

Adopting an evolutionary lens: An optimistic approach to discovering strength in nursing

Appropriately, the state of the art of nursing is in constant review. Philosophy of science, particularly the work of Thomas Kuhn, has traditionally provided the criteria upon which these introspective evaluative processes are based. More recent developments in philosophy of science have introduced alternative models, such as Toulmin's evolutionary model, which might yield a more cogent, optimistic assessment of theoretical progress within nursing. Specific shortcomings of Kuhn's model and possible advantages of one evolutionary model are explored with comparative outcomes presented. Evidence of emerging evaluative criteria within nursing is also explicated.

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NURSE SCHOLARS are appropriately conscientious in assessing their discipline's theoretical progress; healthy introspective critique and evaluation have characterized nursing during the past decades.¹ However, proportionately less attention has been given to the choice of criteria used in the process, criteria that have an enormous influence on the outcomes. Through self-examination, nursing ideally can evaluate its progress, trace the growth of its knowledge, and perceive change in its understanding of epistemological issues that pose questions for the discipline. But despite the inherent advantages of constant evaluation, a pessimistic attitude or a tendency to underestimate strength^{2,3} may emerge, partially due to the choice of evaluative criteria. In all likelihood, the present state of the art within nursing is more optimistic and healthy than might be perceived through the habitual

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use of outmoded, only partially applicable, evaluative tools.

THE REVOLUTIONARY MODEL

Historically, nursing has turned to philosophy of science when evaluating disciplinary change in its cognitive, ethical, and methodological realms.¹ Philosophy of science offers criteria for ascertaining whether progress has occurred within a discipline by explicating models of scientific change. As knowledge within a discipline unfolds, is applied to disciplinary goals, and is disseminated, conceptual change can be examined. In evaluating the state of knowledge in nursing, authors most often cite one of the pioneers in philosophy of science, Thomas Kuhn. In his "revolutionary theory,"^{4,5} he asserts that change within science has been characterized by "paradigm shifts," revolutions in accepted thought patterns that occur in a predictable manner after dissension grows between experts in a field.⁴ Nursing embraced Kuhn heavily in 1978, notably with Hardy's scholarly article applying his model to developing nursing science.² She equated the plethora of theoretical notions in nursing to the context of Kuhn's preparadigmatic stage. Her original observations are still valid; since there is widespread disagreement in nursing as to theory use and development and the value of theoretical underpinnings, nurses have not converged, and there is no "normal science."² Thus nurses have become familiar with the word "paradigm" and have grown comfortable with the description of nursing as preparadigmatic. The nursing literature frequently refers to Kuhn's ideas and vari-

ously applies them to nursing and its development.^{1,2,6-19}

POSSIBLE DEFICIENCIES IN KUHN'S MODEL FOR NURSING

Although Kuhn's revolutionary model is widely accepted in the nursing literature, shortcomings in its application to many disciplines, including the human science of nursing, have become evident with the passage of time. Part of the frustration stems from his vague terminology; especially difficult is the multiple use of the word paradigm.²⁰ Is a paradigm in nursing a model, conceptual framework, theory, or metatheory? Consequently, criteria for identifying points of conceptual agreement and disagreement within nursing are not clear. Nursing is characterized as existing in a preparadigmatic state, where multiple schools of thought exist in a morass of confusion. Present levels of knowledge and theory cannot be evaluated²; progress is nearly impossible to trace.

The waning applicability of Kuhn's ideas partly relates to change within nursing. His model was predicated on historical study of the physical sciences.⁴ Nurse scientists of the 1970s, possibly seeking to emulate the credibility of the physical sciences, and well acquainted with quantitative approaches, described emergent nursing theory in Kuhnian terms. However, as nursing begins to emerge from the positivistic tradition,^{21,22} with its dependence on correspondence rules and a strict, classically empirical approach, perhaps a more open, encompassing explanation of change within the discipline is needed.

