Advancing the Theory of Technological Competency as Caring in Nursing: The Universal Technological Domain

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Abstract

Sophisticated technologies are accepted as integral with contemporary life, occupying a universal technological domain that is coextensive with humans and their environment. In human healthcare, the risk for depersonalization of persons receiving care renders the preservation of humanness as essential, particularly in technology-dense arenas. Nurses are challenged to sustain their caring nursing practice while responding to the complex technological demands of modern healthcare. This paper explicates a further development of the theory of technological competency as caring in nursing (TCCN) that embraces the universal domain of technology. Within the theoretic lens of the TCCN, 3 key elements demonstrate the fundamental process of knowing persons within the universal technological domain: technological knowing, designing, and participative engaging. Underpinning this process of nursing are concepts of human naturalness, human wholeness, and nursing technology connoisseurship. From the perspective of the TCCN, the nurse appreciates and knows persons more fully as active participants in their care rather than as passive recipients of care, and thereby advances the preservation of humanness.

Keywords: technological knowing, human naturalness, technological connoisseurship, universal technological domain, human naturalness, human wholeness

Introduction

Sophisticated technologies are now accepted as integral with contemporary life, occupying a *universal technological domain* (Figure 1) that is coextensive with humans and their environment. This paper explicates further development of the theory of technological competency as caring in nursing (TCCN) that embraces the universal domain of technology, a contemporary reality. In healthcare, specialized technologies are ubiquitous and routinely infiltrate all environments of care. The risk for depersonalization of persons receiving care is great and renders the preservation of humanness as essential in technology dense healthcare arenas. Nurses are challenged to sustain their caring nursing practice while attempting to respond to the complex and competing technological demands of modern day healthcare. A theory of nursing that is focused on knowing persons across the *universal technological domain* is crucial to aid nurses in their practice and help preserve the humanness of the persons in their care.

Within this domain, expert nurses are informed through the process of technological knowing in nursing. The view of competent nurses as *technological connoisseurs*, especially in "high tech" arenas, is celebrated with their expertise grounded in technological knowing. This enables them to fully know their patients as persons and to realize the value of their skilled nursing practice. The TCCN (Locsin, 2005) is the only middle-range nursing theory that specifically addresses technological knowing within the harmonious coexistence of nursing, technology,

and caring. This practice theory is focused on "knowing persons," with key elements of *technological knowing, designing, and participative engaging.*

Nurse satisfaction with enacting theory-based nursing through technological knowing is envisioned to contribute to improved nurse retention in high tech environments. Through the theory of TCCN, nurses can more easily bridge the advancing world of technology while preserving the humanness of their patients. Patient satisfaction as an outcome of enhanced practice grounded in the theory affirms nursing as a professional practice that fosters ideal patient well-being.

Background

The issue of preserving humanness may well be an increasing concern in modern society. In healthcare, particularly, the need is critical to preserve humanness amid the saturation of routinely invasive technologies of care. Nowhere is this felt more keenly than in nursing practice, where nurses are faced with enacting caring as foundational to their practice within a "high tech" milieu stretching from hospitals and other primary care institutions, to the home.

For nurses practicing in high-technological environments, the tension is palpable between the need to preserve humanness through caring nurturance and the demands of the technology for attention, interpretation, and action. Polkinghorne (2004) notes that "technification" (p. 25) occurs when the technological worldview has thoroughly permeated culture where the scientific method serves as a basis for thinking. Nurses operate under the tension-filled dictums of improving cost effective outcomes based on prescriptive, measurable strategies, and reducing hospital stays for patients according to diagnostic

related groups (DRGs), instead of their expert, nursing appraisals for human care. The threat to preserving humanness is constant. Nurses often lose the view of the person as natural and whole. Practicing within the theoretic lens of the TCCN in Nursing allows nurses to reclaim this fundamental value: Nurses are able to see the person as whole again.

Against the backdrop of technological dominance and dependency in healthcare and the imperative in nursing education to advance theory-based practice, the following question is cogent: Can a theory-based practice of nursing preserve humanness in an overwhelmingly technological world of human healthcare? Preservation of humanness in contemporary and future nursing practice is essential to maintain the critical value, meaning, and practice of human healthcare.

