

**NURSING SCIENCE BASED CURRICULUM – WHY NOT NOW?  
ITS SIGNIFICANCE FOR THE DISCIPLINE AND THE PROFESSION**

**Heather Biasio**

**BScN, University of Victoria, 1986**

**A Project Submitted in Partial Fulfillment of the  
Requirements for the Degree of**

**MASTER OF NURSING**

**In the School of Nursing, Faculty of Human and Social Development**

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University of Victoria**

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Abstract

The purpose of this project was to carry out a comprehensive literature review of nursing science, with the goal of making recommendations for incorporation of a nursing science based curriculum. The literature review revealed nursing science, knowledge created within the discipline of nursing, distinguishes what is unique about nursing. It is imperative that nursing, —not other disciplines or agencies—defines nursing when many changes are happening within health care and nursing education that threaten the future of nursing. This definition is established by the art of nursing expressing the science of nursing. Nursing education is a key element in the understanding of and utilization of nursing science. The report concludes that now is the time to incorporate a nursing science based curriculum. Four recommendations are made to facilitate incorporation of a nursing science based curriculum: integrate nursing science into nursing courses; utilize the language of nursing science; facilitate nursing faculty development; and reframe the current CAEN foundational perspectives to reflect nursing science.

Bevis and Watson (1989) claim curriculum is the most important influence in the practice of nurses because they believe it shapes the way nurses view their work. In fact, they go so far as to assert there has not been anything else that has guided the path of nursing. In reviewing some of the literature on curriculum foundations, it is apparent others agree with Bevis and Watson that curriculum is an important influence in how learners view their world (Pinar, Reynolds, Slattery & Taubman, 2004; Pinar, 1998). Curriculum is more than content, courses, and texts. There are a variety of definitions of curriculum: a program of study, a plan for learning, all the experiences one is subjected to while in school, for example (Bevis & Watson, 1989, p. 68-69). Sumara & Davis (1998) have an interesting notion they refer to as “unskinning curriculum”, in which identity and identification—the principle substances of curriculum—are a constant removing and imposing of boundaries (p. 76). They propose identities come from within us and from “gazes of those who observe (identify us), that they are located in the constellation of events and artifacts that they carry” (p. 79). Nursing carries many events and artifacts that shape how we know ourselves. Curriculum is a noteworthy event, one that plays a significant part in shaping our identity through the boundaries setting out its purpose. My intention is to explore the influence of a nursing science based curriculum and the possibility of shaping nursing in a different way.

### *The Purpose of the Project*

The purpose of the project is to produce a synthesis of selected literature on nursing science, supporting an argument for a nursing science based curriculum. The approach used is a literature review, utilizing descriptive and critical analysis. The first section of the document will explain the origins of thinking about nursing curriculum based on nursing science, why this particular topic is of personal interest to me, and why I feel this is an important project to

undertake. The meaning of science and in particular nursing science will be described, highlighting the similarities and differences between the two. The next section of the document will look at the significance of nursing science for the profession and the discipline. It is my view that science frames our thinking, which informs our practice. In the final aspect, I will clarify the significance of conceptualizing nursing science as a science for curriculum development. My recommendations to the Collaboration for Academic Education in Nursing (CAEN) curriculum committee will be based on synthesis of this material.

## Background

### *Nursing Science in the CAEN Curriculum*

My interest in this project originated with graduate study discussions on such questions as what is nursing knowledge, what are the sources of this knowledge, and how is nursing theory utilized in practice? I reflected on these questions in my own practice. What nursing knowledge had I used in practice? What knowledge informed my practice? In our discussions, we explored how nursing theories were utilized in practice. We explored how we understood nursing as a discipline and the influence disciplinary knowledge had on our understanding of professional nursing practice. We questioned what is unique to nursing. What do we contribute to the care of others that is exclusive? Through these discussions, we were able to explore our assumptions about nursing practice and at the same time view the knowledge we were utilizing in our work. From my own perspective as a nurse educator in an undergraduate nursing program, I wondered why we were not having these discussions with the undergraduate students. I began to question how we were presenting disciplinary nursing knowledge. In the CAEN curriculum guide (2005), the professional practice of nurses is said to be informed by knowledge generated within and

unique to the discipline of nursing as well as knowledge generated and borrowed from other disciplines. What constitutes nursing knowledge had not been explained in either the philosophical statements or the courses themselves. Implicit in both is the notion that nursing knowledge is different from the knowledge nurses borrow from other disciplines. Other than a brief introduction to the nursing discipline and the profession in the first semester, students have limited opportunities to explore the possibilities that can make nursing knowledge, or what I am referring to as nursing science, central to their thinking, and could provide direction in their professional practice. As an educator, I am aware that the current curriculum is primarily based on knowledge from other disciplines like pharmacology, biology, and psychology, and therefore is external to the nursing discipline. I am not proposing knowledge from other discipline does not belong in the work of nurses and should not be taught to student nurses. Knowledge from other disciplines adds to how we make meaning. As Barrett (2002) states, use of knowledge from various sources is what one expects of a learned person. However, if nursing science were foundational to the curriculum would this knowledge be held in a different way? How would this knowledge from other disciplines be taken up if our practice were more grounded in nursing theory? In my opinion, the borrowed knowledge would be viewed from a nursing perspective, incorporating nursing's phenomena of concern or interest, such as health, human, and environment. Parker (2001), in outlining reasons for studying nursing theories, enforces the idea that when nurses are practicing from the knowledge of other disciplines such as medicine, public health, and psychology, their practice is limited. When nurses learn to practice from a nursing perspective, they are "awakened to the challenges and opportunities of practicing nursing more fully and with a greater sense of autonomy, respect and satisfaction for themselves and those they nurse" (p. 16).

*Whose Discipline is it Anyway?*

The same graduate student discussions generated an article on nursing education, “*Nursing: Whose Discipline is it Anyway?*” (Northrup, Tschanz, Olynyk, Schick Makaroff, Szabo, & Biasio, 2004), of which I was one of the co-authors. The article questioned how do we want to shape and guide scholarship, practice and education and what education is needed for nurses. Many debates were taking place at the time, both nationally and provincially, on the issue of the necessary educational requirements to prepare today’s nurse. Two events in particular provoked the questions and therefore, the writing of the article.

One event was the Canadian Nurses Association’s (CNA) position to advocate for the nursing baccalaureate degree as entry to nursing practice by year 2000. In 2002, the British Columbia government gave official support for “new graduate registered nurses to achieve the RNABC entry-level competencies through baccalaureate nursing education program” (RNABC Policy Statement, p. 27). The date determined for implementing the RNABC policy, *Education Requirements for Entry-Level Registered Nurses*, was 2005. The joint position statement from Canadian Nurses Association (CNA) and Canadian Association of Schools of Nursing (CASN), *Educational Preparation for Entry to Practice* (2004), (original version, CNA, *Education: Requirements for a degree*, 2002, CNA, personal communications, July 15, 2008), outlined the need for baccalaureate prepared nurses based on the changing roles of nurses, changing health care trends, and the changing competencies required of a nurse. It was believed that these requirements could be met more economically and effectively through a baccalaureate degree.

The other event was the Province of British Columbia’s decision to expand the option of degree acquisition through college-based applied degrees. The introduction of college-based applied degrees was guided by labour market needs and employment-related skills as a means to

address skill shortages anticipated in a number of occupations, nursing potentially being one (Ministry of Advanced Education and Labour Market Development, 2002, ¶ 1). The one qualification not mentioned as a rationale for supporting both of these events—the baccalaureate degree for entry to practice and college-based applied degrees—was the need for intellectual inquiry. It was for this reason that nursing academics spoke out loudly against an applied degree for nursing because it would not further the discipline’s field of study and research. In addition, an applied degree potentially allows for the educational direction to be determined by governments and health care agencies, which may have different agendas than that which furthers the discipline of nursing and the professional practice.