To further complicate the Kuhnian

plight, the relationship between practice and theory in nursing is not easily explainable in terms of the revolutionary model. Since the writings of Dickoff et al²³ and others,²⁴⁻²⁶ there has been an ongoing effort to explore the interface between the scholarly, intellectual, and practical facets of nursing. Kuhn offers little insight into this relationship. In light of his evaluative criteria, there exists an uneasy truce between practice and theory, with evidence of suspicion in both camps. The credibility of theory is questioned by practitioners, sometimes resulting in a defensive stance by both.

THE METAPARADIGM: A REALISTIC EXPECTATION?

In order to defend its utility and existence, scholars sometimes approach emergent nursing theory with strict criteria²⁷⁻²⁹ as to its appearance, content, and relationship to practice, presumably in an attempt to formalize theory into a Kuhnian paradigm acceptable to all of nursing. Identification of a Kuhnian metaparadigm has occupied a number of nursing scholars. Presumably, its explication would define nursing as a discipline, where progress could be measured in Kuhnian terms (through the occurrence of revolutions in thought). Some would add that theory could develop only under the auspices of a unified metaparadigm.⁸

Despite extensive growth within nursing, with scholarly work in progress, it frustrates Kuhnians to note that there may be no clear evidence of impending revolution, growing consensus, or emergence of agreement on an all-inclusive theory (metapara-

digm) for nursing, one which demonstrates incommensurability with competing frameworks. The uniqueness of nursing does not emerge. There is no explanation for the cumulative nature of much of nursing's knowledge. Growth in nursing is not evident, and a frustrating lack of tools with which to measure progress persists.

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There is no evidence that nursing, as a human science, rather than a compact physical science, is ever going to gain disciplinary status in Kuhnian terms. Kuhn's framework, then, loses explanatory power for nursing, since progress cannot be measured with clarity or ease, nor is choice between paradigms or bodies of suppositions guided by criteria. The wisdom of using Kuhn's model seems to fade in light of emerging alternatives from the realm of philosophy of science.

AN EVOLUTIONARY MODEL

In his book, *Human Understanding*,³⁰ philosopher of science Stephen Toulmin offers one alternative to Kuhn's revolutionary model. Toulmin's framework contrasts with Kuhn's in many dimensions. In reviewing Kuhn's explanation of scientific change, Toulmin asserts that Kuhn had difficulty demonstrating scientific revolu-

tions historically.³⁰ Moreover, he notes that Kuhn made no attempt to elucidate the mechanisms or reasons for consensus, on which the emergence of a metaparadigm depends. Another major criticism is Kuhn's lack of consideration for the importance of *conceptual* change. Thus Toulmin casts doubt on the utility of Kuhn's framework and seeks to remedy the deficits of the revolutionary model through the explication of an evolutionary model.

Toulmin's work presents three main themes: (1) a new definition of discipline, one encompassing a clearer role for practice; (2) an evolutionary approach toward change in disciplinary thought; and (3) a new account of human understanding, emphasizing the role of concepts and the relationship between disciplines and their accepted conceptual repertoires. In a Kantian mode, Toulmin attempts to combine the importance of empirical data and modern rationalist thought.

Toulmin's model, then, deals with the role and use of concepts as a model for change within scientific endeavors. He perceives conceptual change as an evolutionary process, with "intellectual innovation balanced against a continuing process of critical selection,"^{30(p140)} rather than sporadic revolutions signaling the adoption of a novel conceptual system. For Toulmin, concepts unify knowledge. He examines the relationship between empirical and conceptual issues, and the way concepts are integrated into knowledge by the individual disciplinarian. Concepts are used to explain activities, he says, although conceptual systems cannot define or dictate a science. Concepts, rather, are of import in their use, their "explanatory activity."^{30(p173)}

In Darwinian language, he postulates how disciplines develop and grow, and how the practice element of some disciplines is woven into that development. Concepts within a discipline inform and reflect the disciplinary world view. Conceptual usefulness changes as research and practice foci change. Conceptual boundaries between disciplines are also fluid, as problems change. In a Kantian sense, concepts represent the world. They must not be reified, nor should the metaphors they generate; concepts are merely tools to preserve, articulate, and help generate knowledge.

