and applying a conceptual framework to explain phenomena.

Through “peeling out,” hypotheses are drawn from the nurse’s observations (Peplau, 1952, p. 269). These tentative explanations that are formulated are then validated with the patient and tested for their meaningfulness and usefulness in the context of the nurse–patient relationship.

Peplau’s theorizing was not limited by a strict adherence to formulating operational definitions or deducing testable statements from existing “high theories.” Rather, Peplau’s regard for universal patterns in psychosocial development, learning, and other human experiences was tempered by her emphasis on the clinically based reality created during encounters with patients (Reed, 1996).
STEP 3: TRANSFORMING ENERGY AND TRANSFORMING KNOWLEDGE. The final step is application of theoretical knowledge through interactions with patients. This results in the transformation of practice knowledge into nursing knowledge. The term “application” hardly captures this transformation, because it requires aesthetic perspective, intellectual competencies, and clinical judgment (Peplau, 1988, p. 13).

The test of the truthfulness of knowledge, according to Peplau (1952; 1988), was not based upon how well the knowledge corresponded to a preexisting theory but how effective it was in helping patients enhance their self-understanding and developmental progress. Nursing knowledge is developed in the context of practice through synthesis of (1) existing scientific theories, clinical observation, and judgment of nurses, and (2) knowledge and active participation of the patients. Thus, Peplau’s interpersonal process provides a context for engaging in both nursing care (helping the patient to transform anxiety into productive energy) and nursing science (peeling out theories, testing them, and in so doing, transforming practice into nursing knowledge.)

NURSING KNOWLEDGE

In Peplau’s (1952) cycle of inquiry, nursing knowledge that is generated through nursing practice is further evaluated and refined through research methods. The resulting knowledge becomes part of a practicing nurse’s repertoire of nursing knowledge, which undergoes transformation and validation in subsequent nurse–patient encounters, as the cycle of inquiry begins again.

During the early modern era of nursing, nursing researchers often borrowed knowledge from other disciplines to be passed on to the practitioners. However, Peplau’s (1952) cycle of inquiry produced practiced-based nursing knowledge rather than borrowed knowledge. It is nursing knowledge by virtue of its link to nursing processes and nursing practice. In sum, Peplau's cycle of inquiry provides a classic perspective on nursing practice as more than a context for applying a tested and refined theory: Practice is a context for initiating and testing theory.

THEORETICAL THINKING

Theoretical thinking, identified near the center of the figure, really spirals through the entire journey of the path. It is an ever-present practice. All disciplines have theories and engage in theoretical thinking. In fact, everyone has working theories about how they view their world and how things function. Children create their own theories to explain how and why things occur. Adolescents and adults do this as well. Practitioners think theoretically to make sense of their everyday encounters. It is the scientists who are unusual in regard to theorizing—they have explicit rules about how to develop theories, how to use them, and how to judge their theories.
Theoretical thinking is the basis of our humanity. It is in our ability to “make theories, to test them from experience, and then make new and better ones, that intelligence emerges” (Gopnik, 2009, p. 186). Gopnik explained that the scientists’ ability to theorize reflects a person’s ability to continue to learn, to be open to new thinking, and to define the world in new ways. This ability, he says, brings dignity to those who make theories.

All thinking is impregnated with theory, especially our scientific conceptualizations. Ferris (2010) explained that we are now so enlightened about the presence of theory that we tend to mock the 17th century idea that science is merely the sum of observations and take for granted our realization that facts and observations are theory laden. Gopnik (2009), in his publication about Darwin’s work, explained that “it is in the jump beyond, to a general rule, a theory, even a vision, that science advances.”

ABDUCTIVE REASONING

Theoretical thinking in nursing, and particularly nursing practice, may be described largely by the process of abduction. Abduction was first described by philosopher of science Charles Peirce (1934) and then elaborated by Hanson (1958) to propose a form of reasoning involved in discovering a plausible explanation, inferring a hypothesis, or generating a theory. This form of reasoning is the third but most important form of logic, next to inductive and deductive logic. Abduction generates more substantial knowledge than can either deduction or induction alone.

