

AQUICHAN

Aquichan

Universidad de La Sabana

aquichan@unisabana.edu.co

ISSN (Versión impresa): 1657-5997

COLOMBIA

2005

Jacqueline Fawcett

MIDDLE-RANGE NURSING THEORIES ARE NECESSARY FOR THE
ADVANCEMENT OF THE DISCIPLINE

Aquichan, octubre, año/vol. 5, número 001

Universidad de La Sabana

Chía, Colombia

pp. 32-43

Red de Revistas Científicas de América Latina y el Caribe, España y Portugal

Universidad Autónoma del Estado de México

<http://redalyc.uaemex.mx>



Middle-range nursing theories are necessary for the advancement of the discipline*

ABSTRACT

This article tries to discuss general aspects on models of nursing knowledge, basic elements for its development and practice. First, it shows the importance of the development of knowledge sustained by the practice and the expression of it by means of four knowledge models: empirical or nursing science, ethical, esthetical or nursing art, and personal.

A description of each model of knowledge takes place, beginning with the personal one. Its meaning is showed as something basic for the development of ethical and aesthetical models, as it is a condition sine qua non such models are not totally developed or expressed satisfactorily in practice.

It presents the discussion on evolution of epistemological questions toward philosophy and ontology. It tries to progress in the knowledge of the self or essence of what is known, to end with a summary on repercussions of knowledge models inclusion in syntax of nursing discipline.

KEY WORDS

Nursing practice, knowledge model, personal knowledge model, empirical model or nursing science, ethical model and nursing moral, aesthetic model or nursing art.

RESUMEN

Este artículo trata de discutir aspectos generales sobre los patrones de conocimiento de enfermería, y los elementos de fundamentación para el desarrollo del conocimiento y la práctica. En primera instancia muestra la importancia del desarrollo del conocimiento que sustenta la práctica, y cómo éste se expresa en cuatro patrones: empírico o ciencia de enfermería, ético, estético o arte de enfermería y el conocimiento personal.

Se hace así mismo una descripción de cada patrón de conocimiento, comenzando por el personal. El significado de este patrón, el menos desarrollado de los cuatro, se muestra como algo básico para el desarrollo de los patrones ético y estético, ya que es casi condición sin la cual los mencionados patrones no pueden desarrollarse a plenitud ni ser expresados en la práctica de manera satisfactoria.

Se plantea la discusión de la evolución de las preguntas epistemológicas de los patrones hacia lo filosófico y ontológico. Es decir, se pretende progresar del conocer hacia el ser o esencia de lo conocido para terminar resumiendo las repercusiones que tiene la inclusión de los patrones del conocimiento en la sintaxis de la disciplina de enfermería.

PALABRAS CLAVE

Práctica de enfermería, patrón de conocimiento, patrón de conocimiento personal, patrón empírico o ciencia de enfermería, patrón ético y moral de enfermería, patrón estético o arte de enfermería.

* Paper presented at a conference sponsored by Universidad de La Sabana. Facultad de Enfermería, Chía, Cundinamarca, Colombia, October 26, 2004.

¹ PhD, RN, FAAN. Professor College of Nursing and Health Sciences University of Massachusetts Boston, USA.
jacqueline.fawcett@umb.edu



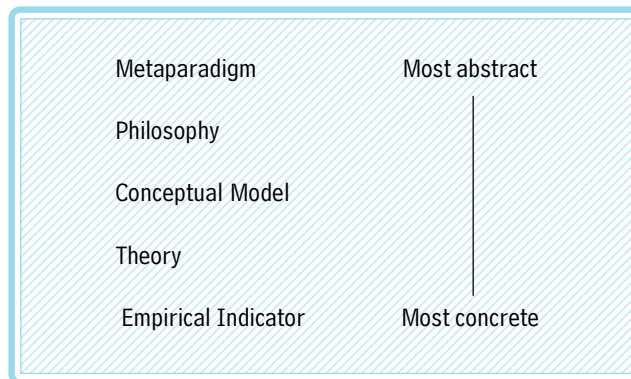
I am honored by the invitation to speak with you today. I bring you greetings from your nursing colleagues throughout the United States of America and especially, from the nursing faculty and students at the University of Massachusetts Boston. This morning, I will discuss my ideas about the role middle-range nursing theories play in the advancement of the discipline of nursing. I will start by identifying the place of middle-range theories within the larger body of nursing knowledge, which I call a structural holarchy. I will then define each component of the structural holarchy and explain its function. Next, I will identify three types of middle-range theories and associated types of research. Then, I will discuss the derivation of middle-range theories from conceptual models and identify three approaches to connecting conceptual models with middle-range theories. I will continue by identifying middle-range nursing theories that have been derived from Roy's Adaptation Model. Finally, I will discuss the importance of continued development and testing of middle-range theories to the advancement of the discipline of nursing.

