

Discourse

Field Notes from Research and Restoration in the Backcountry of Modern Health Care

Patricia Marck

The place itself is unrecognizable... The trail is gone.... This place was once good and just how it was can no longer be found. (Strong, 1995, p. 40)

Shortly after I began to write this discourse for the *CJNR* issue on Risk and Safety, I met with two nurse colleagues to plan several Ethics in Practice (EIP) sessions for the emergency department of our hospital. After we concluded our meeting, we headed out from the Clinical Research Unit to check on the bulging emergency department where our over-worked practitioners and managers toil. I will not detail what we saw there that Monday afternoon at the height of flu season; I am quite confident that each of you can quickly recall a similar scene from your own experience. I will just say that the disparity between the number of EIP sessions we planned to provide (four) and the number of EIPs, or emergency inpatients, waiting for a hospital bed (26 at that moment, with a range of 12 to 40 that week) makes one thing utterly clear. We researchers who hope to translate our science into safer care environments have our work cut out for us. The managers and practitioners we want to work with are stretched further than ever, as are so many of the people who await their care.

This article is shaped by the memory of the patients, practitioners, and managers I saw that day. What follows are, in essence, field notes from a journey into an urban emergency department, a place where we are likely to find several members of our most vulnerable communities. We will probably see low-income parents with their children, a mentally ill young man who could not access timely community care, some frail elderly folks who fell on poorly maintained winter sidewalks, an aboriginal man with diabetes complications, a terminally ill woman with no hospice bed to go to, a vulnerable teenager who feels safer on the streets

than in a violent home, a pregnant, methamphetamine-addicted young woman who has not had any prenatal care, an older homeless man on the far side of many years of alcohol abuse, and at least a couple of victims of trauma, another chronic condition of our time. To extrapolate from recent work by Edwards and Riley (2006), we could probably place many inhabitants of our emergency rooms on a lengthening public health wait-list that remains neglected by our health-care budgets. With all of these people from the backcountry of our health system in mind, then, it seems timely to ask: How can nurse researchers contribute to the building of the system wisdom we so urgently need in order to create safer and more sustainable health care for all? If the health-care places that we once knew are irrevocably gone, as they surely are, how do we use research to forge a viable path to other, safer places in the future?

In our share of the backcountry, we are responding to this challenge by using research and restoration to study and improve the safety of today's health systems. The goal of our EIP sessions on "Who Gets the Bed?" is to encourage our emergency nursing colleagues to use ethics, evidence, and their own practice wisdom to make sound clinical decisions and to maintain respectful relationships in the midst of their heavily strained care environment. Regular EIP sessions are one of several knowledge-integration initiatives in my research program on organizational ethics and health-care safety co-sponsored by the University of Alberta's Faculty of Nursing and Royal Alexandra Hospital, Capital Health (<http://www.nursing.ualberta.ca/SaferSystems/>). We are encouraged, in these early days of our research, to persevere, but, like a fellow veteran of modern health care (Wears, 2005), we proceed with a wary eye out for the confounding surprises of modern health systems and an evolving sense of realistic goals. With full knowledge that we will not succeed in clearing out the emergency rooms of our beleaguered health system any time soon, we nonetheless think that our research approach offers a viable path to safer and more sustainable health care. I hope you will read on, and that you will let us know why you can or cannot agree.

Research and Restoration for System Wisdom: The Work of Citizen Science

Restoration is about accepting the brokenness of things, and investigating the emergent properties of healing. It's the closing of the frontier — ceasing our demand for open land to "develop" — and the reinhabiting of exploited or abandoned places. (Mills, 1995, p. 2)

The field of ecological restoration is concerned with the effective, resourceful repair and recovery of ecosystems that have been degraded, damaged, or destroyed (Society for Ecological Restoration, 2002).

Essentially, good restoration requires ongoing attention to the science of sustaining living systems, the ethical treatment of the places we inhabit, and the practice of adaptive management in our technologically complex and ecologically ailing environments (Higgs, 1999, 2003, 2005; Marck, 2004; Marck et al., 2006). While the term restoration is sometimes interpreted to mean the return of damaged habitats to their idyllic former conditions, most contemporary schools of restoration focus on practical, affordable repairs that ethically and effectively correspond with the realities and possibilities of an uncertain world.