With abduction, the theorist brings together observation and theory, experiences and existing knowledge, to posit a potential explanation for a given situation or event. The nurse takes a creative, conceptual leap to posit possible reasons or underlying processes to explain its occurrence—and the explanation may extend beyond what is readily observed at the present time; the abduction creates a holding place for evidence that may be found later, with improved empirical methods or technology, for example, to better explain the underlying process (Weissman, 2008). Nurses characteristically mistake their abductive reasoning for the mysteries of intuition! Nurses in practice often must act upon their best judgment in the absence of perfect knowledge—making simultaneous connections between their keen observations and interactions with patients and extant theories and other patterns of knowing—to produce knowledge for action. Recognizing this expertise for theoretical thinking may enable nurses to more deliberately produce theoretical knowledge out of their practice encounters.

Abductive reasoning produces open theories. The practitioner uses new data and ideas as they arise to test and modify or refine the theory. There are several sources in the literature that outline examples, details, and steps in abductive thinking (e.g., Montgomery, 2006; Råholm, 2010; Weissman, 2008), although most focus on knowledge development by the researcher rather than the practitioner. Nevertheless, it is likely to be the new generation of doctoral nurses with all kinds of doctoral nursing degrees who will describe abductive thinking for knowledge development by practicing nurses!
CHAMPIONING THEORETICAL THINKING TO SUSTAIN A DISCIPLINE AND ILLUMINATE PROCESSES

For nurses in particular, theoretical thinking provides the disciplinary focus and basis of our practice. And theorizing helps nurses understand the clinical phenomena with which they deal everyday. By theorizing, nurses create a mental image of a concept or an event—to see, to ponder, to understand, and to communicate with others, and then use in practice in some therapeutic or meaningful way (Thorne, 2005). By theorizing, practitioners make sense of their daily lives.

Disciplines share knowledge and borrow theories from other disciplines. However, the strength of a profession's jurisdiction in practice and the clarity of a discipline's identity and contribution to society are dependent upon the explication of a discipline's own theories (Abbott, 1988; Potvin & Balbo, 2007). A key characteristic of both a science and a profession is having theories that are unique to that discipline. More specifically, the mark of scholarship in nursing practice is not the practice alone but when "the intellectual work [of the nurse]…raises the clinical instance to the level of theory" (Diers, 2004, p. 84). Both the conceptual and the empirical are valued.

Theories have important functions in a practice. Kurt Lewin (1951) is often quoted, “there is nothing as practical as a good theory” (p. 169). Theoretical thinking moves knowledge forward by imagining new concepts and mechanisms occurring in practice. “It is in the leap of the data, not the heap of the data…[where] the advance lies” (Gopnik, 2009, p. 71). Knowledge developed in the form of theory does not merely describe a situation or concepts in isolation; it links concepts, ideas, and events to each other to propose some underlying process.

The contemporary writer, bell hooks' (1999) description of writing relates to theorizing in practice: We do it “to find secrets in experience that are obscured from ordinary sight: to uncover hidden coherences in what seems to be a mere jumble of unrelated events and details, and to find incoherence in what appears to be strictly ordered; to make transparent what is opaque, and to expose opacity in what seems transparent” (p. 40). So, theories give us new perspectives, sensitize us to what patients are saying, and help us to listen in new ways and discover new ideas that can be of greater help to patients. And when our theories cannot fully explain, they can offer up abstract concepts, as a place holder for things we cannot quite grasp while we forge ahead in knowledge development, rebuilding our ship as we sail the seas.

