

*Expertise in
Nursing
Practice*

CARING, CLINICAL JUDGMENT, AND ETHICS

*Patricia Benner
Christine Tanner
Catherine Chesla*

SECOND EDITION

Expertise in Nursing Practice

Caring, Clinical Judgment & Ethics

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Contributors

Hubert L. Dreyfus is a professor of philosophy at the University of California, Berkeley. He is internationally known for his writing and teaching on the limits of artificial intelligence and the relationship between everyday social practices, theory, and science. His published books include *What Computers Still Can't Do* (3rd ed., 1992); *Being-in-the-World: A Commentary on Heidegger's Being and Time, Division I* (1991); *Mind Over Machine* (with Stuart Dreyfus) (1988); *Michel Foucault: Beyond Structuralism and Hermeneutics* (with Paul Rabinow, 1982); and numerous articles including "You Can't Get Something for Nothing: Kierkegaard and Heidegger on How Not to Overcome Nihilism" with Jane Rubin, *Inquiry*, Vol. 30 (1–2), March, 1987. Dreyfus, H. L., Spinoza, C., Flores, F. M. (1997). *Disclosing new worlds: Entrepreneurship, democratic action, and the cultivation of solidarity*. Cambridge, MA: MIT Press; and relevant to this work *Responses*. (2000). In M. A. Wrathall & J. Malpas, (Eds.), *Heidegger, authenticity, and modernity: Essays in honor of Hubert L. Dreyfus*, (Vol. 1, pp. 305–341). Cambridge, MA: MIT Press.

Stuart E. Dreyfus has researched skill acquisition in order to assess the compatibility of various mathematical modeling and artificial intelligence efforts with uniquely human skills. Besides teaching mathematical modeling in the Industrial Engineering and Operations Research Department at the University of California, Berkeley, he has taught Cognitive Ergonomics, exploring the implications of various theories of skill acquisition for the design of human-computer systems. He has written several mathematical texts and has coauthored the book *Mind Over Machine* with his brother, Hubert Dreyfus.

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Several faculty and graduate students at Oregon Health Sciences University worked with the research team. Sheila Kodadek, associate professor of Family Nursing at Oregon Health Sciences University, and Peggy Wros, then doctoral student and now assistant professor of nursing at Linfield College, and Martha Haylor former doctoral student and

now assistant professor of nursing at the University of Victoria School of Nursing, in Victoria, British Columbia, were instrumental in the conduct of the study at the Portland site. They assisted in interviews and observations, data entry, verification, coding and overall management, interpretation of data, and preparation of early manuscript drafts. Many other faculty and graduate students participated in data interpretation. Caroline White, professor of nursing, and Margaret Imle, associate professor of nursing, both at Oregon Health State University, and Monical Dostal, Linda Budan, Yoko Nakayama, and Dawn Doutrich, all graduate students at the time of the study, were also very helpful in data coding and interpretation. Patricia Archbold, professor of nursing, Lisa Chickadonz, assistant professor of nursing, and Caroline White provided wonderful critiques of earlier drafts of manuscripts.

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Christine Tanner worked closely with nurse educators throughout Oregon in the development, implementation, and evaluation of the Oregon Consortium for Nursing Education. These colleagues provided her with tremendous insight into the day-to-day realities of nursing faculty and, along with the project leadership team, offered, challenged, celebrated, and extended ideas for nursing education reform. Special appreciation goes to Louise Shores, Paula Gubrud-Howe, Ann Delmar, Maggie Lynch, Diane Bauer, Mary Schoessler, and Heather Anderson for their clear thinking, exciting ideas, and reform-minded countenance.

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Stuart Dreyfus gave ably and generously of their expertise as consultants. We have chosen to present their chapters as the separately authored works they are, and not to present these consultants as authors of the whole book, in part to relieve them of the responsibility and task of working on the whole manuscript.

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Introduction

Since its publication in 1996, this book has generated much dialogue and many research and practice projects. Notably, it has helped in the development of internship and orientation programs for the newly graduated nurse as well as clinical development programs for the more experienced nurse. It has informed educational innovations in prelicensure programs as well as extensive research on the state of prelicensure nursing education. The book has been translated into German and Norwegian and has been used in practice and education in the United States and many other countries.

The study reported in this book is one of three major studies investigating skill acquisition and articulation of knowledge embedded in expert practice in nursing. The first study was reported in a landmark book by Patricia Benner, *From Novice to Expert: Excellence and Power in Clinical Nursing Practice*, published by Addison-Wesley in 1984 with a second edition in 2000. The second study, completed in 1994, was reported as the first edition of this book published in 1996. A third study was reported in 1999 (Benner, Hooper-Kyriakidis, & Stannard, 1999).

All three studies were guided by on the Dreyfus Model of Skill Acquisition. Stuart Dreyfus, an applied mathematician, and Hubert Dreyfus, a philosopher, developed a model of skill acquisition based on the study of chess players, air force pilots, and army tank drivers and commanders (Dreyfus & Dreyfus, 1977; Dreyfus & Dreyfus, 1979; Dreyfus, 1982; Dreyfus & Dreyfus, 1986). The Dreyfus model is developmental, based on situated performance and experiential learning. The Dreyfusses served as consultants in each of these three studies.¹

The first study *From Novice to Expert* was based on 21 paired interviews with newly graduated nurses and their preceptors, and interviews and/or participant observations were conducted with 51 additional

¹ The synthesis of the work on the Dreyfus Model of Skill Acquisition is drawn from Benner (2005).

experienced nurse clinicians, 11 newly graduated nurses, and 5 senior nursing students to further delineate and describe characteristics of nurse performance at different levels of education and experience. This study, which came to be known as the “From Novice to Expert” study, was conducted from 1978 to 1981 (Benner, 1982, 1984) and drew on and contributed to the Dreyfus model (Dreyfus, 1982; Dreyfus & Dreyfus, 1979, 1986). The Dreyfus model addresses experiential learning in a complex underdetermined field over time. It provides a contrast to linear models of computer “expertise” that is formal, decontextualized, and defined element by element from the ground up rather than starting from a deep background (human) understanding of the situation and the relevance of sequence across time. The model is situational rather than being a trait or talent model. The focus is on actual performance and outcomes in particular situations. The model is developmental in that changes in the performance in particular situations can be compared across time. However, the model does not focus or identify particular traits or talents of the person who generates the skillful performance. This model focuses on situated skillful comportment and use of knowledge (Benner, Sutphen, Leonard-Kahn, & Day, in press).

Nursing, like other practice disciplines, is too complex and situated to be reduced to an “applied” field. Nursing practice, like medicine, is complex, varied, and underdetermined, meaning that the clinician must attend to changing relevance as well as changes in the patient’s responses and nature of his clinical condition over time. A turn of events can radically alter the nature of a patient’s situation. Good practice requires that the nurse develop skillful ethical comportment as a practitioner and that she use good clinical judgment informed by scientific evidence and technological development—a science using practice like medicine (Montgomery, 2005). Practice disciplines as practices house and use technology, science, and theory, but in the end, they must use knowledge and function in practical situations.

The sciences of medicine and nursing are broad and draw on multiple disciplines. Using the knowledge and skill required for nursing and medicine require translation and intelligent dialogue with the particular practice situation. Basic sciences of biochemical, physical and biological processes, physiological processes, research and development of specific therapies and technologies, and finally clinical trials and more make up a broad range of relevant science used in the practice of medicine and nursing.

Practice improvement depends on both practical experiential learning and scientific experiments. Evidence-based nursing and medicine seek to aggregate clinical trial research outcomes and other kinds of research to summarize and recommend the best evidence for treatment of specific clinical conditions. However, the logic of scientific decision making and the logic of the practitioner working with single cases or unique populations are necessarily different. The practitioner reasons across time about the particular through changes in the patient's condition and changes in the clinician's understanding of the patient's condition. Since practice in the individual case is underdetermined—that is, open to variations not accounted for by science—the practitioner must use good clinical reasoning in order to intelligently select and use the relevant science. Perceptual acuity in recognizing salient signs, symptoms, and responses to therapies are required for the clinician to use good clinical judgment in particular clinical cases.

Recognizing and keeping track of clinical changes in the patient over time requires the logic of reasoning in transition (Benner, 1994d; Taylor, 1993). Clinicians understand this as following the patient's trends and illness or recovery trajectory. This is a form of argument about the outcomes of successive changes. Patient changes must be evaluated as improved, stable, or deteriorating over time. Clinicians call this “recognizing trends” in the patient. Some aspects of practice can be subjected to more standardization and to what Aristotle described as *techne*. Standard measurements of vital signs and laboratory metrics are examples of clinical assessments that can be reduced to *techne*. But note that skillfulness and craft based on experience may still be essential to successful performance of *techne*. In situations where the patient's particular response must be considered, and perceptual acuity is required to recognize salient changes in the patient, as well as situations where attuned relationships and judgment require skillful comportment, both *techne* and *phronesis* (situated actions based on skill, judgment, character, and wisdom) are essential.