#### *History of Collaborative Curriculum*

In 1992 the Collaborative Nursing Program (CNP) was implemented, a partnership of four college schools of nursing and the University of Victoria. The curriculum was developed through the collaboration of these five institutions, initiating a vision for nursing education quite different from what had existed previously in all of our institutions. It was an “opportunity to envision, create and develop a new and innovative nursing curriculum” (CNP, 1997, p. 1-6). The impetus behind this new vision was changing factors in health care and in nursing education. The changes in health care were influenced by such reports as “*The Report of the B.C. Royal Commission on Health Care and Costs* (1991), with initiatives such as “*Closer to Home*” and “*New Directions for a Healthy British Columbia*, and the *Alma Ata* document, produced in 1978 by the World Health Organization’s (WHO), declaring a move towards Primary Health Care (CNP, 1997, p. 1-6). Two of our national nursing associations, CNA and Canadian Association of University Schools of Nursing (CAUSN), as well as our provincial nursing association, the Registered Nurses Association of BC (RNABC), required nursing education move to a primary

health care model. Some of the collaborative curricular work preceded the suggested changes in health care and nursing education and others were influenced by it.

Changes were taking place within nursing education. Internationally, nurse educators were questioning the current teaching and learning practices (CNP, 2002). During the 1980s, nurse educators deemed nursing education was in need of a curriculum revolution, not just a revision of the current status quo. At the time, education was seen as somewhat oppressive, which led to a need to base education on equalitarian relationships between faculty and students rather than just handing them content. The proposal was not for a change in curriculum content but rather a radical shift, a paradigm shift away from what we had known of education. It was an emancipatory form of education, an education not for “reproducing relationships of dominance, but on transforming existing power relationships” (Bevis & Watson, 1989; Moccia, 1989; Wheeler & Chinn, 1989; as cited in Moccia, 1990, p. 308). There was also a desire to move from a problem-orientated approach of care to a health promotion method, in which strengths and capabilities of clients are recognized. Lastly, educators were questioning the use of a biomedical model to educate nurses (CNP, 2002, p 2-2). The behaviourist model of education, the model influencing nursing education over the last 35 years, is similar in philosophy to the medical model (Bevis & Watson, 1989). Bevis (1989) points out that curriculum based on a behaviourist model is incongruent with nursing philosophy and research, which was moving away from a medical model to a human science paradigm (p. 16). Within the CNP curriculum, human science replaced the biomedical model. It is not explained in the curriculum guide what is meant by a human science paradigm. However, one of the curriculum consultants advising on the development of the CNP curriculum was Jean Watson. Watson’s (1999) understanding of human science comes from the work of Giorgi, a psychologist, who states it is “the study of the

person as a whole, as opposed to the psychoanalytic or behaviourist view of psychology” (p. 15). Human science is a different view of science, with different assumptions, from what one would have in the medical model (M. McIntyre, personal communication, July 19, 2008). Watson outlines it as a philosophy of human freedom, choice, responsibility, a non-reductionist approach in the study of psychology and biology, an epistemology that is inclusive of empirics, esthetics, ethical values, intuition and process discovery, an ontology of time and space, a context of interhuman events, processes and relationship, and a worldview of science as open (p. 16). It is important to clarify what is understood by human science when speaking of nursing science and a nursing science-guided curriculum. Human science is one worldview on science, not necessarily reflecting other worldviews.

The CNP curriculum was founded on the meta-concepts of caring and health promotion, incorporating a philosophy of phenomenology, feminism, critical social theory and humanism. Art and science of nursing was the foundation (CNP, 2002, p 2-2). Interestingly, each of these concepts, with the exception of caring and phenomenology in a partial way, would not be sources of knowledge created within the discipline of nursing. They would be considered disciplinary knowledge from the social sciences. Within the current curriculum revision work, there has been a review of the foundational worldviews with the outcome being the addition of an empiricist perspective, which includes a post-empiricist perspective plus a reorganizing of the original philosophical perspectives of phenomenology, critical social theory and feminist theory. These perspectives, plus the recently added postcolonial viewpoint, are now grouped together under postmodern perspectives. The belief about registered nurse practice is that it is a relational practice of inquiry and action, with caring and health promotion being key processes within this relational practice (CAEN, 2007). This leaves me with the question: What is the relationship of

these concepts and the method of inquiry to the notion of nursing science, our disciplinary knowledge? If nursing science were an organizing framework, would these concepts be taken up in different ways? When engaging with nursing's phenomena of interest, or concepts that are important to nursing, would they look different from a nursing perspective rather than a social science viewpoint?

The need to educate nurses from a nursing science based curriculum has been discussed in the literature for over 30 years. Donaldson and Crowley (1978) pointed out that if we did not educate nurses with disciplinary knowledge there was a real danger the discipline would disappear along with the other possibility that nursing could disappear. Sister Armiger (1974) argued there was "unprecedented need for identification of the uniqueness of nursing science and practice" (p. 160). She feared forces within the society of the day could redefine nursing, leading to the disappearance of the profession. Perhaps the predictions voiced then have not materialized but what these authors voiced some thirty years ago is still being heard today with even more events attempting to reshape nursing. I continue to share their concern. While the discipline has not disappeared and nursing still exists, is the vision of nursing being actualized and is nursing as we wish it to be? Silva (1999) argued, as she reflected on the state of nursing science at the approaching of the 21st century, that nursing theory is more essential now with a faster pace of change in health care, in knowledge, and in systems. Rodgers (2005) believes when we base our practice on other disciplinary knowledge, there is the risk the important nursing questions will be missed. As the CAEN curriculum goes through revision work, it is timely to revisit this topic.

## Meaning of Science and Nursing Science

*Art and Science*

By discussing only science as a single entity, I am not implying that art and science are separate from each other. Historically, art and science in nursing has taken either the foreground or background to each other, with one having more prominence at a given time than the other. (Parker, 2005; Rose & Parker, 1994). Alligood (2006) notes nursing procedures were taught in a “nursing arts” lab. However, with a shift in education to an emphasis on science, the lab then became a “skills lab”. Depending on the time and context, the art and/or science of nursing have been discussed in different ways (Parker, 2005). The nursing discipline is composed of more than nursing science with nursing history, nursing philosophy, nursing strategies, and factors influencing human health important components (Schlotfeldt, 1989). Interestingly, Schlotfeldt did not mention art, specifically, but she proposed disciplinary knowledge was needed in “executing the caring functions that nurses typically provide” (p. 36). Johnson (1991) proposed the way nursing science is conceptualized is relevant to nursing art (p. 8). For example, if one conceptualized nursing science from an applied science perspective, therefore borrowing from other disciplines, the art of nursing would be informed by other disciplines (Johnson, 1991). Rose & Parker (1994) suggest art is “the process by which nursing as a science is expressed” (p. 1006). Parker (2005) states “the art of nursing, then, involves the perception and understanding of the inseparability of expression and technology” (p. 65). Art and science are taken as inseparable, not separate entities, but for this discussion only science will be discussed. I am focusing on nursing science because it does not seem to be as well understood within nursing.

*What is Science?*

The road travelled by modern science has gone through many variations of understandings beginning with the “Scientific Revolution” in the 17<sup>th</sup> century and “Age of Reason” in the 18<sup>th</sup> century (Parker, 2005; Rodgers, 2005). The Merriman-Webster Dictionary definition is “a state of knowing”; “a department of systematized knowledge as an object of study; knowledge; a system of knowledge covering general truths or the operation of general laws especially as obtained and tested through scientific method (science, ¶ 1). The origin of the word comes from several sources, Middle English, Anglo-French, Latin, Sanskrit and means having knowledge, to know, to cut off and to split (science, ¶ 1). Imogene King (1997) simply states science means to know (p. 24). Afaf Meleis (1997) views this knowledge as unified about a phenomenon (p. 48). Knowledge is created through a systematic research process. Fawcett (1999) proposes it is the “systematic controlled, empirical and critical activities undertaken to generate and test theories” (p. 311). Parse (1997) states science is “a theoretical explanation of the subject of inquiry” and through this methodology, knowledge is created in the discipline (p. 74). It is through this systematic or methodological process one is making the best effort to discover the truth (Barrett, 2002). Along this scientific path there has been critique as to what constitutes truth, can one be objective and separate from the subject. There have been debates whether science is process or product, either perspective constituting different values (Barrett, 2002; Northrup & Purkis, 2001). Reed (2008) succinctly outlined how adversity has been part of knowledge development especially in the last century. She outlines how science has gone through phases of changes from “received views” to times of questioning the philosophical bases of the science and its effect on disciplinary knowledge. As she states, today “human practice—is seen as complex and dynamic, laden with values integral with the contextual and influenced by social processes—and

that what knowledge scientists produces is fallible and unstable” (p. 133). This has led to different definitions or divergent views of science, with a differing philosophical base. Fawcett and Alligood (2005) acknowledged when Fawcett and King investigated the consistency in the language used to describe nursing knowledge they found quite a difference in the philosophical orientation to nursing knowledge development. How nurses study and work with the phenomena of interest reflects their reality of nursing. My purpose is not to argue for a particular paradigm for nursing, but to note there are philosophical differences or worldviews within science. Within education, we have the opportunity to raise student awareness of these differences when speaking of particular phenomena.

