

## Chapter 2

# Beyond Practical Reasoning

### From Critical Thinking to Practical Reasoning: A Necessary but Not Sufficient Change in Medical Education

What is a ‘medical education’ and is this the best generic descriptor for the practices that support the learning of medicine? Ludmerer (1999, p. 311) points out that in 1988 the Association of American Medical Colleges (AAMC) ‘abandoned its learner-centered outlook for a faculty-centered outlook,’ and re-defined its mission—from ‘the advance of medical education and the nation’s health’ to ‘the advancement of academic medicine and the nation’s health.’ In 1989, the *Journal of Medical Education* was re-named *Academic Medicine*. Medical education had become subsumed in a wider interest, or, more specifically, the practice and scholarship of teaching was formally subordinated to academic research interests, albeit in educational issues. The clinic and its various practical pedagogies were subsumed in the university and its academic pedagogies.

In an attempt to restore both interest and credibility to the educational components of the professions, the American Carnegie Foundation has been carrying out a series of reviews within the subgroups *Preparation for the Professions Program* and *Advancement of Teaching*. This includes studies of professional education for the clergy, lawyers, engineers and nurses. The study of the professional education of doctors has been completed, its publication timed to celebrate the Flexner centennial (Cooke et al. 2010).

The Carnegie-funded studies have produced a generic model for education in the professions, set out in Sullivan and Rosin (2008) *A New Agenda for Higher Education: Shaping a Life of the Mind for Practice*. This work reviews the dominant ‘critical thinking’ agenda for higher education and suggests a fundamental review and overhaul of this model. This is especially pertinent for medicine, where there has always been a suspicion of over-intellectualizing what has been cherished as a hands-on apprenticeship.

Key representatives from a variety of disciplines and professions were invited to an expert seminar, not to discuss the structures of knowledge of their disciplines but the structures of knowledge and practices of how those disciplines *are taught*.

Participants were invited to inhabit the structures and practices of other, sometimes alien, discipline pedagogies. This interdisciplinary exchange was then distilled to core guiding principles. A review of the history of disciplines suggested that ‘the twentieth century produced not merely the triumph of abstract theory and criticism over formation and action; it also produced a deep fragmentation of fields and specialties’ (Sullivan and Rosin 2008, p. xix). The review suggested that higher education for the professions should reconsider the status of its currently dominant ‘critical thinking’ agenda—to be replaced by one of ‘practical reason’—and should encourage interdisciplinarity. The Aristotelian notion of ‘practical reason’ was at the core of John Dewey’s educational model and subsequently highly influential upon Flexner’s educational vision. In fact, replacing the ‘critical thinking’ agenda of higher education with a ‘practical reasoning’ platform would bring the Flexnerian revolution full circle, a century later.

In Sullivan and Rosin’s study of higher education, four main themes emerged as critical areas to address for what was described overall as ‘shaping a life of the mind for practice’: body of knowledge, identity, community and responsibility. Students in the professions should be learning *bodies of knowledge* that structure their practices. This learning shapes *identities* that are *realized responsibly* in *communities of practice*. The traditional higher education goal of developing critical thinkers taught to deal with abstract knowledge is somewhat at odds with this interest in practical knowledge, identity, community and responsibility through context-driven ethics (rather than an ethics based on transcendental principles). This latter approach resonates with Aristotle’s notion of ‘practical reasoning,’ ‘practical wisdom,’ or *phronesis* and with casuistry, the tradition of case-based ethical reasoning (Arras 1999).

Analytic thinking is necessary, but not sufficient, in medicine and medical education. Doctors also engage in a more holistic and synthetic narrative thinking. Making sense of patients is not an abstract reading but a practical engagement with another’s ‘lifeworld’ (Mishler 1985; Barry et al. 2001). Moreover, caring for the patient is a context-driven ethical act of engagement and always a social act, including engagement with family members and with other members of clinical teams who are working around that patient. Being with patients demands what Schön (1990) calls ‘reflection in action’—concrete acts of ethical engagement that are holistic—at once doing, thinking, feeling and intuiting.