At the heart of good clinical judgment and clinical wisdom lies experiential learning from particular cases. Bad judgments must be refined and corrected in particular cases; anomalies and distinctions must be noticed. The Dreyfus model addresses this kind of experiential learning in a complex underdetermined field over time. The model is situational rather than being a trait or talent model, as the focus is on actual performance and outcomes in particular situations. The model is developmental in that changes in the performance in particular situations can be compared

across time. However, the model does not focus or identify particular traits or talents of the person who generates the skillful performance.

Nursing, as a practice, requires both *techne* and *phronesis* as described by Aristotle. *Techne* can be captured by procedural and scientific knowledge, knowledge that can be made formal, explicit, and certain except for the necessary timing and adjustments made for particular patients. *Phronesis*, in contrast to *techne*, is the kind of practical reasoning engaged in by an excellent practitioner lodged in a community of practitioners who through experiential learning and for the sake of good practice continually lives out and improves practice (Benner, Hooper-Kyriakidis, & Stannard, 2000; Dunne, 1997; Gadamer, 1975; MacIntyre, 1981; Shulman, 1993). *Techne*, or the activity of producing outcomes, is governed by a means-ends rationality where the *maker* or *producer* governs the thing produced or made by gaining mastery over the means of producing the outcomes. By contrast, *phronesis* is lodged in a practice and so cannot rely solely on a means-ends rationality, because one's acts are governed by concern for doing good in particular circumstances, where being in relationship and discerning particular human issues must guide action.

Technique and narrow rational-technicality alone cannot address interpersonal and relational responsibilities, discernment, and situated possibilities required by caring for persons made vulnerable by illness and injury. *Phronesis* is required. Means and ends are inextricably related in caring for the ill. The clinician and patient bend and respond to the other so that the horizons and world are opened and reconstituted, allowing new possibilities to emerge.

As the Dreyfus model suggests, experiential learning requires the stance of an engaged learner, rather than a stance of one expert in *techne* who skillfully applies well-established knowledge in prespecified clear circumstances. Experiential learning requires openness and responsiveness by the learner to improve practice over time. The learner who develops an attuned, response-based practice learns to recognize whole situations in terms of past concrete experiences, as pointed out by the Dreyfus model.

We found that responding to the situation as an "instance of particular concerns" is central to the logic of excellent practice. As Bourdieu (1990) points out, understanding the nature of the situation is at the heart of practical reasoning, and clinical reasoning is a form of practical reasoning. Clinical reasoning is always reasoning across time about the particular through transitions in the patient's condition or concerns and/or changes in the patient's condition. For example, a clinician might

recognize that this clinical situation is a situation of heart “pump” failure or fluid depletion and then proceed to clarify the nature of the situation by further assessment.

The skillful practitioner learns to hold his background understandings in a fluid or semipermeable way so that he can recognize when these tacit expectations are not being met. Like Bourdieu (1990), we found that responding to the situation as an “instance of particular concerns” is central to the logic of excellent practice. Clinical practice occurs within a health care team. Whereas in some skill situations, such as playing chess or driving a car, experts would not need to articulate their perspectives before taking action, in the nursing profession, a case must be made that includes articulating the nurse’s perspective and evidence in order to get the appropriate physician intervention. However, both physicians and nurses are required to make a case about their clinical interpretations to other clinicians. In emergencies, when there may be no physician available, the nurse must be able to articulate clearly the reason for using a standing order or protocol or going beyond the usual boundaries of usual nursing practice. This is expected and defensible when it is critical for the patient’s survival. Recognizing the unexpected—that is, when tacit global expectations of patients’ recovery are not met—is also a hallmark of expert practice. This background is essential situating information for reading this research that extends and examines the previous 1984 From Novice to Expert study.

We insert a condensed account of the novice stage of skill acquisition, which typically occurs in the first year of the nursing student’s clinical education. We want to clear up any mislabeling and misconceptions that a nursing student can graduate and remain at a novice level of skill acquisition. No one can get through nursing school and take the NCLEX–RN (National Council Licensure Examination–Registered Nurse) while remaining a novice! We did not study undergraduate students in the 1996 study reported here. In the 1996 study, we studied only practicing, licensed nurses. Therefore, we include the novice stage here for contrast to the advanced beginner—the newly graduated nurse in the first job:

NOVICE: FIRST YEAR OF EDUCATION

The novice stage of skill acquisition occurs in areas where the student has no experiential background to base approach or understanding of the

clinical situation. For example, the art and skill of a range of medical and nursing interventions on particular patients will be new. The educator must offer good descriptions of features and attributes of the situation that the novice can recognize. Students are given clear parameters and guidelines:

To determine fluid balance, check the patient's morning weights and daily intake and output for the past 3 days. Weight gain and an intake that is consistently greater than 500 cc could indicate water retention, in which case fluid restriction should be started until the cause of the imbalance can be found. (Benner, 1984, p. 21)

An experienced clinician will immediately think of all situations where this evaluation would be inappropriate or too stringent. But the novice is given clear directions of safe ways to proceed until the significance of fluid balance for different clinical conditions can be learned. The rules and guidelines must not require prior experience for their recognition. They must provide a safe beginning point for specific, situated learning in the clinical situation. Fluid balance is salient, but what the novice must learn is the particular salience of fluid balance for particular patients.

The rule-governed behavior of the novice is extremely limited and inflexible. The student is coached in comparing and matching textbook examples with actual clinical cases. Skills that are performed easily on a manikin in a skills lab require adaptation, as communication and reassurance skills are necessary when performed on patients who may be calm or highly anxious. The nursing instructor must carefully select patient care situations that are relatively stable and provide coaching about possible changes in the patient's condition. The instructor forecasts for the students what they should expect, and students typically rely on standard nursing care plans to guide their planned care activities. Exceptions and contraindications must be identified for the students by the nursing instructor or staff nurse caring for the patient. The meanings of vital signs in the particular situation must be reviewed with the instructor or practicing nurse, and the range of relevant signs and symptoms are reviewed in terms of relevance and assessed in the particular patient. A large number of signs and symptoms (e.g., lethargy, skin turgor, mental status, and so on) can only be recognized and assessed after they have been seen in a range of patients. Novices have only a very limited ability to forecast futures due to the student's experience with other patients. Usually, the student must rely on textbook forecasts.

The Dreyfus model does not view the novice as a “failed” or deficient practitioner but rather as an entrant into a new field that, like all human beings, cannot be beyond experience and practical knowledge. A student can be the best novice learner ever, or at least engaged, conscientious, and diligent, prepared in the necessary science and theory background, and be considered “doing well” for his level of experience. One way of thinking about the novice stage is to recognize the extent to which this stage of skill acquisition reveals the complexities of the practical clinical knowledge embedded in a particular clinical field such as nursing or medicine.

No one could have predicted the response of practicing nurses all over the world to that account of gaining clinical expertise, and the articulation of the domains of nursing practice. *From Novice to Expert* has been translated into Finnish, German, Japanese, Spanish, French, Danish, Swedish, Russian, Dutch and Portuguese.

From Novice to Expert and *Expertise in Nursing Practice* have been the source of many conferences and nursing curricula as well as the basis for clinical promotion programs in many hospitals in many parts of the world. Nurses commented that *From Novice to Expert* and *Expertise in Nursing Practice* put into words what they had always known about their clinical nursing expertise but had difficulty articulating.

We believe that *Expertise in Nursing Practice* illuminates and extends the project begun in *From Novice to Expert* (1984, 2000) with a few changes and many additional nuances. *Expertise in Nursing Practice* provides a much thicker description of the acquisition of clinical expertise and a much more extended examination of the nature of clinical knowledge, clinical inquiry, clinical judgment, and expert ethical comportment. This book is based on a 6-year study of 130 hospital nurses, most of them critical care nurses. In this study, we found that examining the nature of the nurse’s agency, by which we mean the sense and possibilities for acting in particular clinical situations, gave new insights about how perception and action are both shaped by a practice community. We came to more clearly understand the distinctions between *engagement with a problem or situation* and the requisite *nursing skills of involvement* with patients and families. These existential skills of involvement—knowing how close or distant to be with patients and families in critical times of threat and recovery—are learned over time experientially. Indeed, we will make the claim that the skill of involvement with patients and families seem to be central in gaining nursing expertise, because promoting the well-being of vulnerable others requires both problem engagement and the existential skills of personal involvement. In this study, we came to see the interlinkage of

clinical and ethical decision making—how one’s notions of good and poor outcomes and visions of excellence shape clinical judgments and actions.

In order to keep the integrity of this research report intact, we have chosen to place commentaries at the end of each finding’s chapters and the description of the methods used in Appendix A. Since presentation of the data for interpretation and presentation of methods are so integral to the validity of the research, we have chosen not to read back into the study knowledge that is now available but was not yet published at the time of the first edition of this book. We have expanded and revised the two implications chapters based on our updated knowledge and understanding of how this study has actually influenced practice as well as include implications that we have come to understand since the first edition. Since that first edition, more research in the area of skill acquisition, clinical reasoning, and thinking in action has been extended and will now be incorporated in the commentaries where relevant to this work.