Perhaps it is as striking to you as it is to me that just as health-system restructuring reached a maladaptive state of chaos in the mid-1990s, a broad interdisciplinary team of ecologists and social scientists were exploring two key questions about the restoration and management of ecosystems (Gunderson, Holling, & Light, 1995): Can human institutions learn from the successes or failures of past ecosystems management? Further, how do ecosystems respond to the management approaches that we adopt? Realizing that they would never fathom the best way to manage the interactions of natural and human systems with soil samples or policy studies alone, these scholars began to question their scientific assumptions about ecosystems by working together across disciplines. Using a case study approach, they investigated whether scientists, citizens, and policy-makers had succeeded or failed in repairing damaged ecosystems in New Brunswick forests, the Florida Everglades, Chesapeake Bay, the Columbia River, the Great Lakes, and the Baltic Sea. Their work transformed much of the scientific thinking about ecosystems management, which had largely turned on a “command and control” approach, returning degraded habitats to conditions of ecological “balance” to be maintained in a stable state. Rejecting the notion that ecosystems could or even should be managed to maintain steady states, they used their case studies to show that efforts to control for steady conditions actually accelerate an ecosystem’s loss of resilience, or capacity to respond to threats (Light, Gunderson, & Holling, 1995). Their research on actual situations led to the refinement of a theory that views human and natural systems as closely coupled, complex systems that co-evolve, decline, and renew in uneven, nested cycles characterized by uncertainty and surprise (Folke et al., 2002; Gunderson et al.; Gunderson & Holling, 2002; Shindler & Cheek, 1999; Walker, Kinzig, Anderies, & Ryan, 2006). Calling for a civic or citizen science of “the long view” to serve the sustainability of natural and human systems, these scientists urge researchers to engage local community members, different levels of decision-makers, and diverse experts in the collaborative study and management of the systems interactions that shape these cycles of adaptive change (Gunderson & Folke, 2003).

As we think about these scientific efforts, over the past decade, to inform ecosystem management, it is impossible for us to ignore our own ill-conceived era of command and control, when short-sighted and unscientific health-system restructuring yielded today's fragile health-care environments. Also, we seem to have begun a journey towards citizen science in health-care safety research. Over the past decade, for example, we have seen human cognitive sciences used to illustrate the connections between the design of work and work environments and between the safety of patient handovers (Beach, Croskerry, & Shapiro, 2003) and the safety of complex resuscitations (Luten et al., 2002). In addition, health-care researchers are using ecological concepts like resilience (Rasmussen, 1990; Reason, 1997), cross-scale interactions (Ali, 2004), adaptive capacity (Glouberman, 2001), and the paradoxical effects of over-regulation (Amalberti, de Saint Maurice, Auroy, & Aslanides, 2004; Rasmussen, 1997) to explain the complexity of health systems in today's world. More recently within the safety research community, there has been a call for explicit theoretical approaches to all areas of inquiry, and the early emphasis on counting errors has been replaced with a deeper methodological debate on risk and safety in a complex health-care world (Edwards, Mill, & Kothari, 2004; Marck, 2005; Shojanian, Duncan, & McDonald, 2002; Woolf, 2004). As a result, although we continue our efforts to learn from airlines and other "ultrasafe" industries, many researchers now realize that something distinctly different from the challenges of a "routine flight" is at work in the dangerous backcountry of modern health care. Most notably, we are letting go of a futile quest for perfectly controlled health systems as we tap into a growing body of interdisciplinary knowledge to develop wiser management approaches for the uncertainties of our technologically complex world (Amalberti, Auroy, Berwick, & Barach, 2005; Barach & Berwick, 2003; Berwick, 2005; Bion & Heffner, 2004; Marck, 2000; Pslek & Greenhalgh, 2001; Wears, 2004). I suspect that our friends in the natural and social sciences will say that we still have several miles of backcountry to traverse before we fully comprehend how different schools of systems theory lead to different questions and challenges (Holling, 2000). Nonetheless, we can at least point to these sightings of a longer view that might lead to safer, sustainable care.