The Structural Holarchy of Nursing Knowledge

I have identified a structural holarchy of nursing knowledge that differentiates five components of nursing knowledge according to their level of abstraction (1). A holarchy is made up of components

that are whole within themselves but also part of a larger whole. In this case, the larger whole is nursing knowledge. Thus, each component of nursing knowledge is a complete whole but also is a part of a larger whole. As can be seen in Figure 1, the most abstract component is the metaparadigm and the most concrete component is the empirical indicator.

FIGURE 1. The structural holarchy of nursing knowledge: components and levels of abstraction



Components of nursing knowledge: metaparadigm

A metaparadigm is defined as the global concepts that identify the phenomena of central interest to a discipline, the global propositions that describe the concepts, and the global propositions that state the relations between the concepts (1). The concepts and propositions of a metaparadigm are admittedly extremely abstract and provide no definitive direction for such activities as research and practice. Rather, the function of a metaparadigm is to identify the basic subject matter of the discipline. The subject matter of nursing encompasses human beings, environment, health, and nursing (1).

Components of nursing knowledge: philosophy

A philosophy may be defined as a statement encompassing ontological claims about the phenomena of central interest to a discipline, epistemic claims about how those phenomena come to be known and ethical claims about what the members of a discipline value (1). The function of a philosophy is to communicate what the members of a discipline believe to be true in relation to the phenomena of interest to that discipline, what they believe about how the knowledge about those phenomena should be developed, and what they value with regard to their actions and practices. Those functions of a philosophy sometimes are presented in the form of world views. Three major world views evident in the works of nurse scholars are the reaction world view, the reciprocal interaction world view, and the simultaneous action world view (1). The major features of each world view are presented in Table 1.

Components of nursing knowledge: conceptual model

A conceptual model is defined as a set of relatively abstract and general concepts that address the phenomena of central interest to a discipline, the propositions that broadly describe those concepts, and the propositions that state relatively abstract and general relations between two or more of the concepts (1). The

function of each conceptual model is to provide a distinctive frame of reference that tells members of a discipline how to observe and interpret the phenomena of interest to the discipline. Although conceptual models address all of the concepts representing the subject matter of the discipline, as identified in the metaparadigm, each metaparadigm concept is defined and described in a different way in different conceptual models. The most widely recognized and utilized conceptual models of nursing in the United States of America, and perhaps in other countries, are Johnson's Behavioral System Model, King's Conceptual System, Levine's Conservation Model, Neuman's Systems Model, Orem's Self-Care Framework, Rogers' Science of Unitary Human Beings, and Roy's Adaptation Model (2-16).

Components of nursing knowledge: theory

A theory is defined as one or more relatively concrete and specific concepts that are derived from a conceptual model, the propositions that narrowly describe those concepts, and the propositions that state relatively concrete and specific relations between two or more of the concepts (1). The functions of a theory are to narrow and more fully specify the phenomena contained in a conceptual model and to provide a relatively concrete and specific structure for the interpretation of initially puzzling behaviors, situations, and events.

Theories vary in their level of abstraction and scope. Grand theories are relatively abstract and broad, though less abstract than conceptual models. Widely used nursing grand theories include Leininger's (17) theory of culture care diversity and universality, Newman's (18, 19) theory of health as expanding consciousness, and Parse's (20, 21) theory of human becoming.

Frederick Suppe, a philosopher of science from the United States of America, has pointed out that "As science matures, the development of knowledge moves from the [conceptual models and] grand theories to the development of middle-range theories that are less abstract and more empirical or practice based" (Suppe, as cited in Schmidt, p. 9) (22). Given our interest in the advancement of the discipline of nursing, this presentation focuses on middle-range theories.

TABLE 1. Major Features of the Reaction, Reciprocal Interaction, and Simultaneous Action World Views

Reaction world view

- Humans are bio-psycho-social-spiritual beings.
- Human beings react to external environmental stimuli in a linear, causal manner.
- Change occurs only for survival and as a consequence of predictable and controllable antecedent conditions.
- Only objective phenomena that can be isolated, observed, defined, and measured are studied.

Reciprocal interaction world view

- Human beings are holistic; parts are viewed only in the context of the whole.
- Human beings are active, and interactions between human beings and their environments are reciprocal.
- Change is a function of multiple antecedent factors, is probabilistic, and may be continuous or may be only for survival.
- Reality is multidimensional, context-dependent, and relative.

Simultaneous action world view

- Unitary human beings are identified by pattern.
- Human beings are in mutual rhythmical interchange with their environments.
- Human beings change continuously, unpredictably, and in the direction of more complex self-organization.
- The phenomena of interest are personal knowledge and pattern recognition.

Middle-range theories are more concrete and narrower than grand theories; they are made up of a limited number of concepts and propositions that are written at a relatively concrete and specific level. Widely used middle-range nursing theories include Orlando's (23) theory of the deliberative nursing process, Peplau's (24, 25) theory of interpersonal relations, and Watson's (26, 27) theory of human caring.