In the second study, we discovered new aspects of each stage of skill acquisition, but we came to see the competent stage as particularly pivotal in clinical learning, as it is at this stage that the learner must begin to recognize patterns and, in order to become proficient, must allow the situation to guide responses. We came to understand the proficiency stage as a transition into expertise. This study points to the importance of active teaching and learning in the competent stage in order to coach nurses in making the transition from competency to proficiency. Retention of nurses at the competent level holds much promise for retention and enhancement of nursing practice with a local setting. At the competent stage, the nurse has many questions and challenges that are new simply because the nurse is at a new level of performance and literally sees new challenges and conflicts. Providing expert coaching at this point is a worthwhile investment. When nurses leave their first job as a result of the typical challenges faced in transitioning from competent to proficient levels of skill, it will only prolong the time needed for the transition into proficiency and expertise.

Through this study, the role of sharing narratives, or storytelling, in understanding a practice, demonstrating reasoning in transitions, in communicating intentions, meanings, and concerns, and in creating a community of dialogue and memory has come into sharper focus. Narrative accounts of actual clinical examples reveal everyday clinical and caring knowledge central to the practice of nursing. The concerns, fears, hopes, conversations, and issues of nurses are disclosed and preserved in telling and discussing the stories. A story allows for less linearity, more

parentheses or asides, and captures both forward and retrospective thinking, because the end of the story is known by the storyteller. Thus, a narrative can better capture practical clinical reasoning as it occurs in transition. We have learned that practitioners, through experience within a socially based practice, build narratives and memories of salient clinical situations as they move from novice to skillful practitioner. With experience, concrete situations become coherent and help the practitioner develop a sense of doing better or worse, of recognizing similarities and differences, and of participating in common meanings and practices. Others' practice narratives allow practitioners to recognize reoccurring distinctions and common clinical entities and issues.

Readers of this work may make a wrong assumption that first-person-experience-near narratives of actual events are hopelessly idiosyncratic and subjective and therefore not transferable or generalizable. But the logic of narrative understanding fits practical knowledge and practical reasoning (Benner, Sutphen, Leonard-Kahn, & Day, in press; Sullivan & Rosin, 2008) and is of great use for understanding commonly occurring situations within a socially organized practice. It is similar to the need in biology to understand the habitat and singular life of a particular animal in order to understand the usual life course, particularities, habits, and situated actions in context and styles of the animal. A similar need exists for any clinical practice to understand commonly occurring clinical situations as perceived and confronted by fellow clinicians. This level of knowledge bridges the gap in understanding from the general to particularities, actions, and exigencies of practical reasoning in local contexts. Formal, abstract, and general knowledge is necessary but not sufficient for any professional practice. For example, in order to use the generalizations available from evidence-based clinical research, the practitioner must be able to discern how and which evidence is relevant to a particular situation. Narratives typically exhibit high levels of validity, especially when the readers of the narratives are knowledgeable in the field that gave rise to the narrative. While there may be disagreements in the meanings of the narratives, when groups are instructed to stay within the situated bounds of the story set up by the narrator, and do not import new unavailable possibilities or speculations, a high degree of consensus of meanings is possible and has been demonstrated in clinical promotion programs where peer reviews are used. The context of nursing practice has changed dramatically in the 25 years since *From Novice to Expert* was published. The caring practices central to nursing were articulated in 1984 in the midst of nursing shortages and in the budding awareness that caring practices were

far more than sentiment or attitudes but were skilled relational and practical know-how. Knowledge embedded in women's professions such as teaching and nursing were also beginning to be recognized. In 1984, there were few unlicensed assistive personnel in hospitals and, at the time, there was relative stability in the health care system. Commercialism and commodification had entered the health care industry but was in its infancy compared with that found in 2009. When the first edition of this book was published in 1996, health care was in the midst of a very uncertain health care reform. Where cost savings are sought primarily in the care provided rather than the cures and diagnostic tests offered, we believe that this work offers a crucial guidepost for quality care. The 1996 trend to train less educated workers to do many of the tasks nurses have done in order to cut health care costs is now at its zenith, with some realization of the limitations of this approach for patient monitoring and safety. Where constant monitoring and astute clinical judgment are required to manage highly unstable patients, fewer tasks can be delegated without losing the nurses' ability to "know the patient" (Tanner, Benner, Chesla, & Gordon, 1993) and the expert recognition of early crucial warnings of patient change.

The practice in acute-care settings has become far more complex than it was in 1996. Ebright and colleagues' studies (2003, 2004) of nurses on general medical-surgical units point to the continuous juggling of priorities, the difficulty in completing any task without numerous interruptions, and the potentially negative effects of these challenges on nursing judgment and patient care. Porter-O'Grady (2001) contends that, without significant change in what and how we teach nursing, we will continue to prepare nurses for a practice that no longer exists.

This work demonstrates what we tend to cover over in the Western tradition: that skilled know-how is a form of knowledge in its own right, not a mere application of knowledge. Experienced clinicians have mastered a kind of knowledge not available from the classroom. We hope that this work brings out of hiding clinical knowing and clinical inquiry that get eclipsed by our anxiety to teach science and technology. We do not seek to devalue science and technology—only to make room for the disciplined inquiry and ethical comportment that render our science and technology safe in the practice of caring for individual patients and families. We want a larger, legitimate space for teaching practical reasoning in transitions, which is the hallmark of any clinical practice.

Since the first edition was published in 1996, all the authors have been involved in ongoing research. Patricia Benner notes that the timeliness and significance of this work is affirmed by her work with the

Carnegie Foundation for Advancement of Teaching National Nursing Education study that demonstrates, from the education side, that nurses are currently undereducated for the complex, responsible, risk-laden work that they do. These nurse's stories bring home the point of what *can* be accomplished and what is at stake when nurses perform at high levels of skilled know-how. This work provides a road map for developing more effective school-to-work transition programs. It also demonstrates the need for such programs to be utilized by newly graduated nurses as well as program offerings for the competent to proficient nurse as well as the disengaged nurse. In chapter 6, Jane Rubin explains how the misunderstanding of nursing's ends can lead nurses to imagine that clinical judgment is just a matter of simple rational calculations between well-defined options and attributes this misunderstanding, in part, to a too narrow education in rational technical strategies. These narrow educational approaches to clinical reasoning overlook the skill of involvement and the relational nature of discerning and interpreting patients' clinical problems as well as their distress over those problems.

Christine Tanner, a long-standing advocate of reform in nursing education, also sees the importance and timeliness of this work in the development of a new education system in Oregon—the Oregon Consortium for Nursing Education (OCNE) (Gubrud-Howe et al., 2003; OCNE, 2008; Tanner et al., 2008). OCNE is a collaboration among several community colleges and the Oregon Health and Science University School of Nursing, committed to expanding capacity in nursing education, transforming curriculum to be more responsive to emerging health care needs, using pedagogies appropriate for a practice discipline drawing on this research on skill acquisition in nursing practice and advances in the science of learning, and reforming clinical education to reflect the realities of today's practice. The OCNE project has provided a wonderful opportunity to work with nursing faculty throughout the state, extending this study to the development and field testing of new pedagogies.

Like *From Novice to Expert*, this is both a study of skill acquisition and a research-based articulation of the nature of clinical nursing knowledge. This work has proven itself relevant for other practice disciplines, such as medicine, social work, teaching, occupational therapy, physical therapy, and others. And although all the examples center on nursing, the progression from principle-based practice guided by science, technology, and ethics to response-based practice guided by practical knowledge accumulated through engaged reasoning will be

relevant and recognizable by all practitioners. It is a practical history of the formation of expertise of practicing nurses.

DESCRIPTION OF THE STUDY

This book is based on an interpretive study of nursing practice in critical care units and was conducted between 1988 and 1994. The study was conceived by Patricia Benner and Christine Tanner and proposed to the Helene Fuld Foundation for funding. Coinvestigators involved from the proposal phase were Hubert and Stuart Dreyfus. Here, we present a brief overview of our approach to the study of nursing practice. A detailed discussion of our concerns and actions in design and conduct of the study can be found in appendix A.

The four key aims that structured the study were as follows:

- To delineate the practical knowledge embedded in expert practice
- To describe the nature of skill acquisition in critical care nursing practice
- To identify institutional impediments and resources for the development of expertise in nursing practice
- To begin to identify educational strategies that encourage the development of expertise

As in all interpretive work, the project was initially structured, but not constrained, by these guiding aims. In the following pages, we illustrate our findings regarding these central questions and demonstrate as well the central themes and narratives that went beyond the original aim of the inquiry.

The design of the study was influenced by a concern to access practice of nurses in ways that allowed the practice to become visible in all aspects. The design additionally extended what we had learned from previous interpretive study of nursing practice (Benner, 1984a; Benner & Wrubel, 1989) and clinical judgment (Benner & Tanner, 1987; Tanner, 1989, 1993). Additional concerns were to access practice that was carried out in various types of institutions in different geographic locations by nurses of varying skill levels practicing with persons with divergent illness processes across the life span.

Interpretive phenomenology (see appendix A for a more detailed explanation of the term) was used to access the everyday practice and skill

of critical care nurses. The aim of this approach is to explain particular and distinct patterns of meaning and action in the practice of nurses studied, taking into account the context in which they worked, their history, and their particular concerns. Rather than try to characterize a modal or general practice, we attempt to articulate particular and distinct patterns of meaning and action in the nurse-informants. The approach is (a) systematic in its use of tested modes of gathering narrative on practice; (b) disciplined in its focus on the meanings and concerns that can be interpreted from direct text from informants, as opposed to a focus on theoretical abstractions from that text; (c) self-critical and self-corrective in its continual return to the text for arbitrating disputes in interpretation; and (d) produces a consensually validated interpretation that is agreed on by multiple readers (Benner, 1994b; Packer & Addison, 1989; van Manen, 1990).