To reframe the questions of our colleagues in ecosystems research: Have we learned from the past experiences of health systems management? Can we say that the health systems of today are responding well to the systems science and related research approaches we have adopted? I would argue that we have watched successive recommendations for systemic reform pile up on policy-makers' desks. For example, given practitioners' preferred sources of knowledge (Estabrooks, Cong, Bridear,

& Profetto-McGrath, 2005) and the persistent evidence-practice gaps (Altman, Clancy, & Blendon, 2004; Nicklin et al., 2004; Pepler et al., 2005; Tubman, Majumdar, Lee, Friesen, & Klassen, 2005), are researchers using translational strategies that actually improve the safety and quality of care (Buchan, 2003; Graham & Logan, 2004; Green, 2006)? Have we translated into better care the valuable research knowledge that is available on nurses' contributions to health outcomes (Doran, 2004; Stone & Tourangeau, 2003; Tourangeau, Stone, & Birnbaum, 2003)? Effective cycles of research and restoration attend to both the ecological integrity of living systems and the cultural integrity of our relations with each other and the places we share (Higgs, 2005, Marck, 2000; Mills, 1995). Yet, can we really claim a research ethos where researchers routinely collaborate with practice communities to design, study, and integrate our safety research into concrete improvements to the safety and sustainability of health care? Certainly, most clinicians and managers are relieved that decision-makers have finally "discovered" the complexity of the health systems they have been coaxing along with increasing difficulty for so many years. I would also argue that most health professionals, whether or not they use the terminology of complexity theories, can readily tell if adequate redundancy, resiliency, feedback loops, and other attributes of well-functioning systems are in effect in their workplaces. However, our emergency rooms remind us that, more often than not, these and other vital elements of safe systems continue to erode in the places where we give and receive care. Well over a decade after nurses initially registered formal safety concerns with modern health systems (Marck, 1995), we still await meaningful progress on most recommendations in the 2000 Final Report of Health Canada's Canadian Nursing Advisory Committee (Maslove & Fooks, 2004), the Institute of Medicine's 1999 report (Altman et al., 2004; Leape & Berwick, 2005), and similar reports from around the world. Public trust in modern health systems is steadily eroding (Blendon, Schoen, DesRoches, Osborn, & Zapert, 2003), nurses' knowledge was discounted in the management of SARS (Registered Nurses' Association of Ontario, 2003), and the risks to nurses' health and well-being are on the rise (O'Brien-Pallas et al., 2005). The same societies, governments, and health systems that initiated and digested inquiries on hospital tragedies around the globe (Australian Council for Safety & Quality in Health Care, 2002; Kennedy, 2001; Sinclair, 2000) are slow to address the needs of continuing-care residents (Auditor General of Alberta, 2005), mental health clients (Gagné, 2005), aboriginal people (Gregory, 2005), and low-income people (Stewart et al., 2005).

This partial list of pressing health and safety risks does not account for many of the hazards faced by nurses, patients, and communities in most

developing countries (World Health Organization, 2005), nor does it begin to address a host of environmental health issues that many countries across the globe share but continue to ignore. Our experiences with AIDS, SARS, and other infectious diseases underscore this collective failure, as we reluctantly acknowledge the critical links between the ecological, economic, and social determinants of health (Ali, 2004; Emanuel, 2003; Glouberman, 2001; MacDonald, 2004; Waldvogel, 2004). To revisit my opening question, then, just how do we integrate the research that we conduct into tangible system wisdom and safer, more sustainable health care? On behalf of the practitioners and patients who inhabit our emergency rooms, I submit the following field note: The most rigorous risk and safety research in health care will not contribute substantively to safer practice environments until we synthesize our systems theorizing with equally rigorous principles of restoration ethics, research, and practice *in the field*. In short, if, like our colleagues in ecosystems and restoration sciences, we want our research efforts to contribute to wiser systems management, we need to engage citizens, practitioners, and decision-makers in the participatory design, conduct, evaluation, and integration of research that serves them and matters to them.