Many other middle-range nursing theories exist. Indeed, one can argue that the product of every nursing study represents a middle-range theory (28). Several explicit middle-range theories have been presented in two recently published books. One book includes chapters addressing a theory of pain, the theory of unpleasant symptoms, the theory of self-efficacy, the theories of reasoned action and planned behavior, a theory of empathy, the

theory of chronic sorrow, a theory of social support, the theory of interpersonal relations, the theory of modeling and role-modeling, the theory of comfort, a theory of health-related quality of life, the theory of health promotion, the theory of the deliberative nursing process, a theory of self-efficacy, a theory of planned change, and a theory of resilience (29). The other book includes chapters addressing the theories of uncertainty in illness, a theory of self-efficacy, the theory of unpleasant symptoms, a theory of family stress and adaptation, a theory of community empowerment, a theory of meaning, the theory of self-transcendence, and a theory of attentively embracing story (30). Although all of the theories included in the two books have been tested in studies conducted by nurses, I am not convinced that all of them are middle-range *nursing* theories. For example, the theories of social support, self-efficacy, reasoned action, and planned behavior were initially developed

within the discipline of social psychology. One could, however, argue that as the result of their testing in nursing situations, those theories may be regarded as shared theories (31, 32). But do shared theories advance our discipline? Perhaps they do but not, I think, as much as nursing discipline-specific theories.

Components of nursing knowledge: empirical indicator

An empirical indicator is defined as a very concrete and specific real world proxy or substitute for a middle-range theory concept; an actual instrument, experimental condition, or procedure that is used to observe or measure a middle-range theory concept (1). The information obtained from empirical indicators typically is called data. The function of empirical indicators is to provide the means by which middle-range theories are generated or tested. Empirical indicators that are instruments yield data that can be sorted into qualitative categories or calculated as quantitative scores. For example, responses to an interview schedule made up of open-ended questions can be analyzed to yield categories or themes, and responses to questionnaires made up of fixed-choice items can be subjected to mathematical calculations that yield a number or score. Empirical indicators that are experimental conditions or procedures tell the researcher or practitioner exactly what to do. They are protocols or scripts that direct actions in a precise manner. Empirical indicators, then, are needed to generate and test middle-range theories.

Types of Middle-Range Theories

There are three types of middle-range theories. Middle-range *descriptive* theories are the most basic type of middle-range theory. Each descriptive theory describes or classifies a phenomenon and, therefore, may encompass just one concept. When a middle-range descriptive theory describes a phenomenon, it simply names the commonalities found in discrete observations of individuals, groups, situations, or events. When a middle-range descriptive theory classifies a phenomenon, it categorizes the described commonalities into mutually exclusive, overlapping, hierarchical, or sequential dimensions. A middle-range classification theory may be referred to as a typology or a taxonomy. Middle-range descriptive theories

are generated and tested by means of descriptive research, which may be qualitative or quantitative in design. Peplau's theory of interpersonal relations is an example of a middle-range descriptive classification theory.

Middle-range *explanatory* theories specify relations between two or more concepts. Each explanatory theory explains why and the extent to which one concept is related to another concept. Middle-range explanatory theories are generated and tested by means of correlational research, which typically is quantitative in design. Watson's theory of human caring is an example of a middle-range explanatory theory.

Middle-range *predictive* theories move beyond explanation to the prediction of precise relations between concepts or the effects of one or more concepts on one or more other concepts. This type of middle-range theory addresses how changes in a phenomenon occur. Middle-range predictive theories are generated and tested by means of experimental research, which typically is quantitative in design. Orlando's theory of the deliberative nursing process is an example of a middle-range predictive theory.

Middle-Range Theories and Conceptual Models

The definition of a theory given earlier indicates that a conceptual model always is the precursor to a theory. Indeed, the British physicist and philosopher of science Sir Karl Popper (33) maintained that inasmuch as "we approach everything in the light of a preconceived theory (33), the belief held by some that theory development proceeds outside the context of a conceptual frame of reference is "absurd" (34). Indeed, "all theories ... stem from cultural and historic contexts that lend them meaning and influence how they are understood and implemented" (35). The particular cultural and historical context from which a theory stems is evident in the conceptual models from which the theory was derived.

Many middle-range theories are needed to deal with all of the phenomena encompassed by any one conceptual model because each theory deals with only a limited aspect of the total reality encompassed by a conceptual model. Each conceptual model, then, is more fully specified by several middle-range theories (Figure 2).