Sullivan and Rosin (2008, pp. 107–109) take medicine as the most complex and developed example of education of practical reason. It is here that analytic and narrative approaches most obviously blend in concrete, ethically charged encounters, or ‘cases’ (with an associated casuistry, or case-based ethics), which regularly defy generalization and are often laced with uncertainty and ambiguity. It is because of the difficulty in tolerating uncertainty that medical students and junior doctors in particular wish to retreat to what Schön (1990) calls the ‘high ground’ of technical–rational certainty. As narrative acumen develops and formal scientific knowledge is cumulatively embedded as tacit knowing that now unconsciously structures clinical judgment (Boshuizen and Schmidt 2008), so experts seem more able to tolerate ambiguity. This is the terrain of everyday uncertainty in expert practice termed the ‘swampy lowland’ by Schön (1990). In the use of case reasoning as an

educational instrument (the core of problem-based learning approaches), 'The chief accomplishment of medical education lies in its fostering of an ongoing, back-and-forth conversation between the narrative and the analytic' (Sullivan and Rosin 2008, p. 108).

Nobody has analyzed this conversation more elegantly than the ethicist Montgomery (2006, p. 52), who suggests that 'Clinical education is finely calibrated to instill and reward the development of clinical judgment in the face of uncertainty.' What Montgomery (2006) describes as the education of practical wisdom or *phronesis* equates to the development of what the Carnegie Foundation calls 'habits of mind and heart,' or *the development of expertise* in the professions such as medicine. Montgomery (2006, p. 209) says that *phronesis* has been translated as 'intelligence' and 'prudence,' rejecting the latter as 'tight-lipped (and tight-fisted)' and thus to be avoided. However, she notes that some medical ethicists have attempted to restore 'prudence' as a key virtue for doctors, seeing it as a 'sickly concept' in need of restoration. Actually, the dictionary definition (*Shorter Oxford English*) of prudence surely restores its credibility, as 'discretion,' 'wisdom' and 'sound judgment in practical affairs.' The prudent person is also 'worldly-wise,' perhaps beyond his or her years.

Practical wisdom is at the heart of clinical reasoning, or 'how doctors think.' Medicine is neither an art nor a science, but a multidisciplinary 'practice': 'the rational, clinically experienced, and scientifically informed care of sick people' (Montgomery 2006, p. 33). Surely nobody could argue with this? Well, its premises are already questioned in the World Health Organization's (WHO) changing definition of 'health' from negative to positive features—no longer the 'absence' of sickness, but the 'presence' of physical, mental, socioeconomic and spiritual well-being. Surely then, medicine should be grounded in the prudent *prevention of illness*? Montgomery (2006, p. 33) goes on to describe medicine's 'essential virtue' as: 'clinical judgment, the practical reasoning or *phronesis* that enables physicians to fit their knowledge and experience to the circumstances of each patient.'

Again, surely it would be hard to argue with this pragmatic view? Well, medicine has another, parallel discourse overshadowing that of person-to-person, doctor-to-patient, encounter—that of epidemiology, or the statistical overview of populations (Millenson 1999). This is one of the great paradoxes of medicine: the axiom 'treat the patient, not the numbers' is countered by what Millenson (1999, p. 327) calls 'power to the population'—the power of statistics that characterizes evidence-based medicine. Here, the individual case is subsumed in the population study. For Montgomery (2006, p. 193), treating the individual through evidence from population studies does not necessarily iron out uncertainty, where 'for prognosis, the numbers are at best a quantified uncertainty.'

However, Millenson (1999, p. 30) argues that evidence from population studies is generally and paradoxically 'what doctors don't know' and hence these doctors are withholding best treatment from patients. He sees this as a long-standing tradition of self-imposed ignorance, quoting from the Flexner Report (1910) 'that very seldom...does a patient receive the best aid which (sic) it is possible to give him in the present state of medicine.' Millenson's emphasis upon the accountability of

doctors for treatment choices in an age of evidence-based medicine offers a stark contrast to the case-based approach described by Montgomery. Indeed, it turns Montgomery's argument on its head, because doctors in Millenson's account are not defending against uncertainty, but inviting and tolerating the uncertainty of the individual case in resisting the power of numbers (the promise that the logic deployed in the use of algorithms such as Bayes' theorem will radically reduce uncertainty). Yet, again paradoxically, the same doctors may claim that they work analytically rather than with narrative. We can readily translate Millenson's support of an evidence-based approach to medical education. How can one effectively practice a medical education without working knowledge of its evidence base? Perhaps more importantly, in light of our general argument in this book, how will medical education be quality assured, or democratized through a peer monitoring process, without a rigorous medical education research arm? These are issues that we discuss at length in Chaps. 15 and 16.