One hundred and thirty nurses practicing in ICUs and general floor units from eight hospitals, seven of which are located in two far western and one in the eastern region of the country, comprised the group of informants. Nurses were drawn from neonatal, pediatric, and adult ICUs; those practicing in adult units were distributed evenly across surgical, medical, cardiac, and general ICUs. Because we sampled for a relatively homogenous group, 98% of the nurses held a minimum of a bachelor's degree. The hospitals from which the informants were drawn included predominantly tertiary-care teaching hospitals as well as a community hospital and a Veterans Administration hospital.

Nurses were selected for their expected level of practice (advanced beginner through expert) by supervisors who were asked to consider years of experience, and, for the nurses who were in practice more than 5 years, the quality of their practice. We anticipated that variability of practice would be captured naturalistically in the beginning and intermediate nurses, but with the experienced nurses, we set out to capture variability by asking supervisors or head nurses to name nurses who had been in practice 5 or more years and were considered superb nurses as well as nurses who had been in practice the same amount of time but provided safe but less than exemplary care. The final sample was comprised of 25 nurses with less than 1 year of experience, 35 nurses with at least 2 but less than 5 years experience, 44 nurses with 5 or more years of experience and identified as expert, and 26 nurses with 5 or more years of experience and identified as experienced but not expert in their practice. (See appendix B for detailed description of informants.)

Two central approaches were used to access the everyday experience and skill of nurses caring for patients in critical care: narrative interviews and observation. Small group interviews with four to six nurses who had the same amount of practice experience were conducted repeatedly for three sessions. Nurses were asked to present narratives of recent practice with particular patients and to help assist with obtaining a complete narrative from each informant by actively contributing questions and clarifying uncertainties. A second approach to understanding practice was direct observation of 48 nurses who were observed for three periods of 2 to 4 hours while they were engaged in direct care of patients in their units. All interviews and any direct discussion during observation periods were audio recorded and transcribed verbatim to produce a text for interpretation.

Interpretation of text was comprised of initial interpretations of each interview by a subset of the research team prior to the following interview with each group; small group interpretation of portions of text that addressed particular questions; and large group interpretations, in which the full team gathered to examine interpretive accounts that had been worked out on initial questions. The process of interpretation included repeated examination of the text for understanding it as a whole; for understanding its most salient points; and for understanding the complete, if detailed, aspects of the text. Several units of analysis were considered in the ongoing interpretation: individual narrative about each patient, the individual nurse's practice as a whole, the practice of nurses who practiced at the same level, the practice of nurses who practiced at the same institution, and groups of narratives that clustered around a particular theme. Subsets of the research team who were concerned about particular units of study concentrated on the interpretation of that particular text.

It is our hope that we have put into words once again what nurses and all clinicians know in their practice and that the marginalized caring practices presented here compel the reader to consider the societal worth and knowledge inherent in the caring, diagnostic, and therapeutic work that nurses do. As well, it is our hope that practitioners from other fields will join us in this conversation so that together we can design better institutions of public caring—in our schools, families, social work, courtrooms, and in all places where protection of vulnerability, sponsorship of growth, and the promotion of better citizenship occurs.

1

The Relationship of Theory and Practice in the Acquisition of Skill

HUBERT L. DREYFUS AND STUART E. DREYFUS

The theory of nursing, as we shall use this phrase, encompasses both the medical and nursing *scientific knowledge* that has been imparted to the trainee, mostly in nursing school, and the *rules of thumb* that are largely acquired during on-the-job training and experience. The term *medical scientific knowledge* is rather self-explanatory. Such knowledge draws primarily on the sciences of chemistry and biology and predicts, among other things, changes in chemical concentrations and biological events that various invasive actions will produce. Typical rules of thumb are of the form *if you observe the following phenomenon, then you should take the following action*. These are rules of good nursing practice that have been developed over time and based on experience yet generally deal with whole situations too complex for analysis in purely scientific terms.

The practice of nursing refers to the actual on-the-job behavior of experienced nurses considered to be experts by their peers and supervisors. Is this skilled coping behavior the result of the application of theory? Or, is what is taught by experience something more than an increasingly refined and subtle theory? If so, what is it? How does it come about? How can it be encouraged and rewarded? These are the issues that this book will address.

Briefly summarized, we shall argue that while practice without theory cannot alone produce fully skilled behavior in complex coping domains

such as nursing, theory without practice has even less chance of success. In short, theory and practice intertwine in a mutually supportive bootstrapping process as the nursing graduate develops skill. Only if both are cultivated and appreciated can full expertise be realized.

The relation between theory and practice and between reason and intuition has concerned our culture since our Western way of being human was first defined in ancient Greece. And although it has not been often noted, the supposed science of medicine that arose in Greece played a crucial role at the beginning of this cultural self-determination. It also turns out that 2,000 years later in our modern world, the practice of nursing has a double aspect that gives it a unique place in our understanding of what Western man has become. Now that medicine has in fact become a theoretical science, nursing has the task of applying medical theory, thereby revealing both the power and limits of this theory and any other theory. Moreover, nursing as a caring practice goes beyond theory altogether and shows that where human meaning is at stake, one needs a kind of intuition that can never be captured by rational theory. Thus, the practice of nursing reveals what 2,000 years of Western thinking has tended to deny—that theory is dependent on practice, and reason requires intuition.

To understand the complicated relation between theory and practice and between reason and intuition illustrated in the practice of nursing, we have to go back to the time when Hippocrates was trying to move medicine from folk wisdom to a scientific art of healing. At the same time, Socrates, born 9 years after Hippocrates in 469 BC, was trying to understand this new intellectual achievement, of which medicine was only one example. Around 400 BC, physics, astronomy, and geometry had taken off from everyday, practical measuring and counting, and thinkers were asking, what is special about these new disciplines? The answer, proposed by Socrates and refined by the philosophical tradition, was that these new disciplines were based on theory. Theory has five essential characteristics. The first three were identified by Socrates. (1) *Explicitness*. Ideally, a theory should not be based on intuition and interpretation but should be spelled out so completely that it can be understood by any rational being. (2) *Universality*. Theory should hold true for all places at all times. (3) *Abstractedness*. A theory must not require reference to particular examples. In the *Euthyphro*, Socrates presupposes these requirements when he assumes that moral behavior must be based on abstract, universal principles and so asks the prophet Euthyphro to justify his behavior by providing an explicit, universal, and abstract definition of

piety—angrily rejecting Euthyphro’s appeal to examples and his own special intuition.

Descartes (1641/1960) and Kant (1963) completed the Socratic account of theory by adding two more requirements: (4) *Discreteness*. A theory must be stated in terms of elements free of context, which we now call features, factors, attributes, data points, cues, and so forth—isolable elements that make no reference to human interests, traditions, institutions, and such. (5) *Systematicity*. A theory must be a new whole in which decontextualized elements are related to each other by rules or laws.

Plato expressed all five characteristics in the myth of the cave: The theorist must remove his object of knowledge from the everyday, perceptual, social world in order to see the universal relations between the explicit and abstract elements—in this case, the ideas. Freed from all context, the elements form a system of their own—all Plato’s ideas are organized by the idea of the Good. Plato saw that while everyday understanding is implicit, concrete, local, holistic, and partial, theories, by contrast, are explicit, abstract, universal, and range over elements organized into a new total whole.

Another question being asked was what do these new theoretical disciplines have to do with everyday practice. In answering this question, the favorite example was medicine. Unlike physics, astronomy, and geometry, which were purely abstract, Hippocrates claimed to have a theory that told physicians what to do. For this reason, Socrates admired Hippocrates and held up the new medicine as a model of knowledge for philosophers to study. Hippocrates returned the compliment by remarking that “a philosophical physician resembles a god.” The question for Socrates thus became, How is a theory-based craft like medicine different from skills based on rules of thumb like stonecutting and cooking? His answer, which still has serious consequences for our current lives, grew out of two observations. Both were true observations about medicine, but, like a good philosopher, Socrates overgeneralized them. He saw that physicians claimed to be able to explain why they did what they did and that their explanations were based on principles from which the behavior in question could be seen to follow rationally. Generalizing these observations, Socrates claims in *Gorgias* (Plato, 1937) that any craft must have “principles of action and reason” (p. 501a).

The claim that a craft or *techné* must be based on a theory that could be articulated by the practitioners led Socrates to rule out of account all forms of intuitive expertise that do not seem to be based on any principles at all. Cooking, for example, unlike medicine, is “unable to render any

account of the nature of the methods it applies” (Plato, 1937, p. 465a). It “goes straight to its end, and never considers or calculates anything” (p. 465a). Socrates holds that such intuitive abilities are not crafts at all and that experts in these domain have no knowledge but a mere knack. This would apply to intuitive experts from basketball players to chess masters and virtuoso musicians, all of whom are unable to articulate rational principles based on a theory to explain what they do.