Fortunately for us, several nurse researchers and their fellow scientists in other disciplines are leading us towards this longer view, and one can find many exemplars of citizen science that embody a restorative intent. If you decide to look into the incomplete list of examples that follows, I hope you will agree, and I also hope you will alert *CJNR* readers to other cases in point. For instance, an explicit participatory research ethic informs the active engagement of local citizens in projects where seniors document, using their own photographs, the falls risks in their communities (Lockett, Willis, & Edwards, 2005), homeless people show us their streets using photo-voice (Wang, Cash, & Powers, 2000), or practitioners photograph and design interventions to address medications safety risks on their hospital unit (Marck et al., 2006). For research contributions based on a deep respect for local knowledge and experience, I invite you to learn about the parenting experiences of aboriginal people (Smith, Varcoe, & Edwards, 2005), diverse cultural beliefs in relation to taken-for-granted practices in modern health care such as organ donation (Molzahn, Starzomski, McDonald, & O'Loughlin, 2005a, 2005b, 2005c), a community knowledge translation partnership (Racher & Annis, 2005), or nurses' ethical and practical knowledge of safety as uncovered in numerous studies (Baker, 1997; Manias & Street, 2000; Varcoe et al., 2004). For ecologically sound methodological approaches to health-care research with a number of different marginalized populations, you could look at case study research from the view of complexity science (Anderson, Crabtree, Steele, & McDaniel, 2005), the call to elicit the

voices of palliative care clients and families in our research (Addington-Hall, 2005), the unique challenges of rural health research (Hartley, 2005), an ecological systems model of child and family health promotion (Drummond, 2004), or a socio-ecological approach to community health intervention research (Edwards et al., 2004). Finally, to move from local to global research, citizen science can cross cultures to reduce risk and increase safety in some of the deepest backcountry of our world (Edwards & Roelofs, 2005; Mill, Astle, Ogilvie, & Opare, 2005; Ogilvie, Astle, Mill, & Opare, 2005). I hope these examples will drive you to ask: What funding and research partners do I seek out in my work, and why? Do I collaborate with the citizens of our communities and practice environments to study and improve the backcountry of modern health care? When I generate research findings, do I move beyond an impact publication or the next research grant, to work with nurses and others to create concrete, evidence-informed repairs? How do we use our research to integrate the discovery of knowledge with the ongoing construction of stronger, safer, more enduring practice communities? In short, if you think that the tenets of research and restoration are relevant to your work, will you answer a call to pursue citizen science in the service of better care?

Calling All Nurse Researchers: Recruiting Scientific Communities to a Longer View

We need to develop a model for working together as a scientific community in order to meet the next health-care challenge brought about by our connected world and the realities of globalization. The health, recovery, and well-being of so many depend on it. (Gottlieb, Shamian, & Chan, 2005, p. 7)

Every research program tells a story about the ethics, culture, and practices of discovery that we value, and also demonstrates whether we see a real, vital place for the citizens of the communities in which we carry out our work (Marck, 2000). What if the forms of research and restoration that we need to do in order to build a safer, more sustainable health system for all are not the forms of science and knowledge initiatives that are consistently rewarded in our academic lives? If nurse researchers have to struggle to get the respect and recognition for their work in citizen science that corresponds to their efforts, will they answer the call for this difficult work in the backcountry of modern health care? Can we recruit a critical mass of colleagues in health care to a viable restorative approach to risk and safety research, or will most of us continue to opt for more well-known and well-rewarded research paths? In our faculty at the University of Alberta, we are attempting to

strengthen our integration of research, teaching, and citizenship by building communities of students, scholars, practitioners, and decision-makers who can collaboratively develop, seek resources for, and contribute to the study and implementation of evidence-informed care. We do not necessarily know what these evidence-informed learning communities will look like, but we do know that they will not resemble the separate silos for research, teaching, and practice that continue to dominate education programs, research endeavours, and practice environments in the health sciences. As with the ailing ecosystems that await our attention right outside our office doors, the restorative integration of ethics, science, and practice in the service of better care would likely call for more profound sacrifices and more health-care reforms than re-engineering ever asked of us. Yet if we can find the communal commitment we just might reap much more meaningful and lasting gains — in health care and in our world.

As I finish this article several weeks after beginning it, our EIP sessions with emergency nurses have just concluded. After each EIP forum, I know that we have created a safe place to talk about difficult matters if several attendees have spoken up at least once, if we have managed to raise several provocative ideas and questions, and if my colleagues are still talking to each other as they head down the corridors and back to their units. That can be said about all four of the sessions we held in our emergency department over the past month. I also know that something about this way of sharing our research is working because, 3 years into this inclusive approach, both new and repeat attendees show up each time. Experts from almost every program have volunteered to collaborate on different sessions, and the evaluations provide us with a lengthening list of topics and questions to explore in future sessions.