Approaches to connecting conceptual models and middle-range theories

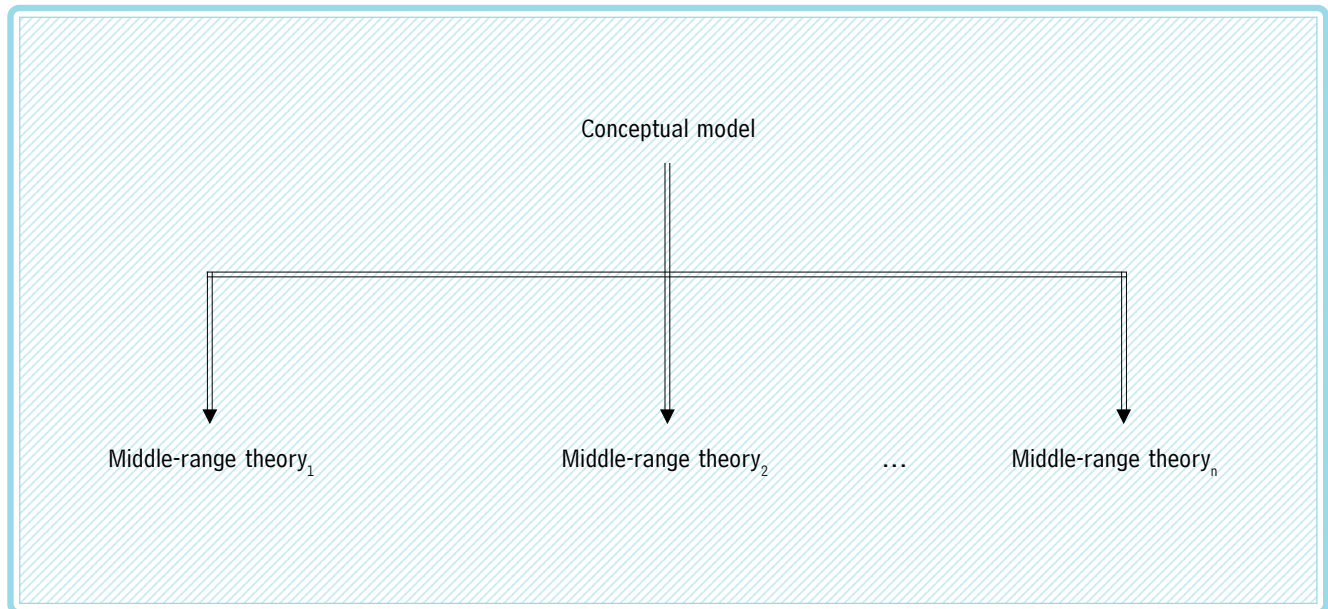
Three approaches to connecting conceptual models and middle-range theories have been identified. One approach is the direct derivation of a middle-range theory from a conceptual model. For example, two theories of family health have been directly derived from King's Conceptual System (36-39). This approach assures a logical linkage between the conceptual model and the middle-range theory. The logic is assured because the world view (reaction, reciprocal interaction, simultaneous action) undergirding the conceptual model and the world view undergirding the theory are the same.

The second approach is to link an existing middle-range nursing theory with a conceptual model of nursing. For example, a researcher might want to link the nursing theory of uncertainty in illness with Johnson's Behavioral System Model. This approach is problematic in that the world view undergirding Johnson's conceptual model

and the world view undergirding the conceptual model from which the theory was derived may not be logically congruent. Logical congruence would be evident only if the world view undergirding Johnson's conceptual model and the world view undergirding the conceptual model from which the theory was derived are the same.

The third approach is to link an existing middle-range theory borrowed from another discipline with a conceptual model of nursing. For example, the theory of planned behavior, from the discipline of social psychology, has been linked with Neuman's Systems Model and with Orem's Self-Care Framework (32). As with the second approach, this approach is problematic in that the world view undergirding the Orem's conceptual model and the world view undergirding the conceptual model from which the theory was derived may not be logically congruent. Logical congruence would be evident only if the world view undergirding Orem's conceptual model and the world view undergirding the conceptual model from which the theory was derived are the same.

FIGURE 2. Many middle-range theories derived from on conceptual model



Latham (40) rejected the third approach on the grounds that it does not contribute to the advancement of the discipline of nursing. She declared:

Grafting a particular borrowed theory onto a nursing conceptual model may be a questionable exercise. ... Rather the emphasis could be placed on creating distinctive cognitive approaches with the parameters of nursing. ... Nursing research will not advance knowledge if it continues to hang on the coattails of other disciplines. (40).

Roy's Adaptation Model and Middle-Range Theories

Early in the 21st century, Watson (41) declared, "It seems that nursing's very survival is at stake at this moment in history" (41). She went on to issue a "call for nursing to reconsider the very source and core of its existence and whether it is grounded enough to survive" in the reality of modern healthcare (41). I believe that Roy's Adaptation Model provides the necessary grounding for the survival of the discipline of nursing. This conceptual model of nursing, which was first presented almost 35 years ago (42), continues to be widely used by nurses in many countries as a guide for nursing research, nursing practice, nursing education, and administration of nursing services.

When used as a guide for all those nursing activities, Roy's Adaptation Model must be connected with one or more middle-range theories. The first approach to connecting conceptual models and middle-range theories has been used for more than 20 years by nurses who have adopted Roy's model.