Science’s contribution to a discipline is “theoretical knowledge of the subject of inquiry” (Parse, 1997, p. 74), adding “a unified body of knowledge about a phenomenon” (Meleis, 1997, p. 49). Science is a collection of knowledge generated through the process of research, whether for knowledge sake only or for use in practice. Donaldson & Crowley (1978) divided human knowledge into two disciplinary fields, academic and professional. Each category contained both basic and applied research, with an added category for professional discipline, clinical research. The purpose of this distinction was, professional disciplines would not only develop and disseminate knowledge but also use knowledge (Barrett, 2002). This was an important difference as nursing had a social mandate of service to people. Barrett (2002) points out the term, professional discipline, has caused some confusion in today’s view of the discipline, as we are no longer debating whether nursing is a profession but have established that it is. Therefore, nursing is an academic discipline, with both basic and applied research. Through applied research, knowledge is tested and used in practice (Northrup et al., 2004). In nursing, science contributes knowledge to guide our nursing practice. According to Schlotfeldt (1989), the

nursing science component of the discipline contains the results of scientific inquiry, which is relevant, and usefully for practice and research.

*What is Nursing Science?*

Elizabeth Barrett (2002) asked the question “what is nursing science” and found it difficult to define. She discovered there was no universal agreement on a definition; rather, there were a variety of interpretations. It was not clear if nursing science referred to knowledge created within the discipline of nursing, or knowledge discovered by nurses, but not necessarily within the nursing discipline. She concluded, “the majority of these authors did not differentiate nursing science from science produced by nurses, or nursing research from research conducted by nurses” (p. 52). In those instances, where a definition existed, it would not be universally accepted (Barrett, 2002). She goes on to explain the reason for the lack of universality. The understandings of nursing science differ because of varying philosophical bases or schools of thought and therefore one definition could not capture those differences. Her view is nursing science needs to be broad enough to represent a variety of philosophical underpinnings or worldviews if it is to represent the discipline as a whole. She defines nursing science as knowledge created by nurses doing research within the discipline of nursing. The main focus of nursing science is knowledge, specifically knowledge to guide practice. What is not nursing science, in her opinion, is knowledge created in other disciplines. Nurses producing knowledge in other disciplines are adding knowledge to that particular discipline, not the discipline of nursing (Barrett, 2002).

For the 10<sup>th</sup> anniversary of the journal, *Nursing Science Quarterly* (1997), nurse scholars were invited to dialogue on the question, “what is nursing science?” There appear to be a number of common elements in their definitions. Firstly, nursing science is a body of

knowledge, “comprising paradigms, frameworks and theories” (Daly, as cited in Daly et al., 1997, p. 10), made up of “clusters of precisely selected beliefs and values that are crafted into distinct theoretical structures” (Mitchell as cited in Daly et al., 1997, p. 10). Secondly, nursing science describes and studies “nursing’s unique phenomenon of concern, the integral nature of unitary human beings and their environments” (Barrett, as cited in Daly et al., 1997, p. 12), the human-universe-health (now called the humanuniversehealth) interrelationship (Daly, as cited in Daly et al., 1997, p. 10). Finally, nursing science provides the nourishment for nursing practice and “gives direction and meaning to practice and research” (Mitchell, as cited in Daly et al., 1997, p. 10); it is the foundation of the discipline, providing the essence of nursing as a scholarly discipline (Cody, as cited in Daly et al., 1997, p. 12).

There are those who would not agree with Barrett’s view of nursing science as that which is created within the discipline of nursing. Bowie (2003) responded to Barrett’s article on “What is Nursing Science?” by disagreeing with the notion that knowledge from other disciplines could not be consider nursing knowledge. She pointed out knowledge from other disciplines is a rich resource for advancing the practice of nursing. Barrett (2003) responded by saying she did not want to imply knowledge from other sources was not important in our practice, as it is. However, using the example of taking a blood pressure, she points out this is not knowledge that makes nursing unique in the health care system. She further notes that it is “not a question of *better* than; it’s a question of *different* from other knowledge that our multidisciplinary colleagues and we contribute to the betterment of people” (p. 280).

There are those who would question whether nursing science is even a science. Edwards (1999) queries from the field of philosophy of science, whether there are problems created when we say nursing is a science. From an empirist’s view, which Edwards claims he is, nursing as a

science is problematic because studies within the discipline of nursing do not fit with the rational picture of science. Any observations made cannot be seen to be theory neutral or objective. Whether one sees the true picture of the world is under question. Also, utilizing Landau's "historical turn" concept, Edwards questions whether nursing science has a long enough history to be able to look at our sciences as good or bad science (p 567). Landau (1996) proposes by looking at history one can make propositions that one method of science had worked better over time (cited in Edwards, 1999, p. 567). Nursing does not have this history therefore one can not judge whether the science is sound. It is for these reasons Edwards suggest nursing's claim to be a science needs further defence. By his own admission Edwards has stated he is situated within the empirical sciences and it is from here that he has formed his critique. Winters and Ballou (2004) refute Edwards' suggestion that nursing science needs further evidence that it is a science. They found weaknesses in his argument for a number of reasons. They take issue with his view of nursing science being from only an empirical perspective, that the reason for situating nursing in science was to attain higher status, and that the science was too young to be able to evaluate whether it was good science. They pointed out nursing utilizes a "combination of scientific and philosophical inquiry" therefore there is a place for non-empirical science (p. 534). In refuting his notion that nursing was looking for higher status, they argue science is a route to further knowledge and social empowerment, not to heighten nursing's image. Finally, quoting Meleis' work (1997), they argue there is enough history in nursing science to determine there is good science in nursing.

There are those who would see nursing science as more the practical knowledge utilized in practice. Johnson (1991) proposes nursing science is a practical science, differentiating this from basic science and applied science. Basic science is understood to be the generation of

knowledge alone with no connection to the application to practice, and applied science is science from other disciplines. In her view practical science's goal "is to use knowledge of principles and causes in the development of specific nursing means that can achieve particular nursing ends and, thereby, the overall end of nursing" (p. 13-14). Her argument is if we continue to pursue science from an applied or basic perspective it will continue to be irrelevant to the art of nursing and hence the practice of nursing. Bishop and Scudder (2004) have presented a similar idea though they did not call practice a science but claimed nursing is neither a science nor an art in the traditional sense of the words but rather a practice. They propose science is for discovering truth and art is to create beauty. Nursing is to promote healing and well-being. Their premise is built on the work of philosopher, Hans Georg Gadamer, who defines practice as "a communally developed ways of being that promote human good" (p. 332). The purpose of practice is to bring about the good, a good that is worth engaging in (p. 332). They recognize that nursing uses science and practices artfully but consider having practice in the foreground of our thinking brings out the full worth of nursing. In a response to a critique of their article, *Nursing as a Practice Rather than an Art or a Science*, Bishop and Scudder (1997) stated their argument was based on the belief there had been too much emphasis on science and art and we need to focus on the moral sense of nursing, a concept central to nursing. In their view attempting to indicate nursing is more than techniques and procedures has led to an increased prominence on art and science. When nursing is seen as a science or an art and one is debating whether it is an applied science or a human science, leads one away from "seeking the identity of nursing in the practice itself" (Bishop & Scudder, p. 334). Both of these presentations of nursing science appear to focus on the practical knowledge of nursing with little reference to theoretical knowledge. Isenberg (2001) commented on how Dorothea Orem saw nursing as a practical science, with

parallels very similar to Donaldson & Crowley's (1978) notion of professional disciplines. As mentioned earlier, Barrett (2002) questions whether we need to continue to place nursing in a professional discipline as it is no longer debated that nursing is indeed a profession. Northrup et al. (2004) contend by viewing nursing's beginnings into academia it makes sense to call nursing a professional discipline, as it was an emerging discipline. There was a tendency to organize around its practical aims, as the discipline did not have a substantive body of knowledge to draw from (p. 58). Northrup et al. (2004) argued a discipline is not shaped by the activities the profession undertakes but rather by the nature of its distinct knowledge base (p. 57). Barrett (1991, 2002) and Northrup et al. (2004) asserted nursing science is a basic science with basic and applied research and not a practice science or practice discipline.