Conceptual change parallels historical change in disciplines, but the goal of scientific enterprise is not the ideal concept, for there is no ideal form. There is no formal axiomatic system to be rigidly replaced in a revolutionary manner. Conceptual change takes place almost imperceptibly, through progressive transformation of understanding and authority. Toulmin suggests that all motion is forward motion. Therefore, all change is for the better. Disciplines are not pursuing Kantian noumenal Truth, but simply a clearer path to understanding the world and its concepts. This realistic view of continual growth seems to fit nursing particularly well.

INTEGRATION OF PRACTICE

Common, shared concepts, rather than a metaparadigm, define a discipline, according to Toulmin. Concepts that are of interest usually pertain to a set of problems encountered in a practice situation. Although his criteria would typify nursing as a "would-be" discipline,³⁰ he incorporates an integral role for practice. Disci-

plines, he says, are intellectual endeavors; but the problems with which the disciplinarian struggles arise from the practice arena. Thus he addresses the age-old dilemma in nursing regarding the role of practice, theory, and research. They are integrally interwoven, the fabric of the endeavor. Because nursing cannot be practiced without conceptualization, concepts reflect the state of knowledge in practice settings. When practice changes, responding to environmental and social change, the discipline changes. For example, problems for Nightingale in the Crimea centered around sanitation issues. Decades later, sanitation problems were still encountered by nurses at the Henry Street Settlement. They probably used some concepts familiar to Nightingale, but they also had new knowledge in sanitation and applied epidemiological techniques. In addition, they would add other conceptual frameworks in striving to deliver nonthreatening health care to needy immigrants. Thus the conceptual body of knowledge changed and grew. It continues to grow, into the hospital setting, and out to the community. As problems grow and change, so do the concepts that explain and inform the discipline. Those concepts that are important at any moment are those pertaining to the problems encountered in practice.

The conceptual problems of the discipline³¹ demand answers, and conceptual growth is stimulated by such problems. Solved problems in practice constitute growth in knowledge development; conceptual definition and growth increase the explanatory power of the disciplinary body of knowledge. Consequently, the evolution of a discipline can be traced through

conceptual change. Small increments of change can be appreciated in Toulmin's framework; in Kuhnian terms, such progress is not easily noted.

DISSENT AND GROWTH

There are other advantages in looking to Toulmin's model for the evaluation of nursing. It represents a system open to input from all levels of nursing. Growth in practice, academia, and research interact to promote the welfare of the whole of nursing. Rather than seeking total consensus in order to accomplish disciplinary growth, Toulmin sees room for dissent—disciplinarians need not agree on every conceptual definition pertaining to their work and thought. Dissension plays as large a role as consensus, since in Toulmin's framework, there is no search for the "correct" answer. Some discussion in nursing^{17,32} has recognized the value in discourse and conceptual debate within the discipline. Continuous interchange of thought takes place, with intellectual debate serving to refine the ideas.

When applied to practice, those ideas that advance the discipline are preserved, and those that fail to serve are abandoned, to be resurrected when utility demands. In an evolutionary framework, Toulmin likens this to Darwin's "ecological niche." When environmental circumstances permit, species survive. Otherwise, they perish. Within nursing, the utility of disciplinary knowledge within practice will preserve that knowledge. Otherwise, it will be shelved until (and only when) that knowledge is demanded pragmatically. However, knowledge that is not used does not cease to exist. In nursing, that becomes evident

in many situations, such as the emergence of older ideals of environmental management in public health practice, cast in the new image of home health care in the changing delivery system.