Purposes

The purposes of this theoretical paper are, (a) to explicate the nursing practice process of knowing persons within the theoretic lens of the TCCN (Locsin, 2001, 2005, 2009, 2010; Locsin & Barnard, 2007), and (b) to describe the practice implications of maintaining humanness in a technological healthcare environment, in which the technological environments of persons are coextensive, coexisting, and cocreated (Purnell, 2005) within the universal technological domain (Figure 1).

The concept of humanness that is often reflected in healthcare is an essential ingredient in the practice of nursing grounded in caring. Critical to preserving humanness in nursing practice is the theoretic lens of the nurse. As human healthcare technologies facilitate the realization of efficient and quality nursing, it befits nurses to practice their nursing caring, rooted and grounded in an explicit theory of nursing.

Persons are living human beings who have hopes, dreams, and aspirations (Boykin & Schoenhofer, 2001). Human beings have the capacity to think, imagine, innovate, and create, and are unpredictable. Within the high-tech nursing situation, the liminal, dynamic space of the technological environment (Figure 1) in which opportunities for human caring become manifest and evolve, the question of how technology facilitates the nurse's knowing of the person challenges understandings of how persons, in their humanness, come to know each other *naturally*, without technological artifice or tool. These philosophical and disciplinary questions are bound up in the realities of practice: As technological connoisseurs, expert nurses are

so skilled as to make the technology seem invisible and almost natural. They are at one with their technological environment.

The Theory of Technological Competency as Caring in Nursing

Technology, wherever and in whatever environment it is embedded, can result in mediating and transforming the dimensions and quality of care for the nurse and the person being nursed. A realistic practice model for contemporary nursing is one in which technological competency is expressed as caring in nursing (Locsin, 2005, 2009, 2010). According to the TCCN (2005), being technologically competent is being caring. Clearly, it matters whether or not the expert nurse is competent in the use of care technologies.

The following five assumptions describe the elements that guide the understanding of the theoretical process of technological knowing of persons in order to preserve and maintain their humanness.

Assumptions of the Theory:
• **Persons are caring by virtue of their humanness** (Boykin & Schoenhofer, 2001). In nursing, caring is understood as the substantive focus of the discipline. It is not simply the act or emotion one may portray toward another person but also the substance of the domain that directs the integral nature of nursing as a discipline of knowledge. In the assumption, "persons are caring" is studied as fundamental to the practice of nursing.
• **The ideal of wholeness is a perspective of unity** (Locsin, 2005) derived from the ideal that persons are known as wholes in ways shaped by philosophical truths and realities. The conceptualization of wholeness allows for the recognition of human beings as complete in their being without reference to composition of parts. This ideal allows the nurse to focus on nursing as a shared lived experience between the nurse and the person being nursed (Boykin & Schoenhofer, 2001), rather than focusing on fixing the person or completing the person's lack or missing "parts."
• **Knowing persons is a multidimensional process** (Locsin, 2005) in which the nurse and nursed focus on appreciating, celebrating, supporting, and affirming each other, while allowing for mutual recognition as dynamic participants in human caring.
• **Technologies of health and nursing are elements for caring** (Locsin, 2005) through which nurses in practice are able to know human beings more fully as persons who are active contributors in