Socrates thought that these sorts of experts were really not experts at all but just clever crowd pleasers operating on hunches and lucky guesses. Only experts like doctors, who could explain why they did what they did, had solid, reliable knowledge. According to Plato, cooks have a knack for making food taste good, but only doctors know what is good for you and why. But this troubled Socrates, since skilled statesmen, heroes, and religious prophets did not claim to be acting on principles like doctors and so seemed to be on the same level as cooks. Socrates set out to check whether such experts were in fact basing their actions on theories. He hoped to show that morality and statesmanship were indeed crafts by eliciting rules or principles from experts in these domains. For example, Socrates assumes in his dialogue *Euthyphro* (Plato, 1937) that Euthyphro, a religious prophet, is an expert at recognizing piety and so asks Euthyphro for his piety recognizing rule: “I want to know what is characteristic of piety. . . to use as a standard whereby to judge your actions and those of other men” (p. 6e3–6). He wants a principle that would ground piety in theory and so make it knowledge.

Euthyphro’s response to this demand is like that of any expert. He gives Socrates examples from his field of expertise—in this case, mythical situations in the past in which men and gods have done things that everyone considers pious. Socrates faces the same problem in *Laches* (Plato, 1937), where he asks Laches, presumably an expert on courage, “What is that common quality, which is the same in all cases, and which is called courage?” (p. 191e) but gets no rules. This leads Socrates to the famous conclusion that since prophets and heroes could not state the consistent, contextfree principles that provide the rationale for their actions the way doctors could explain their prescriptions, all their skills were mere knacks. And even doctors could not produce the finished and tested medical theory that they were just beginning to establish. So, Socrates found that no one could meet his test for knowledge, and he reluctantly concluded that no one knew anything at all—not a promising start for Western philosophy.

This is where Plato came to the aid of Socrates. Plato suggested that experts were operating on principles they could not articulate. He claimed that experts, at least in areas involving nonempirical knowledge such as morality and mathematics, had in another life learned the principles involved, but they had forgotten them. The role of the philosopher was to help such moral and mathematical experts recall the principles on which they were acting. These principles would ground the skill. Knowledge must be “fastened by the reasoning of cause and effect” and “this is done by ‘recollection’” (Meno Plato, 1937, p. 98a).

A generation after Plato, Aristotle already suspected that something crucial had been left out of Plato’s medical model of knowledge. Rather than seeing the ability to give reasons for their actions—like doctors—as the test of expertise, Aristotle sees precisely the immediate, unreasoned, intuitive response as characteristic of an expert craftsman. In his book *Physics*, Aristotle states, “Art (*techne*) does not deliberate.” (Physics Book II, Ch. 8 p. 200b) Moreover, Aristotle was clear that even if there were universal principles based on a theory, intuitive skill was needed to see how the principles applied in each particular case. He derives an illustration from ethics, which Plato thought must be based on universal rules: “It is not easy to find a formula by which we may determine how far and up to what point a man may go wrong before he incurs blame” (Aristotle, 1952, Physics Book, Ch. 8 199b). He then adds, “But this difficulty of definition is inherent in every object of perception: such questions of degree are bound up with the circumstances of the individual case, where our only criterion is the perception” (p. 199b).

The same would, of course, apply to medicine. The two areas where theory impinges on the concrete case, diagnosis, and treatment are areas that would require experience and intuition. Aristotle was right. Expert diagnostic systems such as the computer programs MYCIN and INTERNIST based on principles but without intuition and judgment do better than the nonexpert but have failed to capture the specialist’s expertise.

A systematic evaluation of MYCIN was reported in *The Journal of the American Medical Association* (Yu et al., 1979). MYCIN was given data concerning ten actual meningitis cases and was asked to prescribe drug therapy. Its prescriptions were evaluated by a panel of eight infectious disease specialists who had published clinical reports dealing with the management of meningitis. These experts rated as acceptable 70% of MYCIN’s recommended therapies (Yu et al.).

The evidence concerning INTERNIST-1 is even more detailed. In fact, according to *The New England Journal of Medicine*, which published an evaluation of the program, “the systematic evaluation of the model’s performance is virtually unique in the field of medical applications of artificial intelligence” (Miller, Harry, Pople, & Myers, 1982). The evaluators found that “the experienced clinician is vastly superior to INTERNIST-1 in the ability to consider the relative severity and independence of the different manifestations of disease and to understand the temporal evolution of the disease process (p. 476).

Dr. G. O. Barnett (1982), in his editorial comment on the evaluation, wisely concludes:

Perhaps the most exciting experimental evaluation of INTERNIST-1 would be the demonstration that a productive collaboration is possible between man and computer—that clinical diagnosis in real situations can be improved by combining the medical judgment of the clinician with the statistical and computational power of a computer model and a large base of stored medical information. (p. 5)

Nurses who have to turn the conclusions of theory into treatment have to supply this clinical judgment. As Patricia Benner (1984a) points out, clinical judgments, such as maintaining a patient within specified physiological parameters with medications, requires experience-based intuition.

The Platonic rationalist tradition, however, would support the expert systems builders. There must be a theory underlying all expertise, they claim, so one should be able to find and articulate the principles underlying even diagnosis and treatment. We will formulate these principles, program them, teach them, and even test for expertise by examining students on how well they know them. But Aristotle’s argument that one must at some point use judgment to decide how to apply the rules, plus the general failure of expert systems using rules without judgment, suggests that even a discipline that has a theory must ultimately rely on practical intuition when it needs to touch reality.

To understand the role of intuition, even in a theoretical discipline like medicine, and the implication of this relationship for nursing, a fresh look must be taken at the definition of *skill* and what the expert acquires when he achieves expertise. We must be prepared to abandon the Greek view that a beginner starts with specific cases and as he becomes more proficient abstracts and interiorizes more and more sophisticated rules. It

might turn out that skill acquisition moves in just the opposite direction—from abstract principles to particular cases.

We previously mentioned the belief—all too prevalent in our highly rationalistic, scientific Western culture—that the role of experience is merely to refine theory. We reject the view that, presumably unconsciously, subtle theory produces skilled performance not because we can prove that it is wrong but, in part, because no plausible arguments have been offered (beyond the assertion that no other explanation exists) that it is right. As we shall see later, this assertion is being called into question as understanding slowly emerges about how the brain's neuronal activity accompanied by synaptic modifications during learning can produce improved performance based on experience—a process that cannot adequately be explained as the acquisition of theoretical knowledge.

Furthermore, it certainly does not look reasonable to say that the application of principles and rules of thumb produce skilled human coping, given the effortless and speed with which skilled drivers, for example, cope with changing situations or with which skilled carpenters, say, carry out their activities. Even highly skilled chess players, coping with what appear to be difficult situations requiring planning, reasoning, and careful assessment of various trade-offs, can play chess at the rate of 1 second or less per move and still produce games of very high quality. As well, they can do this even if they are required simultaneously to do simple computational tasks that seem to leave little, if any, room for theoretical thinking about chess.

Add to this the fact that computer scientists have been striving unsuccessfully for more than 30 years to produce artificial intelligence by programming vast numbers of facts, various principles of logical inference, and rules of thumb into computers. Even though computers can store far more facts than any human can remember and can apply inferential rules thousands of times more rapidly and with more accuracy than can human beings, programs optimistically called *expert systems* consistently fail to perform at the level of human experts in areas such as nursing, in which people learn with experience to make rapid, effective decisions. Through these intense efforts toward artificial intelligence, the hypothesis that intelligence consists of nothing more than rules and principles has been put to an empirical test and has been found wanting.

It seems to us that it is more plausible to believe that sufficient experience, accompanied by no theoretical knowledge, could produce skilled coping behavior. After all, animals cope skillfully with their environments

through trial-and-error learning, in addition, of course, to innate behavior, without benefit of theoretical knowledge or reasoning abilities. But a skill such as nursing is far more complex than foraging for food or avoiding enemies. It is probably impossible to learn to excel in nursing merely by drawing exclusively from trial and error and from imitation without acquiring and using articulatable scientific knowledge or rules of thumb. As we develop our explanation of the acquisition of complex skills, we shall delineate the likely necessary contributions of both theory and practice to the process.

In developing our description of skill acquisition, we, and various colleagues, have observed, and in some cases experimentally studied, the learning process not only of nurses—which, of course, is the focus of this book—but also of chess players, airplane pilots, and automobile drivers. We have, furthermore, unashamedly relied heavily on the recollection of some of our own learning experiences. We urge the reader, while tracking with us the evolution of skillful coping behavior, to recall his or her own learning experiences not only in nursing but also in other areas to see if those experiences fit with our description.