Roy and Roberts (43) developed a general theory of the person as an adaptive system, which may be considered a grand theory (44) and separate middle-range theories of the four modes of adaptation: the theory of the physiological mode, the theory of the self-concept mode, the theory of the role function mode, and the theory of the interdependence mode. The theory of the person as an adaptive system considers the person holistically. The theory of the physiological mode encompasses regulator subsystem responses related to exercise and rest, nutrition, elimination, fluid and electrolytes, oxygen and circulation, temperature, the senses, and the endocrine system. The theory of the self-concept mode, the theory of the role function mode, and the theory of the interdependence mode consider those modes as systems "through which the regulator and cognator subsystems act to promote

adaptation" (43). Each theory describes the relevant system in terms of its wholeness, subsystems, relation of parts, inputs, outputs, and self-regulation and control. The hypotheses derived from the propositions of each theory still have not been tested empirically. However, Roy and Roberts recognized the need for a systematic program of research to test the hypotheses they formulated, as well as other hypotheses that could be derived from the theories. They also recognized the need to further develop and test the theory of the person as an adaptive system. They commented, "We must look at the theory of the adaptive person to further explain the interrelatedness of the adaptive modes. In this process we must also search for multivariable and nonlinear relationships. Cognator and regulator processes must be studied to discover the proposed hierarchy of processes" (43).

Roy and Roberts' (43) pioneering work paved the way for derivation of many other middle-range nursing theories. The nursing model of cognitive processing (45,46), which actually is a rudimentary middle-range theory of information processing, focuses attention on the basic cognitive processes of arousal and attention, sensation and perception, coding, concept formation, memory, language, planning, and motor responses. The model proposes that the basic cognitive processes, which occur within the field of consciousness, are dependent on neurological and neurochemical functions. The model further proposes that cognitive processes are directed toward dealing with the focal stimulus of the immediate sensory experience, taking the contextual and residual stimuli of the person's education and experience into account.

Roy (47) has extended the theory of the self-concept mode, the theory of the role function mode, and the theory of the interdependence mode by introducing middle-range theories of processes. She proposed that within the self-concept mode of adaptation, theories about the physical self and personal self address processes of developing self; theories about self consistency address processes of focusing self, theories about self ideal address processes of choosing self, and theories about the moral-ethical-spiritual self address processes of valuing self. Within the role function mode, theories about primary, secondary, and tertiary roles address processes of developing roles; theories about role transition address processes of role taking; and theories about role set address processes of integrating roles. Within the

interdependence mode, theories about significant others address processes of giving and receiving, as well as processes of learning and maturing in relationships, and theories about support systems address processes of securing resources.

Other few explicit middle-range theories that have been derived from the Roy Adaptation Model are:

- Theory of caregiver stress (48, 49).
- Theory of adapting to diabetes (50).
- Theory of psychosocial adaptation to termination of pregnancy for fetal anomaly (51).
- Theory of adaptation during childbearing (52).

Additional theory development work stemming from the Roy Adaptation Model includes the construction of explicit conceptual-theoretical-empirical structures for several studies, including:

- Preparation for cesarean childbirth (53).
- Correlates of functional status in normal life situations and serious illness (54-56).
- Adaptation to chronic illness (57).
- Cross-cultural responses to pain (58).
- Stress experiences of spouses of coronary artery bypass graft patients (59, 60).
- Correlates of physiological and psychosocial adaptation in spinal cord-injured persons (61).
- Correlates of psychological distress and life satisfaction in diverse caregiver populations (62, 63).
- Effects of walking exercise for women with breast cancer (64, 65).

The theoretical component of each of those conceptual-theoretical-empirical structures now needs to be formalized as an explicit middle-range theory.

The second and third approaches to connecting conceptual models and middle-range theories also can be used to link Roy's Adaptation Model with existing middle-range theories. The second approach is evident in the linkage of Orlando's (23) theory of the deliberative nursing process with Roy's model. That linkage gives nurses a theoretical basis for validating their perceptions, thoughts, and feelings about relevant stimuli with patients (66). Inasmuch as the reciprocal interaction world view undergirds both Roy's Adaptation Model and the conceptual model from which Orlando's theory was derived (1), the linkage of the conceptual model and the theory is logically congruent. Other existing middle-range nursing theories that are logically congruent with Roy's Adaptation Model are uncertainty in illness, unpleasant symptoms, and community empowerment. Smith and Liehr (30) indicated that those theories were developed within the philosophic context of the interactive-integrative paradigm, which is similar to the reciprocal interaction world view.

Logical congruence in the use of the third approach would be evident if a theory borrowed from another discipline but derived from a conceptual model undergirded by the reciprocal interaction world view were to be linked with Roy's Adaptation Model. Two such theories are self-efficacy and family stress and adaptation. Those theories, according to Smith and Liehr (30), were developed within the philosophic context of the interactive-integrative paradigm.

Advancing the discipline of nursing

Given Latham's (40) objection to creating linkages between conceptual models of nursing and middle-range theories by using theories borrowed from other disciplines, and the extensive work required to identify the world view undergirding existing middle-range nursing theories and theories from other disciplines, we may want to focus our future efforts on deriving middle-range theories directly from a conceptual model of nursing. That first approach to connecting conceptual models and middle-range theories virtually assures logical congruence between the conceptual model and the theory. Furthermore, the language of the theory, that is, the terms used for the theory concepts and the meaning of each concept, will be in keeping with the distinctive language of the conceptual model.