I hope that this Discourse will serve as our own EIP session, a safe place for nurse researchers to spark debate as we ask each other these questions: How do we use our research to actively participate in the building of safer systems in the everyday? Do we interrogate the received wisdom in our own academic communities about what to study and how to study it, what to publish and where to publish it (Gottlieb & Clarke, 2005), or with whom to spend our scarce hours and to what ends? Loyal heretics have been valued members of the scientific community in ecosystem management for some time (Gunderson et al., 1995), but I would argue that we need many more loyal heretics within all of our health-care communities (Marck, 2004). As global citizens, nurse researchers can work with students, practitioners, and policy-makers to foster citizen science in a quest for more significant discoveries, safer systems, better care, and a healthier world. Whatever your

views, I believe that with hard work, disciplined debate, and respect for the complexities of our living world, we can get there. It is your turn to say whether the quest for citizen science is or is not on a sound path to a safer world, as we strive to conduct research that makes a difference in the years to come.

References

- Addington-Hall, J. (2005). Palliative care research in practice. *CJNR*, *37*(2), 85–93.
- Ali, S. H. (2004). A socio-ecological autopsy of the *E. coli* O157:H7 outbreak in Walkerton, Ontario, Canada. *Social Science and Medicine*, *58*(12), 2601–2612.
- Altman, D. E., Clancy, C., & Blendon, R. J. (2004). Improving patient safety — five years after the IOM report. *New England Journal of Medicine*, *351*(20), 2041–2043.
- Amalberti, R., Auroy, Y., Berwick, D., & Barach, P. (2005). Five system barriers to achieving ultrasafe health care. *Annals of Internal Medicine*, *142*(9), 756–764.
- Amalberti, R., de Saint Maurice, G., Auroy, Y., & Aslanides, M. (2004, October 21). *Understanding violations and boundaries: A working paper*. Paper presented at “Canadian Healthcare Safety Symposium,” Edmonton, Alberta.
- Anderson, R. A., Crabtree, B. F., Steele, D. J., & McDaniel, R. R. (2005). Case study research: The view from complexity science. *Qualitative Health Research*, *15*(5), 669–685.
- Auditor General of Alberta. (2005). *Report of the Auditor General on seniors care and programs*. Edmonton: Author.
- Australian Council for Safety and Quality in Health Care. (2002). *Lessons from the Inquiry into Obstetrics and Gynaecological Services at King Edward Memorial Hospital 1990–2000*. Canberra: Author.
- Baker, H. M. (1997). Nurses’ rules outside the rules for medication administration. *Image: Journal of Nursing Scholarship*, *29*(2), 155–158.
- Barach, P., & Berwick, D.M. (2003). Patient safety and the reliability of health care systems. *Annals of Internal Medicine*, *138*(12), 997–998.
- Beach, C., Croskerry, P., & Shapiro, M. (2003). Profiles in patient safety: Emergency care transitions. *Academic Emergency Medicine*, *10*(4), 364–367.
- Berwick, D. M. (2005). Broadening the view of evidence-based medicine. *Quality and Safety in Health Care*, *14*(5), 315–316.
- Bion, J. F., & Heffner, J. E. (2004). Challenges in the care of the acutely ill. *Lancet*, *363*(9413), 970–977.
- Blendon, R. J., Schoen, C., DesRoches, C., Osborn, R., & Zapert, K. (2003). Common concerns amid diverse systems: Health care experiences in five countries. *Health Affairs*, *22*(3), 106–121.
- Buchan, H. (2003). Using research knowledge to improve health care. *Quality and Safety in Health Care*, *12*(4), 322–323.
- Doran, D. (2004). Enhancing continuity of care through outcomes measurement. *CJNR*, *36*(2), 83–87.