Theoretical thinking reflects the middle way of intermodernism in that it involves analysis and interpretation, systematic thought and imagination. Theorizing is not the result of simply employing analytical thinking and a logical, standardized procedure. Nor is it a process of unplanned flashes of insight (Meheus & Nickles, 2009). It takes a little of both, plus adequate doses of creativity, imagination, and perseverance. Theories help us avoid errors from two extremes, of narrow empiricism that limits our sights to one way of knowing and “unanchored abstract thought” that attempts to explain all (McQueen, 2007, p. 22).
THEORY

Theory resides in the center of the spiral path. This position is not an end point but a place that launches the nurse back through the path to test out and refine theoretical knowledge. Theories consist of concepts and proposed relationships between concepts. They provide explanations of processes proposed to underlie or influence phenomena of interest to a discipline.

Nursing theories are emergent products of a nurse's personal experiences and beliefs, professional activities and practices, philosophy of nursing, and philosophy of science, as well as the skill and strategies nurses use in developing knowledge. Theories are open to critique and change. Writers who disparage theory (e.g., Thomas, 2007) offer worthwhile critique but often criticize from a positivist, and therefore limited, view of theory. Theories provide perspective, specificity to inform action, distinction, and clarity for one's professional identity and also provide a (relatively) secure base from which to connect and collaborate with other disciplines in practice and research.

Theories are practical in that they provide an efficient structure to frame our questions and from which to interpret the findings. Good theories help identify the factors to be studied and the questions to be asked. Theories are like clinical or research instruments; they make evidence “observable” that would otherwise be inaccessible (Weissman, 2008), while at the same time being open to testing and change as more clarity is achieved.

DESCRIBING THEORY

Theories are organizations of nursing concepts and evidence into conceptual structures that help practitioners and researchers see pattern and organization in their activities and make sense of what they observe and discover in their work. Theories by definition have both empirical and abstract dimensions. They consist of concepts and statements of relationships between concepts that point to not only a local process or event but also a possible pattern of which the local event is one example. A theory is a tool for conceptualizing and studying practice problems, proposing explanations and interventions, and testing and refining ideas.

Types of Theories

Theories come in different sizes, so to speak. These range from conceptual models and grand theories that are broad in scope and focus on a large domain of nursing, to middle range theories that address a focused area of research or practice in a discipline, to microlevel theories that have the narrowest scope and most specific focus (see Higgins & Moore, 2000, for a succinct overview).

Middle range theories are the most common theories in science. They have less scope than grand theories or conceptual models, and instead focus on specific health experiences, health and illness problems, or certain patient populations.
They are still relatively abstract yet provide some explanations about nursing phenomena. Middle range theories have concepts that can be defined empirically so that the relationships proposed in the theory can be tested or explored empirically, through systematic approaches in practice or other settings. Theories are tested by deriving research questions or hypotheses (propositions) from the theory for testing. Nurses build knowledge by testing theories against observations of the natural world, in practice and elsewhere. Testing, from an intermodern perspective, reflects evaluative values (discussed later) that are somewhat different from values promoted in modernist science.

**Theory as a System**

Theories also can also be thought of as a system, with a boundary and system conditions, interrelated parts internal to the system, and elements that are external to the system that influence its development (Dubin, 1978). The spiral path has outlined several of these external elements that influence theory, such as the nurse’s philosophy and practice. Modern perspectives depict the relationship between practice and theory as linear, one of dissemination of theory to practice. _Intermodernism_ depicts a different relationship. It is nonlinear, one of transformation where both are changed by the relationship between theory and practice. The relationship is one of transformation rather than dissemination (Latour, 1993). It is important to note that theory and practice are distinct processes because in that way they can generate the change that fosters knowledge development. As a system, then, a theory is dynamic and open to change through research, debate, critique, and through its expression in practice.

**Theory as Process and Product**

THEORY AS A GIFT. As a process, theory is a scholarly way of thinking that stimulates new ideas and illuminates potential connections between ideas. But more than this, theory is a process of interacting with patients in practice, which generates the ideas that are formulated into theories. Theory, then, may be regarded as a gift, given by the situation or encounter with patients in nursing care. The nurse’s theorizing, in turn, is a way of appreciating the gifts given by patients, a form of appreciative inquiry.