The importance of and need for a distinctive nursing language is mandatory if nursing is to advance as a discipline. More specifically, the vocabulary of each conceptual model and each theory should not be considered unnecessary jargon. Rather, the terminology used by the author of each conceptual model and each theory is the result of considerable thought about how to precisely convey the meaning of that particular perspective to others (67). Nurses have long understood the need for a distinctive vocabulary that differentiates nursing from other sciences and especially from medicine (27). "Language", Batey and Eyres (68) explained, "is fundamental to the evolution of all disciplines and within any discipline, selected terminology evolves to become the concepts that denote the specific knowledge domains and methodologies of that discipline" (68). Akinsanya (69) added, "Every science has its own peculiar terms, concepts and principles which are essential for the development of its knowledge base. In nursing, as in other sciences, an understanding of these is a prerequisite to a critical examination of their contribution to the development of knowledge and its application to practice" (69). And, Barrett (70) commented, "How would one understand anatomy and physiology, microbiology, pharmacology, ... without the precise use of language reflecting those domains of knowledge? ... Yet various professional groups and consumers may be able to grasp the meaning precisely due to the specificity of description. How else is substantive knowledge to be communicated without saying ... what it is ...!" (70). Finally, Watson (71) declared, "The attention to language is especially critical to an evolving discipline in that during this postmodern era, one's survival depends upon having language; writers in this area remind us 'if you do not have your own language you don't exist'" (71).

In conclusion, I urge you to select a conceptual model of nursing that interests you and derive middle-range theories from that conceptual model, so that you, too, will contribute most directly to the survival and advancement of our discipline. The widespread use of Roy's Adaptation Model, as well as other conceptual models

of nursing, indicates that they are appropriate guides for nursing activities in diverse cultures. Thus, you may select from among several conceptual models as you begin your journey toward middle-range theory development. Taylor's (72) comments about Orem's Self-Care Framework are equally applicable to many other conceptual models of nursing, including Roy's Adaptation Model. She noted, "For years there have been references to a cultural bias in Orem's work. Yet at our conferences and in visits to countries other than the United States of America, there is evidence that Orem's Self-Care Framework has an appeal and universality that extends to all cultures. The requirement, in using [the model], that the unique aspects of various cultures and practices be considered is a part of what makes this so" (73).

Each of you has a great deal to contribute to the advancement of our discipline. Indeed, although many nursing conceptual models and theories were initially developed by nurse scholars in the United States of America, the recognition of the value of distinctive *nursing* knowledge and its use and further development now is greater in many other countries (72). Much work already has been accomplished but much remains to be done. For example, as Roy and Roberts (43) pointed out, nursing practice theories, or what Roy (73) later called clinical nursing science, must be developed. That is, theories must be derived from conceptual models of nursing to predict the effects of specific nursing interventions on the responses of individuals and groups. Furthermore, programs of research must be designed to systematically generate and test middle-range descriptive, explanatory, and predictive theories derived from many different conceptual models of nursing. I am confident that each of you can contribute to that work.

Thank you very much for this opportunity to share my ideas about nursing knowledge with you. It is an honor to be part of this wonderful and important nursing conference.

REFERENCES

1. Fawcett J. Contemporary nursing knowledge: analysis and evaluation of nursing models and theories. 2nd ed. Philadelphia: F. A. Davis; 2005.
2. Johnson DE. The behavioral system model for nursing. In: J.P. Riehl & C. Roy (Eds.), *Conceptual models for nursing practice*. 2nd ed. New York: Appleton-Century-Crofts; 1980; 207-16.
3. Johnson DE. The behavioral system model for nursing. In: M.E. Parker (Ed.), *Nursing theories in practice*. New York: National League for Nursing; 1990; 23-32.
4. King IM. *Toward a theory for nursing: general concepts of human behavior*. New York: Wiley; 1971.
5. King IM. *A theory for nursing. Systems, concepts, process*. New York: Wiley; 1981.
6. King IM. King's conceptual framework and theory of goal attainment. In: M. E. Parker (Ed.), *Nursing theories in practice*. New York: National League for Nursing; 1990; 73-84.
7. Levine ME. *Introduction to clinical nursing*. Philadelphia: F.A. Davis; 1969.
8. Levine ME. The conservation principles: a model for health. In: K. M. Schaefer & J. B. Pond (Eds.), *Levine's conservation model: a framework for nursing practice*. Philadelphia: F.A. Davis; 1991; 1-11.
9. Neuman B, Fawcett J. (Eds.). *The Neuman systems model*. 4th ed. Upper Saddle River, NJ: Prentice Hall; 2002.
10. Neuman B, Young RJ. A model for teaching total person approach to patient problems. *Nursing Research* 1972; 21: 264-9.
11. Orem DE. *Nursing: concepts of practice*. New York: McGraw-Hill; 1971.
12. Orem DE. *Nursing: concepts of practice*. 6th ed. St. Louis: Mosby; 2001.
13. Rogers ME. *An introduction to the theoretical basis of nursing*. Philadelphia: F.A. Davis; 1970.
14. Rogers ME. Nursing: Science of unitary, irreducible, human beings: Update 1990. In: EAM. Barrett (Ed.), *Visions of Rogers' science-based nursin*. New York: National League for Nursing; 1990; 5-11.
15. Roy C. *Introduction to nursing: an adaptation model*. Englewood Cliffs, NJ: Prentice-Hall; 1976.
16. Roy C, Andrews HA. *The Roy adaptation model*, 2nd ed. Stamford, CT: Appleton and Lange; 1999.
17. Leininger MM. The theory of culture care diversity and universality. In: M. M. Leininger (Ed.), *Culture care diversity and universality: a theory of nursing*. New York: National League for Nursing; 1991; 5-65.
18. Newman MA. *Health as expanding consciousness*. St. Louis: Mosby; 1986.
19. Newman MA. *Health as expanding consciousness*. 2nd ed. New York: National League for Nursing Press; 1994.
20. Parse RR. *Man-living-health: a theory of nursing*. New York: Wiley; 1981.
21. Parse RR. *The human becoming school of thought: a perspective for nurses and other health professionals*. Thousand Oaks, CA: Sage; 1998.
22. Schmidt, N. Response to "The pediatric nurse-A societal need". *Self-Care, Dependent-Care and Nursing* 2004; 12 (2): 7-9.
23. Orlando IJ. *The dynamic nurse-patient relationship*. New York: G.P. Putnam's Sons; 1961.
24. Peplau HE. *Interpersonal relations in nursing*. New York: G.P. Putnam's Sons; 1952.
25. Peplau HE. *Interpersonal relations: A theoretical framework for application in nursing practice*. *Nursing Science Quarterly* 1992; 5: 13-8.