Lastly, there are those who would question whether knowledge generated in the 1950s to 1970s would be considered nursing science, science generated within the discipline of nursing. As mentioned earlier as nursing emerged in academe it did not have an original body of knowledge and therefore borrowed from other disciplines. Many of the nursing models from this time would have been constructed on borrowed science. Knowledge may be framed within a nursing model but as Phillips (1996) points out, some nursing models still incorporate knowledge from other sciences and have not been "transposed into a nursing perspective" (p. 48). Research conducted by nurses in the 1960s and 1970s may not have been within the discipline of nursing but through reconceptualization has become disciplinary knowledge (Phillips, 1996; Schoenhofer, 1993).

To summarize, there seems to be agreement among the scholars being asked the question, "What is nursing science?" that it is a body of knowledge and this knowledge informs our nursing practice and research. What is not clear in the definitions is the origin of the science:

Does the body of knowledge emerge from research within nursing theories or is it a collection of knowledge created within many disciplines? Donaldson and Crowley (1978) declared a discipline is not inclusive of all knowledge, but rather has definite borders, has unique phenomena of study, and an exclusive way of viewing occurrences. This uniqueness is what defines the discipline and the practice, in this case the discipline and practice of nursing. Donaldson and Crowley (1978) feared the disappearance of nursing's uniqueness if we did not make our knowledge explicit.

The similarities between science and nursing science is the structured, systemized method in coming to know or understand our world, plus the existence of different orientations or philosophical positions to science, affecting how one views and uses knowledge. These orientations are statements on the beliefs and values about the nature of knowledge. Christensen & Kenney (1990) declare beliefs and values are how we assume truth about the phenomena of interest in a discipline (as cited in Fawcett, 1997). Where nursing science may differ from other understandings of science is the importance nursing science has to practice. Rodgers (2005) points out, in discussing the discipline of nursing, what has set nursing science apart from other sciences is nursing's distinct needs and purpose. As a profession, we have responsibility to society and this must be considered in how we generate and utilize knowledge. Another area of difference is in the debate around what paradigm should guide the discipline. The debate has revolved around the notion that nursing science is not produced for knowledge alone but to inform our practice, and therefore, the worldview with which the science is produced should be congruent with nursing's view of practice. Monti & Tinggen (1999) discuss the issue of whether nursing should be unified under one paradigm or should it be recognized that there exists multiple views. They outline nursing's predominant paradigms, which they label empiricism and

interpretive, each representing opposing views of reality (p. 66). Utilizing the work of Kuhn and his description of the development of a mature science with various stages of development, Monti and Tingen propose the existence of multiple paradigms in nursing as a sign of a “healthy” scientific community (p. 75). As pointed out in their article, not all would agree with this position. Reed (1995) believes “accepting multiple paradigms is contrary to the idea of holism” (p. 75). Newman, Sime & Corcoran-Perry (1991) agree that multiple perspectives are appropriate for a discipline. However, they state a unitary perspective was “essential for the full explication of the discipline” (p. 5). In responding to Northrup’s critique of her position on a unified or diverse disciplinary perspective, Barrett (1992) is in favour of a unified view but reality dictates there are multiple views at this time and knowledge is being created within these multiple paradigms.

My view on nursing science is that it represents knowledge generated within the discipline of nursing with the purpose of informing our practice. The domain of nursing science is broad enough to incorporate multiple worldviews of nursing reality. My position is similar to Barrett (2002) and Newman et al. (2001) as stated earlier, that limiting it to one worldview at this time would not be inclusive of other knowledge created within the discipline. As an educator, I prefer to present a balanced view of all perspectives so that students can better understand their own viewpoints.

#### *What Other Types of Sciences do Nurses Use?*

Within nursing, there are a number of different sciences utilized in the fulfillment of the nurses’ role in practice. Some examples of sciences used are biology, pharmacology, sociology, psychology, and chemistry, or categories such as biological science, behavioural science, and social science. With the emergence of hospital-based schools of nursing, development of

curricula and valuing of what nurses did, there was a change in the image of nursing from one of domestic help to one of a professional (Northrup et al., 2004). This meant utilizing developed knowledge, not just common sense or shared knowledge originating with others past experiences. Up until this point, nurses were guided by theoretical knowledge produced within the disciplines of biology, physiology, sociology and humanities (Northrup et al.). Much of the knowledge utilize by nurses such as pharmacology, stress and coping responses, and infectious control practices, was not discovered by nurses (Rodgers, 2005).

However, by the 1960s, there was an awareness and desire for a distinctive science for nursing (Rogers, 2005). Historically, due to being a relatively new discipline and emerging from a vocational beginning to one of higher learning, this nursing knowledge development began within other disciplines. Alligood (2006), in discussing nursing knowledge, describes various eras in which it was recognized there was a need for nurses to know, but the knowledge was constructed differently within each era. During the curricular era, to educate meant to know nursing procedures, pathophysiology, pharmacology and the social sciences. With the emergence of the research and graduate studies era, nurses found themselves mainly in other disciplines, as the discipline of nursing was relatively new. She believes much of the knowledge created in the 1950s and 1960s would have been influenced by borrowed knowledge. By the 1970s, nursing scholars were beginning to recognize a need for knowledge developed within the discipline of nursing (Alligood, 2006). Alligood proposes that we are now in an era of utilization of theory, when as a profession we need to be informed by our disciplinary knowledge. Some argue nursing theory utilization is facing a strong uphill climb. Cody (1997) proposes nurses are graduating far more prepared to perform biomedical tasks than fulfill their role guided by nursing theory, despite this being an era in which a large amount of nursing theory had been produced. If

one assumes Cody's perspective, it would appear that nursing is still, or has returned to, the curricular era (to utilize Alligood's term) when knowledge was created around practical aims. For the development of nursing we need to move beyond the practical aims of the profession and come to know and understand the theoretical knowledge generated for the purpose of informing nursing practice.

#### *Who Uses Nursing Science?*

Nursing science is being used in various aspects of nursing, including education, practice, and administration. The following are examples of nursing science-guided research and its implication for practice. Dorothea Orem's theoretical work began in the 1950s and is still used today as a focus of nursing research and establishing what circumstances effects self-care (Isenberg, 2001). The studies have centred around the "conditioning factors" and their effect on the client's ability to perform self-care. The factors are age, development state, life experiences, sociocultural orientation, health, and available resources (p. 181). An example of a study conducted with Orem's theory investigated persons with chronic coronary disease and how the change of health state (conditioning factor) would have on the ability to do self-care. It was found with increased chest pain, self-care decreased, and visa versa when chest pain decreased, there was increase in self-care (Isenberg, Evers, & Brouns, 1987; as cited in Isenberg, 2001, p. 182).

Badger (2008) conducted research of depression in cancer patients and their partners. She proposed chronic illness, like cancer could not be understood unless the environment or context is understood, which in Badger's study, was family. A central concept to her theory development was interdependence, influential in quality of life. She found utilizing a nursing perspective on this topic resulted in a more holistic view of the clients' situations. Many other

studies had been conducted from a psychological perspective whereas her results represented physical, spiritual, social as well as psychological perspectives, expanding the understanding of depression. She noted there was a strong collation between her research and Roy's Adaptive Theory, in which interdependence is central to quality of life.