Nature writer and scholar, Kathleen Dean Moore (2010), explained that in living close to the wilderness, she had to learn to accept its gifts—and the way to learn, she said, was to practice. She did this by giving back, through her writing about nature. Nurses too, live close to wilderness and nature in their daily practice with patients and families. The insights, ideas, and lessons that nurses acquire through their work are gifts. They arise from any place where nursing is practiced—in health-related interactions with patients and their families, colleagues, students, teachers, friends and family, and in quiet self-reflection. Nurses give back not only through their practice but also by developing the potentialities of the caregiving interactions into theories of new knowledge.
THEORY AS AN ART FORM. As a product, theory can be viewed as an art form. Eisner (1985) said that “all scientific inquiry culminates in the creation of form: taxonomies, theories, frameworks, and concept systems. The scientist, like the artist, must transform the content of his or her imagination into some public, stable form, something that can be shared with others ...” (p. 26). In this way, theory is viewed as a product that proposes and shares possible explanations or solutions. Nursing theories have a particular form and substantive focus, often providing insights and interpretations on one or more of nursing’s metaparadigm concepts. The art of theory involves an abstraction from the concrete experience to inform us about a pattern (not just a part) of human health.

Theories as Nets

A modern or postpositivist view of theories portrays them as nets tossed out to the sea to catch a part of reality. We cannot catch the entire ocean, so an important first step in theory development is to clarify what part of the ocean is our focus (our ontology), and our methods (epistemology) for designing and deploying our net. The nature of the netting will influence the kind of “truths” that are caught from the ocean. Moreover, an intermodern view of theories regards the nets as reality. “The net, a web of shifting, intersecting, interacting beliefs and practices, is truth” (Ludwik Fleck cited in Smith, 2005, p. 51). Our theories, then, are quite powerful in influencing our experiences and practices with patients.

EVALUATING THEORIES

Evaluating theories is an important process in the path of knowledge development. As dynamic, humanly constructed structures, theories need to be evaluated by a complex set of criteria. Evaluation criteria are useful in judging the merits of a theory and may also be used to guide the development of a theory. These criteria typically reflect both epistemic values (which are concerned with justifying the theory as true and accurate) and cognitive, social, or moral values (which also warrant the knowledge but in a manner connected more closely to the social dimension of science.) Standard values from modernist science include empirical adequacy, parsimony, coherence, generality, predictability, broad scope, fruitfulness, and objectivity. From an intermodern perspective of knowledge, which is pluralistic in its approach to differing values, the list of criteria includes selected standard criteria (e.g., empirical adequacy) as well as new criteria, all of which are believed to support the aims of science. The following list, then, proposes new considerations of several standard criteria for evaluating theories (Longino, 2008):

- Parsimony may be modified to allow for complexity to better capture the complex and dynamic nature of a human system or situation.
- Coherence may be modified to value novelty in a theory so that theories do not necessarily have to be consistent with existing theories and the status quo. Theories that offer new understandings are desired over accepted theories that perpetuate older views not appropriate or useful in the present context.
Generality and scope of a theory may be purposely limited or focused so as to explain patterns unique to a given situation, case, health experience, or group of people, for example.

Fruitfulness or pragmatic adequacy, which typically focuses on a theory's ability to generate new research problems, may be modified in practice situations to focus on a theory's capacity to alleviate human needs and promote health empowerment.

Overall, then, we do not necessarily want criteria that promote homogeneity and unity in nursing knowledge and theories. There is rarely one causal factor or even one stable set of factors that explains health processes and experiences. Human beings, who comprise nursing’s major focus, are complex and dynamic. Where traditional science calls for criteria that help screen out alternative theories to arrive at the one best theory, we often need a pluralism of theories to explain nursing phenomena. This can happen only if practicing nurses, as well as other participants in scientific inquiry, join together in the production and evaluation of nursing theories.