The careful study of the skill-acquisition phenomenon has shown us that a person usually passes through at least five stages of qualitatively different perceptions of their task as skill improves. Hence, we call what follows a five-stage model of skill acquisition. A closer examination of some of these five stages would probably allow their decomposition into their own stages, so our choice of five should not be regarded as definitive but only as sufficient for our purposes. As we examine in detail how a novice, if she possesses innate ability and has the opportunity to acquire sufficient experience, gradually becomes an expert, we shall focus on the most common kind of skill, sometimes called *unstructured*. The domains in which such skills develop admit of a potentially unlimited number of relevant facts and features. The ways that these elements interrelate to produce later events is often unclear and not capable of being captured by precise rules. Nursing is certainly carried on in such an environment, although the nursing student, learning facts and procedures, may be unaware of this. Managers, teachers, and even economic forecasters live in such an unstructured world. Chess, on the other hand, is a structured domain, with a well-defined set of relevant facts (the position of the pieces on the board) and of legal moves and their effect on the position. While it is this structured property of chess that makes it possible for computers, using primarily brute-force enumeration of a huge number of possibilities, to come very close to the best human performance, human players, lacking the computational speed, accuracy, and memory capacity

of computers, must treat chess as an unstructured domain and rely on other abilities such as pattern discrimination and learned associative behavior to master the game.

Because a high level of skill in an unstructured domain seems to require considerable concrete experience with real situations, and because any individual will have had more experience with some types of situations than with others, a person can simultaneously be an expert with respect to certain types of situations while being less skilled with respect to others. Hence, *expertise*, as we shall use the term, does not necessarily apply to a whole skill domain but to at least some significant part of one. There are, perhaps, no expert nurses, but certainly many nurses achieve expertise in the area of their specialization.

Not all people achieve expertise, even with considerable concrete experience in their domain of specialization. Chess is so designed that only a few can achieve expertise, and therein lies its attraction. Automobile controls are so designed that almost any driver can become what we call *expert*, although some will always be more expert than others. Nursing seems to lie somewhere in between. We have uncovered, happily, a great many rewarding examples of true expertise, but at the same time, we have found that despite considerable experience, some nurses never seem to achieve this level even in their specialized area. Why this is so and what might be done about it are issues that will be discussed in chapter 5 by Jane Rubin.

Being an expert, or being at any particular stage in our skill-acquisition model, does not necessarily mean performing as well as everyone else or exhibiting the same type of thought process.

We refer to “stages” because (1) each individual, when confronting a particular type of situation in his or her skill domain, will usually approach it in the manner of our first stage, “novice,” then as described in our stage two, “advanced beginner,” and so on through our five stages, and (2) the most talented individuals employing the kind of cognitive processes that characterize a certain stage will perform more skillfully than the most talented individuals who are at an earlier stage in our model. The five stages that we shall now lay out are called novice, advanced beginner, competent, proficient, and expert.

STAGE 1: NOVICE

Normally, the instruction process begins with the instructor decomposing the task environment into contextfree features that the beginner can

recognize without benefit of experience. The beginner is then given rules for determining actions on the basis of these features, like a computer following a program. Through instruction, the novice acquires rules for drawing conclusions or for determining actions based upon facts and features of the situation that are recognizable without experience in the skill domain being learned. These elements are either objective ones, such as instrument readings, or subjective ones, of which the novice can reasonably be expected to have acquired a recognition ability based on prior experience in other domains. For example, any adult beginning nursing school can identify a state of high agitation, even though no formula applied to objective features such as heart rate can consistently do this job.

The knowledge imparted to the novice is what we have called *theoretical knowledge*, yet, even at this first level, it can require for its application assessments, such as that of extreme agitation, that admit of no theoretical description. We have already, at this initial stage, an example of the superiority of combining theory and experience-taught capabilities.

To make our skill description more accessible, we will illustrate our distinctions with examples chosen from automobile driving, as almost all readers have acquired this skill. In later chapters, using actual words of nurses as well as descriptions of their behavior, we will follow the skill-acquisition process as it relates to nursing.

Along with many other rules, the novice driver is given a formula for the safe distance at which to follow another car as a function of objectively determined speed as indicated by the speedometer. Of course, the novice is not told how to recognize a car as opposed to an elephant (which probably should not be followed as closely), since this ability is assumed to have been already acquired. Interestingly, no strict rules have ever been found that would allow a computer, using only objective data such as a digitized video image, to consistently and correctly distinguish a member of the class of cars from all other objects, demonstrating the inadequacy of depending upon theory alone. It seems that our car-recognition ability comes from experience through a brain-modification process that neurophysiologists and mathematicians studying artificial neural networks are beginning to understand in terms of synaptic reinforcement and inhibition based on outcomes of behaviors. The ability to discriminate between different sensory inputs and to learn to respond differently to different classes of input almost certainly does not depend on rules and principles, even unconscious ones, of the type given novices during their theoretical training.

The ability to recognize an agitated individual or to distinguish cars from other moving objects on a road, as we have said, seems explainable in terms of brain processes but not in terms of rule-based reasoning. In what follows, we shall use the term *intuition* when writing about this ability. Intuition, as we understand it and use it, is neither wild guessing nor supernatural inspiration but is the sort of ability, explainable in physiological terms, that we use all the time as we go about our everyday tasks.

STAGE 2: ADVANCED BEGINNER

Performance improves to a marginally acceptable level only after the novice has considerable experience coping with real situations. While this encourages the advanced beginner to consider more objective facts and use more sophisticated rules, it also teaches the learner an enlarged conception of what is relevant to the skill. Through practical experience in concrete situations with meaningful elements that neither the instructor nor student can define in terms of objective features, the advanced beginner intuitively starts to recognize these elements when they are present. We call these newly recognized elements *situational* to distinguish them from the objective elements of the skill domain that the beginner can recognize prior to seeing concrete examples. Just as the beginning driver could bring an ability to recognize a car to the driving domain because she has seen many examples of cars prior to learning to drive, the advanced beginner, after seeing many examples of elements unique to the domain of study, begins to recognize them. Rules for behavior may now refer to these newly learned elements as well as to objectively recognizable ones and to elements recognizable due to experiences prior to studying the new domain of skill. With the addition of many new elements now known by the learner to be relevant to the skill, the task appears to become more difficult, and the advanced beginner often feels overwhelmed by the complexity of the skill and exhausted by the effort required to notice all relevant elements and remember an increasing number of more and more complicated rules.

The advanced beginner driver, having been taught as a beginner to shift gears at certain speeds regardless of the traffic and terrain, learns to anticipate speed and hence gear changes necessitated by traffic. Simultaneously, the advanced beginner begins to recognize the engine sounds that indicate the need to change gears and uses these situational aspects in addition to speed to decide when to shift.

STAGE 3: COMPETENCE

With more experience, the number of potentially relevant elements of a real-world situation that the learner is able to recognize becomes overwhelming. At this point, since a sense of what is important in any particular situation is missing, performance becomes nerve wracking and exhausting, and the student might wonder how anybody ever masters the skill.

To cope with this problem and achieve competence, people learn through instruction or experience to adopt a hierarchical perspective. First, they must devise a plan or choose a perspective, which then determines those elements of the situation to be treated as important and those that can be ignored. By restricting themselves to only a few of the vast number of possibly relevant facts and features, decision making becomes easier.

The competent performer must devise new rules and reasoning procedures for the chosen plan or perspective determination so that learned rules for actions based on relevant facts can then be applied. These rules are not as easily come by as the rules given beginners in texts and lectures. The problem is that there are a vast number of different situations that the learner may encounter, many differing from each other in subtle, nuanced ways, and in each a plan or perspective must be determined. There are, in fact, more situations than can be named or precisely defined, so no one can prepare for the learner a list of what to do in each possible situation. Thus, competent performers have to decide for themselves what plan to choose without being sure that it will be appropriate in the particular situation. Now, coping becomes frightening rather than exhausting, and the learner feels great responsibility for his or her actions. Prior to this stage, if the learned rules did not work out, the performer could rationalize that he had not been given good enough rules rather than feel remorse because of a mistake. Of course, at this stage, things often work out well, and a kind of elation unknown to the beginner is experienced, so learners find themselves on an emotional roller coaster.

This combination of necessity and uncertainty introduces an important new type of relationship between the performer and his or her environment. The novice and the advanced beginner, applying rules and maxims, feel little or no responsibility for the outcome of their acts. If they have made no mistakes, an unfortunate outcome is viewed as the result of inadequately specified elements or principles. The competent

performer, on the other hand, after wrestling with the question of a choice of perspective or goal, feels responsible for, and thus emotionally involved in, the result of his choice. An outcome that is clearly successful is deeply satisfying and leaves a vivid memory of the situation encountered as seen from the goal or perspective finally chosen. Disasters, likewise, are not easily forgotten.

As the competent performer becomes more and more emotionally involved in his or her tasks, it becomes increasingly difficult to draw back and adopt the detached rule-following stance of the beginner. While it might seem that this involvement-caused interference with detached rule testing and improving would inhibit further skill development, in fact the opposite seems to be the case. As we shall soon see, the replacement of the detached rule-following stance of the novice and advanced beginner by involvement, should it occur, sets the stage for further advancement while resistance to the frightening acceptance of risk and responsibility can lead to stagnation and ultimately to boredom and regression or withdrawal.