Cody, Bunker, and Mitchell (2001) speak to the utilization of the Health Action Model, a nursing education-practice model, based on the Parse's Human Becoming Theory. It was a collaborative undertaking with community and nursing, with the focus being "quality of life from the person-community perspective" (p. 242). The intention of this model was to fulfill nursing's social mandate to care for the health of society but to approach this mandate in a different way. The community in this case were homeless and low-income individuals challenged by lack of resources. The advanced practice nurses worked with individuals addressing issues affecting quality of life. A steering committee composed of individuals representing health systems, social agencies and those living with homelessness and poverty, met quarterly and attempted to make new links to community where none existed before (p. 246). Parse's theory provided a way for the community to connect in ways they had not before.

Lewis, Rogers, and Naef (2006) write about a nursing curriculum that had been informed by the work of Bevis and Watson and has now expanded to be more explicitly human science. The curriculum incorporates multiple nursing theories philosophically consistent with the human science, such as Parse, Newman, Rogers, and Watson. Their views on learning centred on the whole human experience involving mind, heart, body and soul: Learning is an emerging process, creating a safe environment for questions and expression of ideas. The authors speak of their experiences teaching in such a curriculum and how exhilarating it is working as a community and advancing the unique knowledge of the discipline and practice. At the same time, it is

challenging because they work with other viewpoints such as natural science, the biomedical paradigm and clinical competencies. Through discussions and awareness they learn along with the students how “to dance” the existence of divergent views of health, human and environment (p. 33).

Sue Donaldson (2000) did an extensive search of breakthroughs in scientific research in the discipline of nursing from 1960–1999. She looked specifically at research that had introduced new thinking for both the discipline of nursing and other health care disciplines. Each research development was presented as “(a) emergence of a new or reconceptualized realm of nursing knowledge, (b) in the context of predominant thinking in nursing at that time and (c) in the context of prevailing scientific knowledge and practice in other disciplines.” (p. 247). She clearly stated that the paper was a collection of research from an empirical scientific inquiry, and did not represent the non-scientific work that she acknowledged was also making significant impact in the discipline and practice of nursing. The phenomenon studied was of humans and their health, differing from the medical perspective of human disease and the public health perspective of ecology of population health. The amount of scientific inquiry and the impact it has had in the care of clients is quite impressive. One area of study was in women with urinary stress incontinence. Kegel exercises had been established to be an effective non-invasive therapy for urinary incontinence. However, it was found women were choosing medication therapy or surgery to remedy the situation. From the view of nurse researchers, it was found the use of Kegel exercises and training was more effective if protocols were designed with the women’s particular pelvic floor muscle composition and contractile behaviour was taken into account. It was the individualization that was found to be effective in women utilizing this therapy. Moreover, in conjunction with this discovery, nurse researchers discovered the prevalence of

social isolation these women experienced. Donaldson stated the nurse researchers used “the person and family health perspective of nursing” in the research (p. 282). What was not made clear in the collection of studies was whether or not there was a connection to nursing theory in the conduction of these research studies. Roy’s Adaptation Theory and Orem’s Self-Care Theory were listed in the references, but the collection was too extensive to make note of who used these above-mentioned theories.

Some theories found in other disciplines have been reconceptualized to reflect nursing’s interest. Ann Whall’s (2004) 1980 dissertation is an example. She found there was very little knowledge on the family presented from a nursing perspective and yet there was much emphasis within nursing to see the family as a unit of care. She explored the reconceptualizing of some prominent family functioning theories, mainly from sociology and psychology, into a nursing perspective. One example was viewing the systems approach to family functioning and then reconceptualizing it using Rogers’ Theory, Science of Unitary Human Beings. On review, there were places of congruency between the systems approach and Rogers’ Theory, namely, there were perceptual boundaries, everything is connected to everything else, and intervention is with the whole family system (p. 138). Where the nursing perspective emerged is in viewing health, which Rogers termed “a value judgement” and disease is not separate from family but a “manifestation of the total pattern of the family system” (p. 138). Rogers’ Theory sees the system as open, not closed, and this would be reflected in the approach to families. However, this study is quite dated and nursing theory was in its infancy at the time. It would be interesting to see how Whall would reconceptualize family theories with newer developments in nursing theory.

Not all agree that nursing science or knowledge development within the discipline of nursing is relevant to nursing today. Whall (1993), in *Lets Get Rid of All Nursing Theory*, voiced the concern that this was a more common comment being voiced and increasingly so in respect to the teaching of nursing theory in graduate studies. The reasons given were it is already being taught in undergraduate studies, nursing conceptual models are the only nursing theory and without theory there would be freedom from restrictive practice and research. Cody (1994), commenting on Whall's concern that an outcome of this disregard might be a slow down in development of nursing theory, stated he feared the slow down was already taking place. At a doctoral forum he had attended, Cody noted that comments made in reference to the language used in theory made it inaccessible to members of the discipline, with a few even mocking the notion of nursing theory.

Nolan, Lundh, and Tishelman (1998) also voiced concern about the belittling of nursing theory, with practice taking the forefront. They were clear there had been a growth in the literature as to how nursing theory had benefited patient care and the profession. Despite this growth, they were of the opinion there was a growing tension between theory and practice, rather than the theoretical knowledge complementing experiential knowledge. From their perspective, theory was not informing practice and it was seen to be irrelevant. They proposed the solution was for theories to be less abstract and that nursing abandon its quest to be a unique entity in our knowledge development, as the discipline had grown to a level of advancement that this was no longer necessary. They suggested more development of mid-range theories and utilizing shared knowledge, understood to be borrowed knowledge used "in a distinct manner", with nursing's own "methodologies and practices" (p. 274).

DeKeyser and Medoff-Cooper (2001) reviewed the literature to determine some of the issues on the topic of nursing theory. They chose to focus particularly on nursing theory and its relevance to practicing nurses. The findings were that generally middle range theories were stimulating the development of theory, with grand theories being diminished at present. They found there was much debate on whether nursing should situate itself in unique knowledge or borrowed knowledge. There were strong arguments for both sides of the discussion. DeKeyser and Medoff-Cooper took the stand that “knowledge gained from borrowed theories is changed once used within the context of the nursing discipline” and that their personal experience of utilizing borrowed theories for their own research had added to the richness of the research. They do not specify if the knowledge is first reconceptualized within nursing’s area of interest.

In keeping with my understanding of nursing science, the examples shared would be examples of nursing knowledge created within the discipline of nursing with divergent worldviews informing the research and practice. In order to keep the nursing perspective in the foreground, I do not agree with some of the solutions suggested to the problem of nursing science being irrelevant. If we are borrowing from other disciplines it needs to be clear we are asking different questions, gaining different knowledge and silencing nursing. If middle range theories are seen to be more useful, then it needs to be explicit from what source it comes and if it is congruent with nursing’s viewpoint. When I initially reviewed Donaldson’s collection of breakthrough research, I questioned whether this was nursing research or nurses doing research in other disciplines. On closer examination of one of the groupings, urinary stress in women, it became more evident the nursing perspective was there, but not explicit. The language used was biomedical making it difficult to recognize how the nursing contribution was different. Donaldson (2000) stated the collection of studies characterized a change across disciplines, not

just nursing therefore a possible reason for the difficulty in identifying nursing. It is her thought and hope that in the future doctoral students would engage in research that will “change the thinking about a health care phenomenon rather than just new knowledge within the discipline of nursing” (p. 283) hence her reason for gathering these particular studies that utilized the practice of collaborating across disciplines.

### Significance of Nursing Science for the Profession and the Discipline

A criterion inherent in both a profession and a discipline is that it possesses a specialized body of knowledge. There are nurse scholars and practitioners who argue this specialized body of knowledge needs to be nursing science, knowledge generated within the discipline of nursing. Northrup et al. (2004) noted the relevance of nursing science to the profession is situated in nursing practice, explaining and accounting for the purposes, goals, and values specific to that practice (p. 58). It was for this reason that the need for intelligent inquiry was argued by Northrup et al. (2004) as a criterion in the rationalization for baccalaureate nursing degree. Intellectual activities in higher learning are one of the criteria of a profession (Northrup et al., 2004; Chitty, 2001). As nursing moved towards professionalism this specialized body of knowledge was borrowed from other disciplines, as at the time there was no substantive knowledge within nursing (Northrup et al., 2004; Chitty, 2001). Today, the body of nursing knowledge is extensive, and the profession’s specialized body of knowledge should be clearly defined as nursing science.