**TOWARD A NETWORK OF SCHOLARS**

Van den Daele (2004) explained that since the 19th century, modern science progressed as the “implicit and embodied knowledge of the practitioner [was replaced] by the explicit and disembodied knowledge of the scientists” (p. 34). However, he goes on to warn that the traditional scientists’ vision for knowledge development may be too narrow for the increasingly complex nature of society. “In dealing with complexity, the limits of the knowing scientists may be narrower than the limits of the knowing practitioners, for instance in handling human life and behavior, organizations, or technical systems” (p. 34). Clearly, the wisdom of the practitioner along with other nurses will be needed to build the knowledge and theories of the 21st century.

According to 20th century modernist practices of science, nursing research and practice were regarded as separate domains: Scientific knowledge was developed by the researchers and then handed down through mechanisms variously called dissemination, application, or research utilization to practicing nurses. Postmodernist ideas spread in the later third of the 20th century and challenged traditional thinking across many disciplines about knowledge generation. The movement stimulated new ideas about the relationship between theory and practice and who should participate in defining truth for a discipline. Shifts in thinking about knowledge development and practice are still unfolding in this century.

As a discipline rich with practice, theory, and research dimensions, nurses can be thought leaders in knowledge innovations that advance societal welfare. Nursing science and practice employ multiple patterns of knowing and views of truth while still valuing certain foundational principles first expressed in the grand theories. Nurses are embracing multiple methods of theory development and research, and a pluralism of theories that inform nursing interactions. Classic theories are still appreciated for their historical significance in distinguishing nursing among other
health care disciplines and as a foundation for knowledge development, but new ideas about theory and knowledge development are on the horizon—ideas generated by the knowledge potential inherent in the burgeoning of doctoral nurses who will enter practice as well as academe and other scholarly positions in the next decade. Nursing theories will have to be accessible, flexible, and responsive to the knowledge needs of practicing nurses and the public. Theory will not so much be applied or disseminated from research to practice as it will emerge from scholarly thinking in practice, and then continue to be transformed as practice contexts change.

Theories are windows for the world to peer in to the knowledge of disciplines. What knowledge will enter the world through nursing? Nursing has an increasing number of doctoral level practicing nurses who will become an untapped resource for knowledge development if they are not educated into the knowledge building process. Historians of science tell us emphatically that to sustain our profession, knowledge must become disciplinary; that is, there must be an ongoing and organized core of like-minded individuals who work together in building knowledge into useful and meaningful theories of that discipline. Our large and complex discipline needs a network of strategies and a network of scholars for knowledge.

Knowledge development draws from philosophical, empirical, and theoretical dimensions of nursing knowledge. A scholar sees all practices as inquiry, always asking why, yet appreciating the mystery, and always reaching for new ideas—whether predominantly as a practitioner, philosopher, scientist, theorist, teacher, or learner. We need nursing scholars in all practices who can walk the path of inquiry to build nursing knowledge. Engaging and educating practicing nurses more deliberately, along with other graduate nurses, in theory development will provide nursing with a more sustainable approach to fostering knowledge for our future health care needs.

QUESTIONS FOR REFLECTION

1. How has this chapter helped you to answer the question, “How does that which we call nursing knowledge come into being?” From your experiences, do you have ideas about this that were not presented in this chapter?
2. How do you see the Path as influencing your participation in building nursing knowledge?
3. What component(s) of the Path were most helpful in understanding how nursing knowledge can be developed? Which components of the Path left you with questions?
4. Eleven tenets of intermodernism were proposed. How closely do you identify with the perspectives of this new philosophical view? Do you disagree with some tenets?
5. How has this chapter helped you begin to think about your own theory innovations through your nursing practice or research?
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