For example, a competent driver is no longer merely following rules designed to enable him or her to drive a vehicle safely and courteously. Instead, the driver begins a trip by selecting a goal. If, for example, a driver wishes to get somewhere very quickly, comfort and courtesy play a diminished role in the selection of maneuvers, and slightly greater risks might be accepted. Driving in this manner, pride might be felt if the trip is completed quickly and uneventfully, and remorse generally follows an arrest or near collision. Should the trip involve, say, an incident in which the driver passes another car dangerously so that only quick action by the other driver prevents an accident, the competent driver can respond to this experience in one of two qualitatively different ways. One response would be for the driver to consciously decide that one should hardly ever rush and modify the rule used to decide to hurry. Or, perhaps, the rule for conditions for safe passing might be modified so that the driver only passes under exceedingly safe circumstances. These would be the approaches of the driver doomed to timidity and fear and, by our definition, to incompetence. Or, responding quite differently, one could accept the deeply felt consequences of the act without detachedly asking oneself what went wrong and, especially, why. If the driver does this, he or she will not be quite so likely to hurry in the future or to pass in similar situations, and there will be a much better chance of ultimately becoming, with enough frightening or, preferably, rewarding experiences, a relaxed and expert driver. As indicated when we discussed the advanced beginner's recognition abilities, it is innate and natural for

driving behavior to be unconsciously enhanced through experience by synaptic brain changes without these changes taking the form of conscious or even unconscious rule modification. Likewise, the first few times a nurse encounters an unusual need for taking action and responsibility, it tends to be noteworthy and memorable. However, with repetition, such become events that were once experienced as unusual become familiar and more routine as the nurse takes up expectations that getting new orders will be required and relatively easy to accomplish. After the first few times, the nurse learns that she will be able to do this, and she follows through without much effortful deliberation, and the incident is no longer so memorable.

Experiential learning with past patient care enables the nurse to develop a greater sense of salience. Increasingly, the nurse has a sense of when he has or does not have a good clinical grasp of the situation. Since he has now lived through more clinical futures, he can now better predict immediate likely events and needs of patients and plan for them.

STAGE 4: PROFICIENT

Suppose, as characterized immediately above as the second of the two qualitatively different ways of learning from experience, that events are experienced with involvement as the learner practices her skill and that, as the result of both positive and negative experiences, responses are either strengthened or inhibited due to synaptic brain changes rather than rules of behavior being modified. Should this happen, the performer's theory of the skill, as represented by rules and principles, will gradually be replaced by brain synapse-produced, situational discriminations accompanied by associated responses. Proficiency seems to develop if, and only if, experience is assimilated in this atheoretical way and then intuitive behavior replaces reasoned responses.

As the brain of the performer acquires the ability to discriminate between a variety of situations entered into with concern and involvement, plans are intuitively evoked and certain aspects stand out as important without the learner standing back and choosing those plans or deciding to adopt that perspective. Action becomes easier and less stressful as the learner simply sees what needs to be achieved rather than deciding, by a calculative procedure, which of several possible alternatives should be selected. There is less doubt that what one is trying to accomplish is appropriate when the goal is simply obvious rather than the winner

of a complex competition. In fact, at the moment of involved intuitive response, there can be no doubt, since doubt comes only with detached evaluation of performance.

Notice that we have stressed how the involved, experienced performer sees goals and salient facts but not how he sees immediately what to do to achieve these goals. This is because there are far fewer ways of seeing what is going on than ways of intervening through actions. The proficient performer simply has not yet had enough experience with the wide variety of possible actions in each of the situations that he can now discriminate to have rendered the best response automatic. For this reason, the proficient performer, seeing the goal and the important features of the situation, still must *decide* what to do. To do this, he falls back on detached, rule-based determination of actions.

The proficient driver, approaching a curve on a rainy day, may intuitively realize, due to brain activity induced by synaptic modifications produced during prior experiences, that she is going dangerously fast. She then consciously decides whether to apply the brakes or merely reduce pressure by some selected amount on the accelerator. We call this driver proficient rather than expert because valuable moments may be lost while an action is consciously chosen, or time pressure may lead to a less than optimal choice. Yet, this driver is certainly more likely to safely negotiate the curve than is the competent driver, who spends additional time *deciding*, based on speed, angle of bank, and felt gravitational forces, that the car's speed is excessive.

STAGE 5: EXPERT

The expert not only knows what needs to be achieved, based on mature and practiced situational discrimination, but also knows how to achieve the goal. A more subtle and refined discrimination ability is what distinguishes the expert from the proficient performer. This ability allows the expert to discriminate among situations all seen as similar with respect to the plan or perspective, distinguishing those situations requiring one action from those demanding another. As with the proficient performer, synaptic modifications caused by actions, experienced with involvement account for responses that turn out to be appropriate being reinforced, while those that do not work out well are inhibited. In short, the expert not only sees what needs to be achieved but also how to achieve it. When things are proceeding normally, experts do not solve problems and do

not make decisions; they simply do what experience has shown normally works, and it normally works.

The expert driver at all times, except during exceptional moments, experiences himself as simply going somewhere, not as manipulating a complex piece of machinery called a car, just as a normal walking person somehow experiences herself as approaching the destination and not, as a small child might, as consciously and deliberately propelling the body forward. Approaching a curve under wet conditions at a high speed, the expert not only feels that he is going too fast, but simply does, with the brake or accelerator pedal, whatever is appropriate. The unconscious, involved relation of the driver to the road is never broken by detached, conscious thought.

In this idealized picture of skillful coping, it might seem that experts do not need to think and are always right. Such, of course, is *not* the case. While most expert performance is ongoing and nonreflective, the best of experts, when time permits, think before they act. Normally, however, they do not think about their rules for choosing goals or their reasons for choosing possible actions, as if they did, they would regress to the competent level. Rather, they reflect on the goal or perspective that seems evident to them and on the action that seems appropriate to achieving their goal. We call this reflection *deliberative rationality* and discuss it below.

It seems that a beginner makes inferences using strict rules and features just like a computer, but with talent and a great deal of involved experience, the beginner develops into an expert who sees intuitively what to do *without* applying rules and making inferences at all. Philosophers have given an accurate description of the beginner and of the expert facing an unfamiliar situation, but as we have seen, normally experts do not *solve problems*. They do not reason. They do what in experience has normally worked, and naturally, it normally works.

Likewise, in nursing (Benner, 1984a), the beginner follows rules, and the expert trusts intuition. However, it is important to add that nursing, unlike chess and driving, is a skill that relies on theoretical understanding. Thus, although the expert nurse will find that she relies on fewer and fewer rules in using theory in practice, practice will be improved not just by experience but by a deeper and deeper understanding of appropriate medical or nursing theory.

When one sees the importance of practice and intuition, so long neglected in the West, there is a temptation to invert the traditional hierarchies in which theory is superior to practice and rationality is superior

to intuition, but to invert these terms is to stay within the traditional system of thought. The relations between these important human capacities are much too complex to be captured in any hierarchy or oppositional choice. Nursing, like all medical practice and the practice of scientific disciplines in general, is a special combination of theory and practice in which it is clear that theory guides practice and practice grounds theory in a way that undercuts any philosophical attempt to say which is superior to the other. As well, in cases of breakdown or new areas where intuition is not developed, reasoning is a necessary guide, but reasoning always presupposes a background of intuitions that can never be replaced by rationality—thus, the necessity of intuitively guided practice. Nursing, then, turns out to be an especially illuminating craft in which one can see both the power and the limits of theoretical rationality.

We call the kind of inferential reasoning exhibited by the novice, advanced beginner, and competent performer as they apply and improve their theories and rules *calculative rationality*. By *deliberative rationality*, on the other hand, we mean the kind of detached, meditative reflection exhibited by the expert when time permits thought. We will only briefly touch on this process here, partly because we have discussed it in more detail elsewhere, and partly because nursing skill, unlike, say, long-range planning, rarely allows much time for meditative deliberation.

Sometimes, due to a sequence of events, one is led into seeing a situation from an appropriate perspective. Seeing an event in one way rather than some other almost as reasonable way can lead to seeing a subsequent event in a way quite different from how that event would have been interpreted had a second perspective been chosen. After several such interpretations, one can have a totally different view of the situation than one would have had if, at the start, a different, reasonable perspective had been chosen. Getting locked into a particular perspective when another one is equally or more reasonable is called *tunnel vision*. An expert will try to protect against it by trying to see the situation in alternative ways, sometimes through introspection and sometimes by consulting others and trying to be sympathetic to their perhaps differing views. For example, a nurse who sees a certain unpleasant patient's behavior as malingering might see subsequent behavior as confirming evidence and thereby miss a developing medical crisis until it is almost too late. If the nurse had time to stand back and rethink the evolving pattern of behaviors or talk it over with another nurse, he might suddenly realize the true meaning of the present and past events. Deliberative rationality stands at the intersection of theory and practice. It is detached,

reasoned observation of one's intuitive, practice-based behavior with an eye to challenging, and perhaps improving, intuition without replacing it by the purely theory-based action of the novice, advanced beginner, or competent performer.

Another example of where theory interacts with practice occurs when an expert intuitively feels that a situation is so novel as to preclude intuitive response. The first reaction of the expert will be to seek the advice of someone for whom the current situation is not novel, due to their differing experiences. If that is impossible, recognizing intuitively the need for theory, the expert will try to recall the rules and scientific knowledge he learned as a beginner in order to cope with the novel situation. Not only novel medical conditions can elicit competent, calculated behavior, but they can also cause changes in the working environment. If a nurse has been assigned to a new ward or transferred to a new hospital with a different working culture, it might be better to calculate out a competent response to a familiar situation than to intuitively respond in a way that was considered expert under previous circumstances.