In today’s health care and education systems there are multiple events taking place in an effort to increase collaboration, increase efficiencies, and decrease costs, and the profession of nursing is not immune to these events. Interdisciplinary practice or multidisciplinary teams are

examples of current occurrences being discussed in the literature and encouraged in the work place. Cody (2001) points out there are a number of expressions being used for this current concept, e.g., interdisciplinary, multidisciplinary, and interprofessional, to name a few. Within these multiple terms, he notes there are common principles, foremost among them being “the belief that research, practice and education that involve multiple healthcare disciplines working together will improve healthcare, enhance the knowledge base, and strengthen health care education” (p. 275). For a number of reasons, it is imperative that nursing knows their distinct contribution if they are to be a member of the team. There is the risk of becoming invisible, disappearing into the medicalization of health care (Northrup et al., 2004). Northrup et al. point out that if nursing were informed by its own disciplinary knowledge the contributions made to interdisciplinary practice would look different from others. If interdisciplinary practice, as a concept, is seeking different disciplinary views then why would the discipline of nursing need to be part of this group if nursing’s perspective was the same as the other disciplines? Having different points of views in the discussions can only enrich and expand possibilities for client care. Nursing’s contribution is the perspective as presented from a particular nursing theory within a specific paradigm.

Evidence-based practice has also taken hold in many aspects of health care and health care education. There has been much discussion over this concept and its particular fit with nursing. It is not my intention to discuss the many facets of the issue but rather to point out the importance of having nursing science in the foreground of such a discussion. Northrup et al. (2004) propose nurses informed by nursing science are able to view terms like evidence-based practice from a nursing perspective and refocus it for nursing. Mitchell (1997) presents three unexplored notions around the debate on evidence-based practice and invites us to consider these

ideas when discussing evidence-based practice. Firstly, evidence-based practice is only suitable in a limited way in nurses' work, i.e., technical activities built on technical research, not nursing research. It is certainly useful information to know in the care of clients but it will not further nursing knowledge or nursing's contribution. Secondly, when taking up a particular theory, one needs to question whether it is useful or not in light of nursing practice. For example, the theory of behaviour modification would, for some, not be ethical, and no amount of research would make it so. Thirdly, evidence-based practice makes it difficult to work with the complexities of human beings in an individual manner requiring individualization of care. Mitchell proposes no amount of research could provide the know-how with certainty as nurses enhance quality of life for clients.

Nagle (1999), in discussing present day issues in health care, supports a closer alignment with nursing science and practice. The issue of redesigning nurses' work in order to contain costs has her arguing for nurses and nurse leaders to take a stronger stand on nursing knowledge and its importance in determining whether nursing will become extinction or distinction. Nagle notes this reorganizing of nurses' work has blurred the boundaries of nursing's distinctiveness. If nursing continues to define itself based on tasks and not on the disciplinary knowledge, we are at risk of becoming extinct. She cautions that the uniqueness of the nursing perspective in carrying out these technical tasks has fallen to the side, allowing for others to do what some would perceive to be nursing.

The nursing profession is facing a number of challenges in the ever-changing world of health care and education. Nursing is in danger of being redefined. Health care ministries and authorities are seeking solutions to nursing shortages and escalating health care costs. Among the solutions is the potential, and actual, redefinition of nurses' work. Certainly, the issues

confronting health care are relevant to nursing but not relevant when speaking of the disciplinary knowledge as a field of study, research and practice (Northrup et al., 2004). Nursing needs to be well-versed in nursing knowledge in order to articulate our contribution to the health care system and client care.

### Significance of Conceptualizing Nursing Science as a Science for Curriculum Development

#### *Curriculum Influence on Nursing Practice*

Curriculum is foundational to the development of nursing as a discipline and a profession. Bevis and Watson (1997), as previously stated in the introduction, believe curriculum is what shapes an individual's view of his or her work. Nursing curriculum development has gone through its share of change, influenced by the different worldviews that have taken hold at various times of nursing history. Pinar et al. (2004) uses the phrase "understanding curriculum" rather than the term "curriculum development". They recognize there are multiple complexities in curriculum work and nothing is permanent; understanding curriculum embraces the concept of change and non-permanence. Included in this concept of understanding curriculum is the belief that curriculum is the "relationship among the school subjects, as well as issues within individual school subjects, and the relationships between the curriculum and the world" (Pinar et al., 2004, p. 6). The word understanding moves the notions of curriculum to a lived experience rather than a blueprint of what is to be taught. This is an important concept as I envision a nursing science-based curriculum as a relationship among all the courses and the contexts within which nursing takes place. Nursing science cannot be taught in isolation or it will continue to be irrelevant in the discipline and the profession.

Another aspect of curriculum that I consider influential in curriculum understanding is the notion of the hidden curriculum. It is also known as the unstudied curriculum, or the unwritten curriculum. These were generally understood to be outcomes that were not in the planned curriculum (Pinar et al., 2004). In the 1960s, Dreeben (1968) was quite surprised at what was taught that was not in the planned curriculum (as cited in Pinar, 1998). His findings were conformity, fear of reprisal and obedience to others. Apple (1975) argued that the “hidden curriculum tacitly (and of course hiddenly) ‘legitimizes the existing social order’” (as cited in Pinar, 1998, p. 297). Bevis (1989) called this the curriculum of “subtle socialization, of teaching initiates how to think and feel like nurses” (p. 75). This is in itself not necessarily a bad thing but because it is unconscious, the message remains unexamined. Such activities as how much time is given to a subject, learning environments, scheduling of classes and how teachers respond to students, are a few examples how the hidden curriculum can send messages (Bevis, 1989). The significance of discussing the issue of the hidden curriculum is that, as educators, we can be giving a message about nursing science that is implicit, unconscious and unchallenged. The collaborative curriculum was developed on the notion of a curriculum as “the interactions that take place between and among students, clients, practitioners and teachers, with the intent that learning take place” (CNP, 1997, p. 1-11). With this understanding of curriculum, it would be very important that the hidden curriculum was made explicit so we are clear how we are shaping the students.

Articulating a curriculum for nursing has been and continues to be a difficult task. (Jillings & O’Flynn-Magee, 2007). The complexity in nursing education lies in attempting to have a curriculum attend to multiple issues, such as the breadth of knowledge necessary, standards of professional practice and differing client contexts (Jillings & O’Flynn-Magee). The authors

caution that all of the variables of teaching nursing can be daunting for nurse educators and the curricular foundations can be lost or forgotten as the educators try to make sense of it all. They also point out there can be potential disconnect between the theory learned and the practice experienced becoming a source of tension. A nursing science based curriculum potentially could be a significant source of tension and add to the complexities experienced in nursing education.

### *Nursing Science in Undergraduate Studies*

Mitchell (2002) was intrigued that undergraduate programs did not introduce and work more intently with the unique knowledge of nursing. She found many students are not given the opportunity to get to know nursing theories. In order to know, one needs to study various theories, explore ones own values, discuss alternate views, and adopt a particular vision of yourself as a nurse (Mitchell, 2002). Students would need exposure to the theories in order to discover these truths. Mitchell's concern is when we do not teach nursing's unique knowledge we are giving a message that nursing can care for clients without it. Fitzsimmons (2002) relays an experience she had through conducting an assessment of a community of person's living with homelessness (as cited in Mitchell, 2002). She had completed a fairly thorough assessment, but when she reflected on the data utilizing Watson's Theory of Caring, she discovered she had missed some important aspects of the community; in her words "she was missing the soul of the community" (as cited in Mitchell, 2002, p. 210). In discussions and writings concerning the livelihood and relevance of nursing science, a repeated theme is the role nursing education has in creating situations for actualizing nursing's disciplinary knowledge in practice. Fawcett (2000) believes nurse educators are in a position to create environments that turn nursing from an "atheoretical focus on skills" (as cited in Barrett, 2002, p. 57). Parse (2001) believes all levels of nursing students should be taught nursing frameworks and theories of the discipline.