- Drummond, J. (2004). Conceiving action, tracking practice, and locating expertise for health promotion research. *CJNR*, *36*(1), 115–120.
- Edwards, N., Mill, J., & Kothari, A. R. (2004). Multiple intervention research programs in community health. *CJNR*, *36*(1), 40–54.
- Edwards, N., & Riley, B. L. (2006). Commentary: Can we develop wait lists for public health issues? *Canadian Medical Association Journal*, *174*(6), 794–796.
- Edwards, N., & Roelofs, S. (2005). Participatory approaches in co-design of a comprehensive referral system. *Canadian Nurse*, *101*(8), 20–24.
- Emanuel, E. J. (2003). The Lessons of SARS. *Annals of Internal Medicine*, *139*(7), 589–591.
- Estabrooks, C. A., Cong, H., Bridear, K., & Profetto-McGrath, J. (2005). Profiling Canadian nurses' preferred knowledge sources for clinical practice. *CJNR*, *37*(2), 118–141.
- Folke, C., Carpenter, S., Elmqvist, T., Gunderson, L., Holling, C. S., & Walker, B. (2002). Resilience and sustainable development: Building adaptive capacity in a world of transformations. *Ambio*, *31*(5), 437–440.
- Gagne, M. A. (2005). *Advancing the agenda for collaborative mental health care in Canada. Report prepared for the Canadian Collaborative Mental Health Initiative, Mississauga, Ontario, Canada, May 2005*. Retrieved April 3, 2006, from <http://www.ccmhi.ca>
- Glouberman, S. (2001). Walkerton water and complex adaptive systems. *Healthcare Quarterly*, *4*(4), 28–31.
- Gottlieb, L. N., & Clarke, S. P. (2005). Impact factors and the law of unintended consequences. *CJNR*, *37*(4), 5–10.
- Gottlieb, L. N., Shamian, J., & Chan, S. (2005). Lessons from SARS: Challenges for the international research community. *CJNR*, *36*(1), 3–7.
- Graham, I. D., & Logan, J. (2004). Innovations in knowledge transfer and continuity of care. *CJNR*, *36*(2), 89–103.
- Green, L. W. (2006). Public health asks of systems science: To advance our evidence-based practice, can you help us get more practice-based evidence? *American Journal of Public Health*, *96*(3), 406–409.
- Gregory, D. (2005). Aboriginal health and nursing research: Postcolonial theoretical perspectives. *CJNR*, *37*(4), 11–15.
- Gunderson, L., & Folke, C. (2003). Toward a “science of the long view.” *Conservation Ecology*, *7*(1), 15. Available online: <http://www.consecol.org/vol7/iss1/art15/>
- Gunderson, L., & Holling, C. S. (Eds.). (2002). *Panarchy: Understanding transformations in human and natural systems*. Washington: Island Press.
- Gunderson, L. H., Holling, C. S., & Light, S. S. (Eds.). (1995). *Barriers and bridges to the renewal of ecosystems and institutions*. New York: Columbia University Press.
- Hartley, D. (2005). Rural health research: Building capacity and influencing policy in the United States and Canada. *CJNR*, *37*(1), 7–13.
- Higgs, E. S. (1999). What is good ecological restoration? *Conservation Biology*, *11*, 338–348.
- Higgs, E. S. (2003). *Nature by design: Human agency, natural processes and ecological restoration*. Boston: MIT Press