their care, rather than simply as objects of care.
• **Nursing as a discipline and a professional practice** (Boykin & Schoenhofer, 2001) provides the essential opportunity for engagement in the scholarship of practice grounded in caring within the universal technological domain.
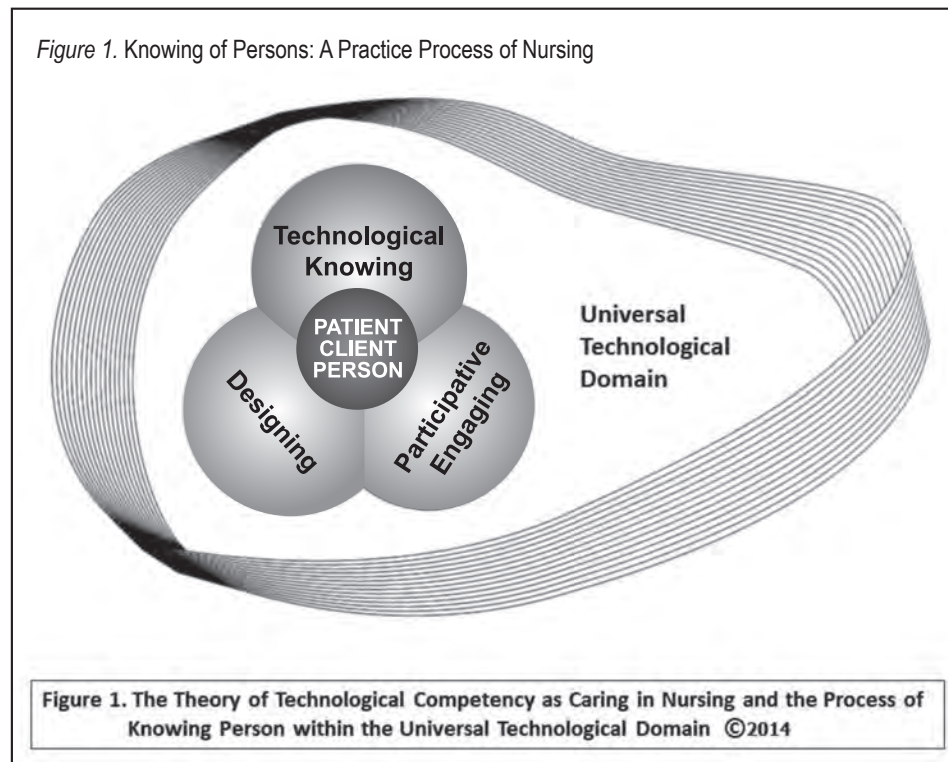
These assumptions provide essential elements of the theory of TCCN that guide the nurse in the practice of nursing as knowing persons as wholes through the proficient use of technologies for human care. Technological knowing (Locsin, 2009) is a way of understanding persons through the use of technologies of health and human care and provides nurses an "other" way of knowing persons.

Figure 1. Knowing of Persons: A Practice Process of Nursing

Figure 1. The Theory of Technological Competency as Caring in Nursing and the Process of Knowing Person within the Universal Technological Domain ©2014

Since Carper's (1978) germinal research was published, nurse scholars have critiqued, extended, and sought to reconcile with practice the fundamental patterns of knowing that she and later scholars articulated. The range and dimensions of these patterns were insufficient to embrace other ways of knowing (Purnell, 2009), especially the knowing of persons in intimate relationship with highly technological environments. Technologies that nurses use in proficient human caring provide opportunities for furthering the knowing of persons in their wholeness. Nurses are challenged in their authentic intentions and desires to engage in quality nursing practice.

Knowing persons as a practice process of nursing is revealed in the knowledgeable

demonstration of intentional, deliberate, and authentic encounters of knowing persons in technologically demanding nursing practice settings, particularly those in environments requiring specialized and substantial technological expertise. From the perspective of the theory, three multidimensional elements serve to guide nurses in their practice. These elements inform each other as aspects of a whole, and are described as *technological knowing, designing,* and *participative engaging*.

Technological Knowing

Technological knowing is the shaping of deliberate understanding of persons guided by the revelations of technology. In this process, the understanding of the person is magnified through the realities of the data obtained from the technology. In comprehending these realities, the nurse enters the world of the other, knowing them as participants in their care rather than as impersonal objects of care. Although the person's status may change from moment to moment, the person is realized by the nurse as a dynamic and unpredictable human being (Locsin, 2010).

Designing

Designing is a multidimensional process of knowing persons in which both the nurse and the one nursed cocreate a mutually fulfilling care process from which the nurse can design responses to the patient's desire for quality human care (Locsin, 2010).

Participative Engaging

Participative engaging promotes the opportunity for simultaneous practice of shared activities that are crucial to knowing persons. In this engagement, the alternating rhythm of implementation and evaluation occurs during which the nurse enters the world of the other and engages in continuous knowing (Locsin, 2010).

Discovery and Advancing Knowing Within the Universal Technological Domain

Discovery of further knowledge about the person that is derived from the process of knowing, designing, and participative engaging informs the nurse and the one nursed in an integrated and seamless practice, illuminating the generative nature of technological knowing in nursing. Both the nurse and the person being nursed cocreate and mutually experience nursing for the purpose of realizing each other's hopes, dreams, and aspirations. The ongoing cognitive engagement and plenary practice of knowing persons using technologies of human care illustrate advancing discovery of knowledge.