Cody (1997) passionately compares the advancements and richness of nursing science with the stagnation and poverty that has also occurred (as cited in Daly et al., p. 13). He states there is much to celebrate in the achievements of nursing science: growing theory and research clarifying nursing's unique contributions, an awaking in the mainstream that there is a distinct knowledge base in nursing, and a richness in nursing's diversity, as examples. The stagnation and poverty lies in the continued reliance on applied-science literature, scarcity of nursing theory-based works in the literature and the continued graduation of undergraduate nurses with an applied science knowledge base to inform their practice, as a few examples. Cody (as cited in Daly et al., 1997) points out nursing continues to identify principally with medicine and only to a limited degree with nursing knowledge.

During an interview by Fawcett (2002), Marilyn Rawnsley makes note that when graduate students are introduced to nursing conceptual models in graduate school, their confidence is often shaken and they feel threatened. It is her belief that if students were introduced to the nursing language and nursing theories as undergraduates, there would not be this sense of threat. She also proposes that academics perhaps have not been as interested in the utilization of nursing knowledge in practice. Alligood (2006) supports nursing moving towards utilization of nursing theory. Theory utilization provides the organized approach needed for the practice of nursing and moves nursing away from physiological and psychosocial interventions providing a holistic approach that is specific to nursing's concerns. Cody (1997) indicates the greatest challenge is the application of the knowledge development, with demonstrations and illustrations of how theory can be utilized in practice. Nursing education can be an important catalyst in making theory real in practice.

One of the criticisms of nursing science is the abstract language. As is common among other disciplines, nursing language needs to be introduced in undergraduate studies, allowing through time and exposure to become familiar with it. Cody (1994) speaks to the discomfort nurses have with the language used within nursing theories and, in particular, the new paradigm theories. Some of his findings were: the language is abstract, it is awkward to use as it is not everyday language and it takes effort to learn. The language chosen within theories is not there to be awkward and difficult, but rather is chosen carefully so as to reflect the beliefs of the theory and of nursing. Cody (1994) states, “a full-fledged theory is a complete linguistic articulation between a belief system and everyday human experience” (p. 99). Parse (2001) proposes language is what articulates the uniqueness of a discipline. For nursing, our language is not the language of medicine but rather the conceptualizations of nursing frameworks and theories developed to express nursing’s area of interest and reality of care (Parse, 2001). She believes the language of the discipline should be part of all nursing education programs, as early as their first introduction to nursing. She outlines some examples, one being to have an initial course in which they learn about nursing paradigms, schools of thought, frameworks, and theories. My own experience of learning sociology was the initial difficulty understanding the language of sociology, but with time, it became easier and “normal” to me. Utilizing the language of the discipline will strengthen the sense of purpose and place for nursing.

Some would say theories are outdated and no longer relevant. Thorne (2007) stated there has been a move to build nursing science on a more social and political base, as this was more in keeping with contemporary thought. She takes issue with those who see nursing theory as flawed and outdated particularly when speaking of earlier theory development. She believes the earlier theorists were forward thinking and brave to take on the complexity of nursing through

the creation of nursing models as a way to provide a systematic way of thinking to guide practice. She outlined several events that may have instigated the rejection of nursing models. Firstly, there was resistance from nurse educators to having the nursing models as the primary educative tools. They found them limiting when evaluating competencies. Secondly, there existed resistance in practice with the prescriptive nature of nursing models especially when based on one particular model. Or if individuals used their own model of care, then there was difficulty in communicating with each other. Thirdly, within the nursing scholarship communities there was tension when attempts were made to locate their work within a theoretical model when it appeared to further the theory rather than “deal with substantive matters that the theory was intended to frame” (p. 355). Thorne hopes by understanding some of the history as to why theories were rejected that scholars and practitioners will see ways to address some of the issues and renew excitement for our disciplinary knowledge. She sees educators as key to this process.

#### *Other Schools Utilizing Nursing Science*

There is limited literature on nursing programs that have developed the curriculum based on nursing science. York University is one with curriculum informed by human science. York University had a similar beginning as CAEN, with the foundations built on the work of Em Bevis and Jean Watson (1989), utilizing their book, *Toward a Caring Curriculum*. The curriculum has evolved over the last ten years to one that recognizes nursing as a human science and incorporates multiple nursing theories that are consistent with the philosophy of human science. Nursing theory is made explicit. The students are exposed to nursing theories and are taught the philosophical foundations of nursing. They are encouraged to critique natural science and the biomedical perspective utilizing the nursing perspective. The students and faculty are in

a constant learning mode as to how to coexist with the dominant paradigms of the various systems they encounter. Shouli (2001), an undergraduate nursing student at York University wrote, “For me, having a nursing theory guide my practice translates into me being able to express my values and beliefs in the way I deliver care in any given situation” (p. 175). Another undergraduate nursing student from the same institution commented:

Theory is important to me for several reasons. First, nursing theory helps me to distinguish my professional discipline from other health care workers, so I have clarity about my unique contribution. Second, theory urges me to practice my beliefs. Third, theory provides a knowledge base about my chosen profession that opens a path for growth and development to keep up with the evolving times and to go forth into the future with a strong foundation. (Fitzsimmons, as cited in Mitchell, 2002, p. 211)

Both of these students experienced a benefit from utilizing nursing theory.

### Synthesis

The purpose of exploring nursing science, with the intent of learning its significance to nursing, was to recommend that the CAEN program adopt nursing science as the organizing framework for the curriculum.

Nursing science has been explored in order to determine its significance to the nursing profession and the discipline, and its importance in nursing curriculum development. Barrett (2002) completed an extensive search of the literature to discover what was meant by nursing science. She discovered that there was no one universal definition, but rather multiple understandings. She attributed these differences to various philosophical orientations of science.

Fawcett and Alligood (2005) noted a similar inconsistency of understanding with scholars' descriptions of nursing knowledge. Alligood found this diversity of meaning to be understandable as the educational backgrounds of the scholars were quite varied. Many had done their doctoral studies in various disciplines, not necessarily nursing. Therefore, they tended to speak the language of that particular discipline when describing nursing knowledge. Barrett (2000) states it may not be possible for a universal definition because there are diverse philosophies within nursing, but it is clear for her what it is not, namely knowledge created in other disciplines. She proposes nursing science needs to be broad enough to include divergent philosophical worldviews and the knowledge is generated within the discipline of nursing. Unlike the York University program which is based on human science, one particular worldview, I am proposing the CAEN program adopt a multiple worldview to nursing knowledge. At an undergraduate level, nursing initiates need to be presented with differing perspectives in order to be supported in determining their own view of nursing. At present, the CAEN curriculum approaches the practice of nursing from a framework of promoting health and healing (CAEN, 2008, p. 9). I propose the practice of nursing should be from a framework of nursing science. As Barrett (2003) commented nursing science is "not a question of *better* than; it's a question of *different* from other knowledge" (p. 280).

The literature review revealed various views on the relevance of nursing science to the discipline and the profession. Certainly some authors speak in favour of nursing science, which they view as the identity of nursing, the distinction from other disciplines and health care professionals, the nourishment for practice (Mitchell as cited in Daly et al., 1997), and the "what nurses know" informing the "what nurses do". Nursing science is the voice speaking for what is distinct about nursing. There are many scholars doing nursing research, uncovering meanings

that are of interest and of importance to nursing. However, there is a tone of frustration from some that nursing science is not been taken up by their nursing colleagues in either research or practice. The frustration centres on the enormous amount of nursing knowledge being generated, yet remaining either disregarded or unknown to both the profession and discipline. Another frustration voiced is the changing landscape of health care with initiatives such as evidence-based practice and interdisciplinary practice. The frustration is not that these initiatives exist, but rather that they are not critiqued with attention to whether they are congruent with nursing philosophical stance or phenomena of interest. Is nursing being shaped by these changing systems and technologies, or is nursing contributing they viewpoint on the initiatives?