26. Watson J. *Nursing: Human science and human care: a theory of nursing*. Norwalk, CT: Appleton-Century-Crofts; 1985.
27. Watson J. *Watson's theory of transpersonal caring*. In: P. Hinton Walker & B. Neuman (Eds.), *Blueprint for use of nursing models: education, research, practice, and administration*. New York: NLN Press; 1996; 141-84.
28. Fawcett J. *The relationship of theory and research*. 3rd ed. Philadelphia: F. A. Davis; 1999.
29. Peterson SJ, Bredow TS. *Middle range theories: application to nursing research*. Philadelphia: Lippincott Williams and Wilkins; 2004.
30. Smith MJ, Liehr PR (Eds.). *Middle range theory for nursing*. New York: Springer; 2003.
31. Barnum BJS. *Nursing theory: analysis, application, evaluation*, 3rd ed. Glenview, IL: Scott, Foresman/Little Brown Higher Education; 1990.
32. Villarruel AM, Bishop TL, Simpson EM, Jemmott LS, Fawcett J. Borrowed theories, shared theories, and the advancement of nursing knowledge. *Nursing Science Quarterly* 2001; 14: 158-63.
33. Popper KR. *Normal science and its dangers*. In: I. Lakatos & A. Musgrave (Eds.), *Criticism and the growth of knowledge*. London: Cambridge University Press; 1970; 51-8.
34. Popper KR. *Conjectures and refutations: the growth of scientific knowledge*. New York: Harper and Row; 1965.
35. Slife BD, Williams RN. *What's behind the research? Discovering hidden assumptions in the behavioral sciences*. Thousand Oaks, CA: Sage; 1995.
36. Doornbos MM. Using King's systems framework to explore family health in the families of the young chronically mentally ill. In: M. A. Frey & C. L. Sieloff (Eds.), *Advancing King's systems framework and theory of nursing*. Thousand Oaks, CA: Sage. 1995; 192-205.
37. Doornbos MM. King's systems framework and family health: The derivation and testing of a theory. *Journal of Theory Construction and Testing* 2000; 4: 20-6.
38. Wicks MN. Family health as derived from King's framework. In: M. A. Frey & C. L. Sieloff (Eds.), *Advancing King's systems framework and theory of nursing*. Thousand Oaks, CA: Sage; 1995; 97-108.
39. Wicks MN. A test of the Wicks family health model in families coping with chronic obstructive pulmonary disease. *Journal of Family Nursing* 1997; 3: 189-212.
40. Latham L. Letter to the Editor. *Nursing Science Quarterly* 2002; 15: 264.
41. Watson J. *Nursing: Seeking its source and survival*. [Guest Editorial.] *ICUs and Nursing Web Journal* 2002; 9: 1-7. www.nursing.gr/.
42. Roy C. *Adaptation: A conceptual framework for nursing*. *Nursing Outlook* 1970; 18 (3): 42-5.
43. Roy C, Roberts SL. *Theory construction in nursing. An adaptation model*. Englewood Cliffs, NJ: Prentice-Hall; 1981.
44. Alligood MR. *Philosophies, models, and theories: critical thinking structures*. In: M. R. Alligood & A. Marriner Tomey (Eds.), *Nursing theory: utilization and application* St. 2nd ed., Louis: Mosby 2001; 41-61.
45. Roy C. *Altered cognition: an information processing approach*. In: P. H. Mitchell, L. C. Hodges, M. Muwaswes, & C. A. Walleck (Eds.), *AANN's neuroscience nursing: Phenomenon and practice: human responses to neurological health problems*. Norwalk, CT: Appleton and Lange; 1988a; 185-211.
46. Roy C. *Alterations in cognitive processing*. In: C. Stewart-Amidei & J.A. Kunkel (Eds.), *AANN's neuroscience nursing: human responses to neurologic dysfunction*. 2nd ed. Philadelphia: Saunders; 2001; 275-323.
47. Roy C. *Implications of the 21st century developments of the Roy adaptation model*. Paper presented at the 4th Annual Conference of the Roy Adaptation Association. Kennebunkport, ME; 2003; May.
48. Tsai P-F. *Development of a middle-range theory of caregiver stress from the Roy adaptation model*. *Dissertation Abstracts International* 60, 133B; 1999.