We have seen now how theory interacts with practice in surprisingly interesting and important ways. Anyone seeing skill as merely theoretical knowledge or as only practiced response will miss much of this intriguing picture. The very rules and principles so highly valued by the theoretician almost always, when closely examined, are seen to require for their application facts and features, some of which are recognized thanks to practice but undefined by theory. Practice, on the other hand, would probably be of little avail were it not preceded by training concerning the relevant features in various situations and some theoretical understanding of relationships and correlations among these features. With these learned conceptual and theoretical ideas from which to start, the learner can safely begin to take responsibility and acquire experience. More importantly, it is quite possibly the brain instantiation of this conceptual knowledge that experience will eventually override, as these rule-based procedures are replaced by the synaptic modifications that make possible an intuitive response. Without theory as a starting point, no two observers given the same experiences would be likely to see things in remotely similar ways. A new set of circumstances would likely be responded to by these observers in radically different ways rather than in the consensually accepted way evinced by similarly trained experts. Without consensual agreement concerning good practice, no meaningful after-the-fact discussion could occur, and little progress in improving the overall skill level of the group could transpire.

To see why, we must first distinguish illness from disease. According to Benner and Wrubel (1989) *disease* is an organic dysfunction, of which modern medicine has a theory, whereas *illness* is the experience of the breakdown of one's body and thus of one's everyday world. As they note:

As long as one has no symptoms or other disruption of usual functioning, there is no experience of illness, even though disease may be present and the body may be suffering damage at the cellular, tissue or organ level. Nurses are in the unique position of being able to understand both the disease experience and the meanings that the patient brings to that experience. As a result, nurses can help shape the illness experience for the patient by guiding, interpreting, and coaching. (pp. 8–9)

Nursing, because it treats both disease and illness, is at the same time a paradigm case of applied theory and an outstanding example of a practice that is in principle beyond the reach of theory and analytical reason.

Disease is a dysfunction of the body, a physical object governed by physical laws, so it should come as no surprise that Hippocrates' vision of the physician as scientist is finally being achieved. Yet, it would be a mistake characteristic of our rationalistic culture to think that the success of medicine in any way suggests that there can be a theory of nursing as a caring practice. Caring in the context of nursing consists in keeping open the possibilities that can be saved in the world of the sick person while aiding the person in letting go of possibilities that are no longer realistic. If man were simply a rational animal, as the Greeks thought, then there might be a theory of having a world and how to keep it. But a school of philosophy, developed in the beginning of this century and based on the existential thought of Soren Kierkegaard, denies that man can be understood as some combination of body and mind. Martin Heidegger (1926/1962), the most famous philosopher in this school, stated that human beings are defined by the stand they take upon themselves, which in turn sets up the range of possibilities open to them. In this view, *human being* is a unique way of being in that everything human beings do follows from their individual self-interpretation. The meaning of a whole life is basic and determines what possibilities show up and how they make sense to a person. Moreover, we are not objective, theoretical spectators of our lives and of the world but are involved participants. Things show up as mattering to us. Heidegger sums this up by saying that the human being does not have fixed properties like an object or animal, but that man's basic way of being is care. It is this way of being that must be

understood, preserved, and enhanced by nursing as a caring profession. As Benner and Wrubel (1989) put it, “Nurses promote healing through assisting the patient in maintaining the human ties and concerns. And it is this human connection that gives people the courage to weather their illness” (p. 87).

Since the human way of being is involved and holistic, there can be no abstract, analytical theory of it. Caring is what one might call an existential skill. It is, indeed, what Socrates would have called a *knack*, but since, unlike cooking, it is a matter of life and death and involves the whole person, that term hardly seems appropriate. It shows the power of a tradition based on the theory of disease that the existential skills have no traditional name that does honor to their importance and uniqueness, and we seem to have no appropriate word for them in our vocabulary. The best we can come up with is that caring, as a way of helping people by entering their world, is a higher kind of knowledge that we can call *understanding*.

Psychotherapy, which claims to have a theory of mental disease—that is, a scientific account of the mind and of its normal and abnormal functioning—might seem to belie our claim that there can be no theory of tact. However, if the existential thinkers are correct, and we think they are, a psychology such as psychoanalytical theory (modeled on medical theory) with its handbook of psychopathology (modeled on bodily pathology) is a dream that can never be realized. It is interesting in this connection to note that as psychotherapists gain experience in caring for patients, despite their intense theoretical disagreements, they come more and more to resemble each other in their practice. This suggests that psychotherapists make less and less use of theory as they gain expertise. Nurses, on the other hand, insofar as their work consists in applying medical theory, learn and apply more and more theory as they increase in experience and expertise. Their understanding of where theory is appropriate should help nurses resist any temptation to formulate the principles of their existential skills. The current theories of caring in nursing are typically interpretive perspectives on care, but this should not undermine their legitimacy (Benner, 1994a; Morse, Bottorff, Neander, & Solberg, 1991).

This does not mean that there is nothing to be said about the tact involved in world preserving. We have already said a good deal. One can describe the general structure of human beings and the way care consists of mattering, possibilities, and inhabiting a shared world. This is what Heidegger (1962) calls an existential account of the human being. One can also describe in detail how specific cultures, families, and individuals

structure their worlds. Since meanings are shared, one can also select and describe typical cases, laying out what matters and what possibilities are opened and closed in typical situations. Qualitative distinctions can then be made between more and less successful interventions. One can also look at the stages through which caring skills develop and formulate maxims to aid beginners. Yet, the nurse, who is an expert in caring, knows that she cannot be guided by principles or any pseudosciences of the psyche but must enter into the situation of the patient and be guided by participation and intuition.

In this domain, there can be no clinical *knowledge*, as Plato would define it, but there can and must be clinical *understanding*. Thus, in caring, as in the case of the *application* of medical theory, one finds a practice requiring involvement for which there can be no theory. However, there is an important difference between the treatment of disease and the care of illness. In the case of applying the general principles of medicine, the nurse must be involved in the activity of using the technology and must learn to read the bodily signs of disease, not, of course, as cues for the application of rules but as patterns that solicit the appropriate intuitive response. The nurse, however, is not only involved in the activity of beginning to bear the science and technology of medicine on a specific body with a specific disease but is also in caring. In caring, the nurse must be able to take on the perspective of the patient and make peace with the situation and its suffering in order to be touched by the situation of a fellow human being and have the tact to enable that person to surmount the patient's illness. Only by combining both technological and existential skills in their unique practice is the nurse able to heal both the body and the person.

Thus, nursing has an even more privileged place among Western skills than that of providing an outstanding example of the essential place of practice and intuition in a theoretical discipline. Nursing is also—and this constitutes its total uniqueness—a domain showing forth clearly that in some human areas, there is no place at all for abstract, objective, universal theory nor for analytical rationality. Besides being the perfect model of a craft (*techne*), the caring practices of nursing provide a paradigm case of skills that have no theoretical component at all.

COMMENTARY

The Dreyfus model of clinical and ethical skill acquisition and formation of an expert is based on the notion that experiential learning is essential for

progressing from the novice stage of learning in any field to becoming an expert. Expertise is gained by developing interpretive abilities to identify the nature of practical situations and the development of skillful responses to what must be done as well as when and how. Learning more and more rules and routines to structure practice works only as a temporary measure to shore up the safety and suspension of the novice in highly complex unfamiliar situations. Initially, students profit from breaking the situation down into simpler sets of tasks, but this strategy will not work for long if the student is not also being coached to develop a recognition of the nature of the situation and a sense of salience (Benner, Sutphen, Leonard-Kahn, Day, 2008; In Press). Situated learning is holistic or integrated by the understanding of the nature of the practical clinical situation.

Nurse educators have been influenced strongly to adapt to academic preference for formal abstract theories that are able to be generalized over a range of situations rather than situated cognition and *use* in particular situations. All professions have bent to this prevailing preference in academic agendas (Sullivan & Rosin, 2008). What has been particularly useful to nursing education has been the strong influence of Dewey and the value of experiential learning. Dewey (1933) called for a “progressive reform” to education to place more emphasis on everyday learning and as being lifelong. He highlights the importance of learning from experience in actual practical situations rather than through drills of isolated skills: “I take it that the fundamental unity of the newer philosophy is found in the idea that there is an intimate and necessary relation between the processes of actual experience and education (Dewey, p. 100).

Furthermore, Dewey (1987) held that the learner must be prepared to learn and that environments for experiential learning could be enriched:

No one with an honest respect for scientific conclusions can deny that experience as experience is something that occurs only under highly specialized conditions, such as are found in a highly organized creature which in turn requires a specialized environment. There is no evidence that experience occurs everywhere and everywhen. (p. 3)

As Dewey (1987) suggests, experiential learning does not happen in just any condition with just any person or on every occasion. Experiential learning happens most in environments where feedback on performance is rich and the opportunities for articulating and reflecting on experiential learning are deliberately planned. Nursing educators actively plan

for and encourage experiential learning. They use pedagogical strategies to prompt students to reflect on their experiential learning in their preparations for clinical practice as well as in their debriefing sessions in postclinical conferences where students openly share their clinical learning for the day so that their classmates may benefit from their experiential learning.