- Higgs, E. S. (2005). The two-culture problem: Ecological restoration and the integration of knowledge. *Restoration Ecology*, *13*(1), 159–164.
- Holling, C. S. (2000). Theories for sustainable futures. *Conservation Ecology*, *4*(2), 7. Available online: <http://www.consecol.org/vol4/iss2/art7/>
- Kennedy, I. (2001, July). *The report of the public inquiry into children's heart surgery at the Bristol Royal Infirmary 1984–1995: Learning from Bristol*. London: Department of Health.
- Leape, L. L., & Berwick, D. M. (2005). Five years after *To Err Is Human*: What have we learned? *Journal of the American Medical Association*, *293*(19), 2384–2390.
- Light, S. S., Gunderson, L. H., & Holling, C. S. (1995). The Everglades: Evolution of management in a turbulent ecosystem. In L. H. Gunderson, C. S. Holling, & S. S. Light (Eds.), *Barriers and bridges to the renewal of ecosystems and institutions* (pp. 103–168). New York: Columbia University Press.
- Lockett, D., Willis, A., & Edwards, N. (2005). Through seniors' eyes: An exploratory qualitative study to identify environmental barriers to and facilitators of walking. *CJNR*, *37*(3), 48–65.
- Luten, R., Wears, R. L., Broselow, J., Croskerry, P., Joseph, M. M., & Frush, K. (2002). Managing the unique size-related issues of pediatric resuscitation: Reducing cognitive load with resuscitation aids. *Academic Emergency Medicine*, *9*(8), 840–847.
- MacDonald, M. T. (2004). From SARS to strategic actions reframing systems. *Journal of Advanced Nursing*, *47*(5), 544–550.
- Manias, E., & Street, A. (2000). The handover: Uncovering the hidden practices of nurses. *Intensive and Critical Care Nursing*, *16*(6), 373–383.
- Marck, P. B. (1995). Review of AARN telephone consults for practice as of February 5, 1995. *AARN Newsletter*, *51*(3), 29–31.
- Marck, P. B. (2000). Nursing in a technological world: Searching for healing communities. *Advances in Nursing Science*, *23*(2), 59–72.
- Marck, P. B. (2004). Ethics for practitioners: An ecological framework. In J. Storch, P. Rodney, & R. T. Starzomski (Eds.), *Toward a moral horizon: Nursing ethics for leadership and practice* (pp. 232–247). Toronto: Pearson Education.
- Marck, P. B. (2005). “Theorizing about systems: An ecological task for patient safety research. *Clinical Nursing Research*, *14*(2), 103–108.
- Marck, P. B., Kwan, J. A., Preville, B., Reynes, M., Morgan-Eckley, W., Versluys, R., Chivers, L., O'Brien, B., van der zalm, J., Swankhuizen, M., & Majumdar, S. R. (2006). Building safer systems by ecological design: Using restoration science to develop a medication safety intervention. *Quality and Safety in Health Care*, *15*(2), 92–97.
- Maslove, L., & Fooks, C. (2004). *Our health, our future: Creating quality workplaces for Canadian nurses. A progress report on implementing the Final Report of the Canadian Nursing Advisory Committee*. Ottawa: Health Canada.
- Mill, J., Astle, B., Ogilvie, L., & Opare, M. (2005). Global health and equity. Part 1: Setting the context. *Canadian Nurse*, *101*(5), 22–24.
- Mills, S. (1995). *In service of the wild: Restoring and reinhabiting damaged land*. Boston: Beacon.

- Molzahn, A. E., Starzomski, R., McDonald, M., & O'Loughlin, C. (2005a). Aboriginal beliefs about organ donation: Some Coast Salish viewpoints. *CJNR*, *36*(4), 110–128.
- Molzahn, A. E., Starzomski, R., McDonald, M., & O'Loughlin, C. (2005b). Chinese Canadian beliefs toward organ donation. *Qualitative Health Research*, *15*(1), 82–98.
- Molzahn, A. E., Starzomski, R., McDonald, M., & O'Loughlin, C. (2005c). Indo-Canadian beliefs regarding organ donation. *Progress in Transplantation*, *15*(3), 233–239.
- Nicklin, W., Mass, H., Affonso, D., O'Connor, P., Ferguson-Pare, M., Jeffs, L., Tregunno, D., & White, P. (2004). Patient safety and leadership within Canada's academic health science centres: Towards the development of a collaborative position paper. *Canadian Journal of Nursing Leadership*, *17*(1), 22–34.
- O'Brien-Pallas, L., Tomblin Murphy, G., White, S., Hayes, L., Baumann, A., Higgin, A., Pringle, D., Birch, S., McGillis Hall, L., Kephart, G., & Wang, S. (2005). *Building the future: An integrated strategy for nursing human resources in Canada*. Ottawa: Nursing Sector Study Corporation.
- Ogilvie, L., Astle, B., Mill, J., & Opare, M. (2005). Global health and equity. Part 2: Exploring solutions. *Canadian Nurse*, *101*(6), 25–28.
- Pepler, C. J., Edgar, L., Frisch, S., Rennick, J., Swidzinski, M., White, C., Brown, T. G., & Gross, J. (2005). Unit culture and research-based nursing practice in acute care. *CJNR*, *37*(3), 66–85.
- Plsek, P. E., & Geenhalgh, T. (2001). Complexity science: The challenge of complexity in health care. *British Medical Journal*, *323*(7313), 625–628.
- Racher, F. E., & Annis, R. C. (2005). Community partnerships: Translating research for community development. *CJNR*, *37*(1), 169–175.
- Rasmussen, J. (1990). Human error and the problem of causality in analysis of accidents. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences*, *327*(1241), 449–460.
- Rasmussen, J. (1997). Risk management in a dynamic society: A modelling problem. *Safety Science*, *27*(2/3), 183–213.
- Reason, J. T. (1997). *Managing the risks of organizational accidents*. Aldershot, UK: Ashgate Press.
- Registered Nurses' Association of Ontario. (2003). *SARS unmasked: Celebrating resilience, exposing vulnerability. A report on the nursing experience with SARS in Ontario*. Toronto: Author.
- Shindler, B., & Cheek, K. A. (1999). Integrating citizens in adaptive management: A propositional analysis. *Conservation Ecology*, *3*(1), 9. Available online: <http://www.consecol.org/vol3/iss1/art9/>
- Shojania, K. G., Duncan, B. W., & McDonald, K. M. (2002). Safe but sound: Patient safety meets evidence-based medicine. *Journal of the American Medical Association*, *288*(4), 508–513.
- Sinclair, M. (2000). *The report of the Manitoba Pediatric Cardiac Surgery Inquest: An Inquiry into Twelve Deaths at the Winnipeg Health Sciences Centre in 1994*. Retrieved September 2, 2001, from <http://www.pediatriccardiacinquest.mb.ca/>