49. Tsai P-F. A middle-range theory of caregiver stress. *Nursing Science Quarterly* 2003; 16: 137-45.
50. Whittemore R, Roy C. Adapting to diabetes mellitus: a theory synthesis. *Nursing Science Quarterly* 2002; 15: 311-7.
51. Kruszewski AZ. Psychosocial adaptation to termination of pregnancy for fetal anomaly. *Dissertation Abstracts International*; 1999; 61, 194B.
52. Tulman L, Fawcett J. Women's health during and after pregnancy: A theory-based study of adaptation to change. New York: Springer; 2003.
53. Fawcett J. Preparation for caesarean childbirth: Derivation of a nursing intervention from the Roy adaptation model. *Journal of Advanced Nursing* 1990; 15: 1418-25.
54. Fawcett J, Tulman L. Building a programme of research from the Roy Adaptation Model of Nursing. *Journal of Advanced Nursing* 1990; 15: 720-5.
55. Samarel N, Fawcett J. Enhancing adaptation to breast cancer: the addition of coaching to support groups. *Oncology Nursing Forum* 1992; 19: 591-6.
56. Tulman L, Fawcett J. A framework for studying functional status after diagnosis of breast cancer. *Cancer Nursing* 1990a; 13: 95-9.
57. Pollock SE. Adaptation to chronic illness: a program of research for testing nursing theory. *Nursing Science Quarterly* 1993; 6: 86-92.
58. Calvillo ER, Flaskerud JH. The adequacy and scope of Roy's adaptation model to guide cross-cultural pain research. *Nursing Science Quarterly* 1993; 6: 118-29.
59. Artinian NT. Stress experience of spouses of patients having coronary artery bypass during hospitalization and 6 weeks after discharge. *Heart and Lung* 1991; 20: 52-9.
60. Artinian NT. Spouse adaptation to mate's CABG surgery: 1-year follow-up. *American Journal of Critical Care* 1992; 1 (2): 36-42.
61. Barone SH, Roy C. The Roy adaptation model in research: rehabilitation nursing. In: P. Hinton Walker & B. Neuman (Eds.), *Blueprint for use of nursing models*. New York: NLN Press; 1996; 64-87.
62. Ducharme F, Ricard N, Duquette A, Levesque L, Lachance L. Empirical testing of a longitudinal model derived from the Roy adaptation model. *Nursing Science Quarterly* 1998; 11: 149-59.
63. Levesque L, Ricard N, Ducharme F, Duquette A, Bonin JP. Empirical verification of a theoretical model derived from the Roy adaptation model: findings from five studies. *Nursing Science Quarterly* 1998; 11: 23-30.
64. Mock V, Burke MB, Sheehan P, Creaton EM, Winningham ML, McKenney-Tedder S, Schwager LP, Liebman M. A nursing rehabilitation program for women with breast cancer receiving adjuvant chemotherapy. *Oncology Nursing Forum* 1994; 21: 899-908.
65. Mock V, Dow KH, Meares CJ, Grimm PM, Dienemann JA, Haisfield-Wolfe ME, Quitasol W, Mitchell S, Chakravarthy A, Gage I. Effects of exercise on fatigue, physical functioning, and emotional distress during radiation therapy for breast cancer. *Oncology Nursing Forum* 1997; 24: 991-1000.
66. Roy C. *Introduction to nursing: an adaptation model*. 2nd ed. Englewood Cliffs, NJ: Prentice-Hall; 1984.
67. Biley F. Wordly wise. *Nursing (London)* 1990; 4 (24): 37.
68. Batey MV, Eyres SJ. Interdisciplinary semantics: implications for research. *Western Journal of Nursing Research* 1979; 1: 139-41.
69. Akinsanya JA. Introduction. *Recent Advances in Nursing* 1989; 24, i-ii.
70. Barrett EAM. Response to Letter to the Editor. *Nursing Science Quarterly* 2003; 16: 27-280.
71. Watson J. The theory of human caring: Retrospective and prospective. *Nursing Science Quarterly* 1997; 10: 49-52.
72. Taylor SG. From the President. *Self-Care, Dependent-Care, and Nursing* 2004; 12 (2): 11.
73. Roy C. An explication of the philosophical assumptions of the Roy Adaptation Model. *Nursing Science Quarterly*, 1988b; 1: 26-34.