As a conceptualization of the multidimensional nature of technology embedded within nursing in contemporary practice, the universal technological domain is boundary-less as signified by the mobius-like wave in Figure 1, and coextensive with the nurse and nursed. The notion of complexity and complex dynamics within the universal technological domain therefore open the realm to discovery and advancing knowing.

Theoretical Concepts Development
Nurses as Technological Connoisseurs

Contemporary nursing stresses knowing persons as a process of nursing in which human beings are appreciated through practice technologies that provide acknowledgements of their humanness (Locsin & Purnell, 2009). The expert nurse as a connoisseur of practice technologies demonstrates seamless skills, with connoisseurship being "as much of an art of doing as an art of knowing" (Polanyi, 1962, p. 54). In situations of critical care, nurses as technological connoisseurs choose delicately honed complex responses to human needs in order to maintain or to titrate life in their actions. This profound way of knowing underpins the process in which nursing technologies are used to engage persons more fully as participants in their care, and to know them as not needing to be "fixed," or to be made whole again (Boykin & Schoenhofer, 2001): They are already whole. In this process of knowing through technological competence grounded in caring, the practice of nursing is made meaningful and valuable, and its outcomes made visibly clear.

Nevertheless, while technology has great potential to bring the nurse closer to the patient by enhancing the nurse's ability to know the person more fully (Locsin & Purnell, 2007), it is conversely possible that technology can increase the gap between the nurse and the person nursed. Such situations may occur through the nurse's conscious disregard of the patient as person, and ignorance of the nursing imperative to know the patient who has hopes, dreams, and aspirations for living. Sadly, nurses are often torn between the medical dictum of a focus on human parts, and their nursing stance of caring for the whole person.

In many situations, nurses contemplate the notion that advanced technology may distance them from patients because they need to pay such close and extensive attention to the machine technologies (Locsin, 1999). However, one can understand and appreciate that it is through these technologies that critical information about the person can be more accurately obtained, thereby allowing nurses to focus more on *being with* the person who is *being nursed*, rather than simply illustrating proficiency with the technology. When the latter occurs, such situations can lead nurses to demonstrate technological proficiency as a skill or technique rather than as the artful and knowledgeable expression of nursing as caring.

With these conceptual tensions of being human, of nursing, and of technological knowing, varying expectations of purpose and focus are construed within the descriptions of human wholeness and human completeness. It is here that we return to our original question: Can a theory-based practice of nursing preserve humanness in an overwhelmingly technological world of human healthcare? If a theory of nursing answers to the contemporary practice need to be grounded in an affirmation of the realities of technology as both internal and external human environments, and to the necessity for a practice process of knowing persons as wholes grounded in caring, the answer is clearly in the affirmative.

Human Naturalness and Human Wholeness

The notion of persons as wholes and natural regardless of artificial parts is fundamental to the understanding of knowing *a person as a human being*, and not an object. Within this perspective that is consonant with the unitary transformative paradigm (Newman, Sime, & Corcoran-Perry, 1991), the lack of a human part or parts does not render the human being as less of a person. From a human science viewpoint, human beings are understood as more than and different from the sum of their parts, therefore, the person remains whole at all times.

Another view of the meaning of being human encompasses the idea of completeness. This perspective is grounded in the totality paradigm (Parse, 1987). Human completeness implies that human beings have a sufficiency of requisite and expected parts. Completeness is held to be the ideal illustration of a human person, in which a person as object is known from a studied anatomical and physiological human perspective: With a totality or completeness of parts view, the person is regarded as "normal" when all parts are complete. The implication of this perspective is that with a part missing, the person may be appreciated as less human and at risk for objectification.