- Smith, D., Varcoe, C., & Edwards, N. (2005). Turning around the intergenerational impact of residential schools on aboriginal people: Implications for health policy and practice. *CJNR*, 37(4), 38–60.
- Society for Ecological Restoration International Science and Policy Working Group. (2004). *The SER international primer on ecological restoration*. Retrieved October 21, 2005, from <http://www.ser.org>
- Stewart, M., Reutter, L., Makwarimba, E., Rootman, I., Williamson, D., Raine, K., Wilson, D., Fast, J., Love, R., McFall, S., Shorten, D., Letourneau, N., Hayward, K., Masuda, J., & Rutakumwa, W. (2005). Determinants of health-service use by low-income people. *CJNR*, 37(3), 104–131.
- Stone, P. W., & Tourangeau, A. E. (2003). Ask an expert: Measuring nursing services in patient safety research. *Applied Nursing Research*, 16(2), 131–132.
- Strong, D. (1995). *Crazy mountains: Learning from wilderness to weigh technology*. Albany, NY: SUNY Press.
- Tourangeau, A. E., Stone, P. W., & Birnbaum, D. (2003). North American perspectives hidden in plain view: The importance of professional nursing care. *Clinical Governance: An International Journal*, 8(2), 158–163.
- Tubman, M., Majumdar, S. R., Lee, D., Friesen, C., & Klassen, T. P. (2005). Best practices for safe handling of products containing potassium. *British Medical Journal*, 331, 274–277.
- Varcoe, C., Doane, G., Pauly, B., Rodney, P., Storch, J. L., Mahony, K., McPherson, G., Brown, H., & Starzomski, R. (2004). Ethical practice in nursing: Working the in-betweens. *Journal of Advanced Nursing*, 45(3), 316–325.
- Waldvogel, F. A. (2004). Infectious diseases in the 21st century: Old challenges and new opportunities. *International Journal of Infectious Diseases*, 8(1), 5–12.
- Walker, B., Kinzig, A., Anderies, J., & Ryan, P. (Guest Eds.). (2006). *Ecology and Society* Special Feature: Exploring Resilience in Social-Ecological Systems: Comparative Studies and Theory Development. Retrieved March 24, 2006, from <http://www.ecologyandsociety.org/viewissue.php?sf=22>
- Wang, C., Cash, J. L., & Powers, L. S. (2000). Who knows the streets as well as the homeless? Promoting personal and community action through photo-voice. *Health Promotion Practice*, 1(1), 81–89.
- Wears, R. (2004). Organizations and safety in health care. *Quality and Safety in Health Care*, 13(Suppl 2), ii.
- Wears, R. (2005). Keep the celebrations short. *Quality and Safety in Health Care*, 14(3), 154.
- Woolf, S. H. (2004). Patient safety is not enough: Targeting quality improvements to optimize the health of the population. *Annals of Internal Medicine*, 140(1), 33–36.
- World Health Organization. (2005). *The world health report 2005 — Make every mother and child count*. Geneva: Author.

Patricia Marck, RN, PhD, is Assistant Professor, Faculty of Nursing, and Assistant Adjunct Professor, John Dosssetor Health Ethics Centre, University of Alberta, Edmonton, Canada; and Faculty Leader – Nursing, Royal Alexandra Hospital Clinical Research Unit, Capital Health, Edmonton.