EVOLUTION TOWARD SELF-EVALUATION

The keystone of any discipline, according to Toulmin, is the concept. The concept is integral to nursing. The foundations of theory and practice and struggles to explicate the uniqueness of nursing center on conceptualization. Concepts and their application, relative to knowledge, epitomize the growth of nursing as a discipline. Nursing and its progress should be measured in terms of concepts, whether the traditional ideal of man, health, nursing, and environment,^{29,33} or the emergent ideals of a new practitioner. Nursing must be open to emergent uses of traditional concepts as well as the advent of new conceptual ideals. Knowledge cannot grow unless scholars understand that nothing is irrelevant in principle. Closure must be avoided.

Concepts change with the empirical needs of the practice. The body of conceptual knowledge is constantly evolving in response to the forces around it. Neophytes are given the body of conceptual knowledge and values as the "transmit"^{30(p138)} of the discipline, and they are encouraged to modify it in a creative, open manner. In Toulmin's model there is not only room, but also a demand for creativity, and a need for constructive dissent within the discipline. Both are necessary for the health of the conceptual body (perhaps necessitating an examination of

the tendency to suppress creativity). Agreement and disagreement must be articulated, separate from personal identities. Evaluation is continual and is practiced by all those in direct contact with the body of knowledge. Meaning is gained through intellectual debate; communication between disciplinarians is of paramount importance. Through these refining processes, nurses will gain conceptual understanding and develop intradisciplinary criteria with which to evaluate nursing and communicate its progress and value to others.

One outgrowth of the evolutionary process is already strong within nursing, the embracing of new modes of inquiry.³⁴⁻³⁷ Increasing flexibility within the research community toward less empirical methodologies has stimulated an appreciation of certain characteristics and processes within nursing that are not quantifiable. That realization, coupled with nursing's ties with academia, has given rise to an acceptance of creative alternatives to standard, empirical methodology in acquiring and transmitting knowledge.

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TOULMIN AND THE PRESENT STATE OF NURSING

Toulmin's framework can help nursing to understand its present state, in terms of concepts, research questions, and the rela-

tionship between theory and practice. Disciplinary knowledge evolves through explanations garnered in research. Research problems are generated in practice. Thus, according to Laudan,³¹ the "solved problem" becomes part of disciplinary knowledge. Whatever methodology is cogent is utilized. Nursing is given the freedom to enlarge its idea of science and consider itself scientific if that is indeed valuable to its identity.

In view of Toulmin's framework, then, nursing need not strive after a metaparadigm; it is not even advisable at this stage of development. The most meaningful activity centers around definition of an existing "transmit," the body of knowledge, values, and social skills to be passed on to new nurses. Together nurses can calmly and pragmatically evaluate nursing knowledge and how well it solves problems in practice, and how its language and understanding of relevant concepts can be refined to better advance communication between disciplinarians. New modes of practice and research can communicate to the novice the scope of expert knowledge and the behavioral repertoire of the expert.^{38,39} Problems in practice can be addressed using overt and tacit knowledge, expanding even on Carper's⁶ classic modal-

ities. There is comfort in Toulmin's notion that practitioners and researchers can be "two men," utilizing those with theoretically facile minds (but perhaps limited psychomotor skill) in theorizing, while others do the practice.

The future holds great promise. Articulation of goals, values, and purpose will stimulate the emergence of philosophical criteria for evaluating change, evaluation carried out by and for nursing by the new philosophers of nursing. New insight will result from pragmatic evaluation of concepts and conceptual change. Nursing will grow to accept the differences between nursing and the more "compact" disciplines, appreciate the waxing and waning of theoretical frameworks, and enjoy debate in the intellectual forum. The relative roles of theorizing, evaluating, and practicing will intertwine; different corps of nurses will do each and communicate openly. The future for nursing is bright, if evaluated in light of nursing's relative newness in the academic world and the stunning progress made during this century, conceptually and pragmatically. The state of the art for nursing is one of health, prosperity, and promise, magnified through the use of a suitable framework in viewing its strengths.

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