The objectification of persons occurs and becomes conventional when nurses practice nursing as merely the achievement and completion of tasks. Situations such as these can exist when persons are viewed as objects of care and therefore only as recipients of care, who passively and "patiently" await the "nursing" to be rendered by the nurse. However, when persons are recognized as participants in their care, a gestalt opens up into a process of knowing in which caring can be expressed in complex ways. A feature of this practice process of nursing is the expectation of commitment to know the one nursed. Committed knowing is expressed by the nurse in the appreciation, design, and engagement of practice to facilitate the preservation of humanness. Instead of *doing for* the patient, the nurse is now able to be with the patient in mutual knowing.

Implications for Nursing and Its Practice

The mandate is clear for a nursing practice that is based on the intention to know persons more fully as human beings, transcending the notion of persons as objects of care. The nurse is challenged to know persons as whole using every possible creative, imaginative, and innovative way to appreciate and celebrate their intentions. Nurses need to return to an overriding imperative of practice to know persons more fully as whole in order to maintain and sustain their humanness.

Communicating Nursing Practice

With technological knowing in nursing, communicating the cocreated moment between the nurse and the one nursed is essential, if nursing is to preserve the humanness of persons in a nursing practice grounded in environments of nursing caring. As perceptive as the nurse can be of the nursing situation (Boykin & Schoenhofer, 2001), the technological knowing of persons within the phenomenon of *being cared for* with technologies, and of nurses *caring for* persons with these technologies can be understood and communicated in myriad ways. The thoughtful, knowledgeable, theory-based, and sensitive practice of the nurse profoundly influences the compassionate disclosure of humanness in both a contemporary and futuristic technological world of nursing.

Distinguishing Nursing Research

Nursing phenomena are revealed and explicated in nursing research. Two main phenomena of concern in current studies are the phenomenon of *caring for,* a view of the influence of technology that nurses use to know their patients more fully as whole persons, and *being cared for,* from the perspective of the ones nursed. These concepts were illuminated further in subsequent studies (Locsin et al., 2010; Locsin, 2010; Kongsuwan & Locsin, 2011, Locsin & Kongsuwan, 2013). The results of these studies have prepared the way for researching other nursing phenomena for which the TCCN is ideally suited. Future studies might include the pertinent issue of technological dependency in both nursing practice and in patients' lives. The effect of mind and psychoenergetic technologies (Pajunen, Purnell, Tiller, & Dibble, 2009) on human and machine technologies and the importance and influence, perhaps even dependence on robots-for-nursing caring (Purnell, 2009), as well as the ethical dilemmas ensuing from such a practice provide critical avenues for nursing research. With the advent of three dimensional (3D) printers and the consequent development of inexpensive external prostheses and implantable devices, the experiences of persons with composite bioengineered parts, including artificial tissues, provide a backdrop of vital technological practice issues with which nurses must grapple while continuously maintaining a view of persons as wholes.

Studies which would provide further relevance to a theory-based practice include the burn-out phenomenon among nurses and the prospect of the use of nurse robots in the future to provide what might be termed "compassionate relief" for overworked human nurses. "Nurse-bots" – specialized assistive personal technologies are here (Locsin & Campling, 2005; Campling, Tanioka, & Locsin, 2007; Locsin, 2011; Fuji, Yasuhara, Tanioka, Purnell, & Locsin, 2012; Miyagawa et al., 2012; Tanioka & Locsin, 2012; Yasuhara, Tanioka, & Locsin, 2012), and what was a dream for the future, is now a present actuality. The advancing technologies that genetically enhance human beings, human cloning, and those focused on the development of "future" humans and post-humans are rapidly becoming realities for nurses not only to consider, but embrace in their nursing practice with sensitivity and informed caring. The diverse environments for care, technologies, and opportunities for skilled nursing demonstrate the universality of the technological domain and the need for the theory of technological competency as caring in various nursing environments of care.

Conclusion

The need is critical for nurses to further realize the significance of being human in intense technological environments and to enter into the sphere of influence of the theory of *Technological Competency as Caring in Nursing* (Locsin, 2005). Through technological competency as caring in nursing, nurses can seamlessly enact their unique practice in a world of technological dependency. Through this lens, nursing occurring within the universal technological domain is firmly focused on preserving the humanness of persons in their care.

Nursing is a uniquely *human service* for human beings who are served by, not controlled by, human technological creations. Maintaining the influence of technological competency as caring in nursing within the complex world of nursing is critical to sustaining a mutually rewarding engagement between the nurse and the one nursed.

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