There is some misunderstanding that if nursing science is adopted all other knowledge will become disregarded. This is not so. Barrett (2002) stated any learned profession utilizes knowledge from many sources. However, proponents of nursing science are claiming knowledge from other disciplines will be viewed from a nursing perspective. Lewis, Rogers and Naef (2006) explained how they viewed the art and science of giving a bed bath and back rub incorporating biological science and nursing science. The benefits of a bed bath and back rub were explained using physiological immunological evidence along with the understanding of healing through the act of giving a bath and back rub. This is a lovely example of viewing biological knowledge through the lens of nursing science. The physiological knowledge became one with the healing aspect of care, not a separate entity.

The literature was somewhat silent on those speaking against nursing science. There were references to conferences and forums in which it is heard, “what is theory good for?” There were authors supporting nursing science who discussed some of the reasons others might not be using nursing science, but there was very little written specifically by those who

disregarded nursing theory's relevance to nursing. Their rejections, as noted by others, centre on the difficulty in understanding the abstract language of theory, finding mid-range theories more useful, experiencing philosophical conflict with the institutional paradigms and with the nursing theory worldview, reporting negative experiences when used nursing theory, and for some who had never been exposed to nursing theory, were unclear how it could inform practice. These issues need to be recognized when implementing a nursing science based curriculum. Lewis, Rogers and Naef (2006) spoke to the challenges one encounters "dancing" with different paradigms. The CNP/CAEN curriculum has also experienced similar challenges. However, by recognizing that different worldviews do exist, the students and faculty can speak to what is distinctive in nursing's disciplinary knowledge and perspective as they work with other disciplines. This will strengthen the students' insight into the world of nursing.

The importance of educators in the furthering of nursing knowledge was also discussed in the literature. Alligood (2005) proposed nursing is entering the era of theory utilization. She claims there is "sufficient evidence that theory-based practice exists to declare a theory utilization era" (p. 10). Cody (1997) believes this is the area now needing attention. Without application, nursing knowledge will be seen as irrelevant and soon disappear. Rawsley (2002) indicates academics have perhaps paid little attention to this aspect of nursing knowledge development and that they should now turn in that direction. Nurse educators can make nursing science real for students. The language we use can be instrumental in how students come to know nursing and nursing's distinct contribution. Through the process of doing this project, I became aware of certain terminology that may have indicated a biomedical paradigm, a social science or a nursing perspective. The fact that faculty themselves are not well versed in nursing

knowledge is an issue that needs to be addressed. My literature review did determine that nursing theory has not been part of the educational experience for many nurses.

It has been determined curriculum is an important aspect of implementing nursing science. A nursing science based curriculum can be instrumental in advancing the discipline of nursing. As established, enacting the curriculum can be a complex and daunting task for educators and the day-to-day tasks can take priority over theoretical aspects of nursing. Nursing science has its own inherent complexities with such things as abstract language, the nursing perspective seen to conflict with the dominant paradigms of health care and faculty not familiar with nursing science. These complexities would need to be considered with any change. Nonetheless, the time is right to venture into the world of nursing science. The literature is replete with nursing research, nursing theory development and examples of nursing science being utilized by nurses. Nursing science based practice has been discussed for 30 or more years with the stated concern that nursing as a discipline and as a profession was in danger of disappearing. I believe that now is the time to implement nursing based science curriculum.

## Recommendations

The following recommendations are intended as suggestions on initiating a nursing science based curriculum.

### *Integrate Nursing Science into Courses*

Some authors express concerns about a disconnect between nursing theory and nursing practice. The term theory/practice gap is a common topic in the literature. The design of curriculum can facilitate this gap. Jillings and O'Flynn-Magee (2007) note nurse educators have perpetuated this gap by teaching theory separate from practice. It is imperative nursing theory be part of nursing practice or there will continue to be a gap and nursing science will be seen to be irrelevant. The nursing practice contexts often have dominant realities of health, humans and environments structured into everyday practice of nursing students. Faculty would need to bring nursing perspective into the foreground of practice. Bunkers (2002) gives an example of a student conference in which the family and nursing student present their stories together. It required courage for both, the family to tell what they want, and for the student nurse to not be the expert. This type of conference reflects learning that utilizes a nursing theory to guide the process. When choosing course readings, articles that reflect a nursing perspective should be selected. It would also be important to choose theories that are from different paradigms, allowing the students to know the different views.

### *Utilize the Language of Nursing Science*

Both Parse (2001) and Cody (1994) emphasized the significance of language in nursing theory. Language is the articulation of the science and the practice. It defines the disciplinary concepts. Parse (2001) recommends nursing disciplinary language should be introduced in introductory nursing courses. She suggests that this should begin with nursing paradigms,

schools of thought, frameworks, and theories. Another suggestion for making language congruent with the disciplinary perspective is to review course titles and course descriptions, asking the question, does this reflect a nursing perspective? Bunkers (2002) states, “the course description is the initial framing of the worldview from which the subject matter will be discussed” (p. 27). This is not an easy task since nursing has been heavily influenced by medical language, making it difficult to recognize when it is not nursing. Parker (2005) voices concern that, in attempting to make nursing distinct from other disciplines, the potential is there not only to separate from others such as medicine but also to separate from the clients. She points out the nursing diagnostic movement was an attempt at creating a nursing language and it ended up objectifying humans, which was in opposition to nursing’s view of humans as whole. Faculty would play an important role in implementing a nursing perspective through the utilization of the language in their every day interactions with the students. It would require translating what the student is experiencing, either in text or in practice, into a nursing perspective. Seminars would be an ideal opportunity to do this in a more thoughtful and focussed manner. Finding text books that reflect the nursing perspective will be difficult. Pilkington (2002) questions why there is no human science in nursing texts. She attributes the lack of the human science worldview to the dominance of the positivist/postpositivist worldview in the natural sciences. Educators will need to make meaning for the students.

### *Faculty Development*

Faculty are the key to make this a reality for students. For many educators, use of nursing science has not been their personal experience. Therefore, faculty would need to learn what constitutes nursing science, and how to actualize it in courses and in practice. Lewis, Rogers, & Naef (2006) commented on the difficulty of being aware of one’s perspective during

interactions with students, courses and practice areas; it was a constant process of co-learning. This would require that faculty support each other as they endeavour to adopt nursing science. It would also require each of us as educators to understand our individual worldviews, as well as the different worldviews of each other. Marlene Smith (1994) points out that how we view nursing, what we believe about being humans, and health, for example, speak to our personal philosophy of nursing. She suggests looking at philosophical differences from a relational perspective rather than a divisive one. As mentioned earlier, understanding the hidden curriculum is an important aspect of curriculum development. Within faculty development, it would be imperative to include discussions about how educators might be creating the unspoken curriculum.

#### *Reframing Current Foundational Perspectives to Reflect Nursing Science*

Nursing science should be adopted as the organizing framework for the current CAEN foundational perspectives. This would create the opportunity for asking questions such as how this worldview is informing nursing knowledge. For example, how would social critical theory view health, and what are the similarities and differences from a nursing perspective? How would a feminist perspective view caring? Questions emanating from a critical theoretical perspective create possibilities to reflect on and expose practices that are taken for granted in nursing and in the health care cultures (CAEN, 2008, p, 14). A nursing perspective would ask how are these taken-for-granted practices related to the whole. The suggestion to make nursing science the organizing framework is not to negate the value of the existing foundational perspectives. The questions that come from these views are important and also need to be part of nursing practice. My intention is to expand what we know, and to further the nursing discipline

and profession; the goal is to approach the reframing of the foundational perspectives from a relational rather than a divisive philosophical process.

To conclude, the CAEN position statement (April 2006) clearly shows commitment to an academic degree for nursing with a unique body of knowledge. The task now is to make nursing knowledge explicit.

The academic discipline is grounded in a unique body of nursing knowledge. The body of nursing knowledge has been, and continues to be, informed in part, by theoretical perspectives from a number of disciplines. As the discipline has evolved, nursing has developed its own body of knowledge that is constructed within and informed by the practice of nursing. (CAEN, 2006).

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