Montgomery (2006, p. 41) argues that medicine is *mis*-described as a scientific pursuit. Rather, it is a *science-using practical activity*, shot through with ethical dilemmas. *Phronesis* requires not only 'a good physician,' but also a 'reliable moral agent.' Thus, Montgomery makes the radical claim that 'medical education is necessarily a moral education.' As a 'phronesiology,' it is a science of individuals—an oxymoron—yet such a 'case based' approach is, as we mentioned above, now dominant in medical ethics, described as 'the revival of casuistry in bioethics' (Arras 1999). Drawing on the method of casuistry from the early Middle Ages, philosophers such as Stephen Toulmin (Jonsen and Toulmin 1990) have emphasized the value of individual, situated, contextually complicated ethical decisions that cut through the traditional approaches of ethics proceeding by principles assumed to be universal or transcendental. This follows Aristotle's view that inquiries into ethics and health are particular, circumstantial and uncertain.

Fish and Coles (2005), focusing upon postgraduate medical education in the UK, also choose practical wisdom, or *phronesis*, as the core principle of both a medical education (Fish and Coles 2005) and surgical training (de Cossart and Fish 2005). In this work, the influence of Dewey, via Schön's model of reflective practice, is paramount. Fish and Coles (2005, p. 111) describe medical education as the progressive accumulation of 'professional judgment within the broader processes of clinical thinking.' In formulating a diagnosis and then a treatment plan, 'Practical wisdom...then helps the practitioner to focus on and understand the particular ethical dimensions and moral situation of *this individual patient*' (our emphasis).

Ethically sensitive clinical practice, following Aristotle, can be called *praxis*, a theory-in-practice (paralleling Schön's reflection-*in*-action). Echoing the work of Sullivan and Rosin (2008) on articulating the principles that offer a platform for effective professionalism, Fish and Coles describe being a professional as a forming of identity within a community of practice. In the context of surgical education, de Cossart (a surgeon and educator) and Fish (an educationalist) quote the American surgeon-educator and medical writer and journalist Atul Gawande to argue, as does Kathryn Montgomery, that practical wisdom is an ethical practice embodying a high degree of tolerance of ambiguity: 'Professionals are routinely faced with having

to decide which diagnosis or whose version or account of the (patient's) trouble they find most convincing and/or morally robust,' so that 'There is science in what we do, yes, but also habit, intuition, and sometimes plain old guessing. The gap between what we know and what we aim for persists. And this gap complicates everything we do' (de Cossart and Fish 2005, p. 136).

This 'gap' is supposedly filled by evidence-based medicine and surgery, but, of course, the individual case persists in disrupting this evidence. It is one thing for doctors to persist with habitual, intuitive practices in ignorance of an evidence base (Millenson 1999, pp. 125–136), it is quite another to be familiar with the evidence base and then see that the patient in front of you simply does not fit the population profile, in what Groopman (2007, p. 27) calls 'flesh-and-blood decision making'—by nature an indeterminate practice.

Groopman (2007, pp. 16–17)—a widely recognized expert diagnostician—himself writes about 'how doctors think' as the movement back and forth between the evidence base and the particular case, but now placing emphasis upon the evidence base gained from studies of communication—the 'non-technical' aspects of a doctor's practice—rather than technical, clinical science issues. For example, he cites a perplexing and initially mis-diagnosed case of celiac disease—an allergy to gluten and an autoimmune disorder—that had been wrongly diagnosed as a psychological 'eating disorder.' The correct diagnosis could have been made initially if doctors had asked open-ended questions of the patient (an approach of dialogue), instead of characteristically shutting down the patient's story with closed questions and statements that Roter and Hall (2006) see as the bane of the contemporary medical consultation (an approach of monologue).

To return to Montgomery's (2006, p. 171) own version of 'how doctors think,' she warns that to characterize a medical education as a scientific education is misguided. Indeed, to call medicine a science is a form of rhetoric: 'medicine thrives by advancing its moral and intellectual goals as "science" while covertly accomplishing them through interpretive, narrative, discursive means.' Thus, medical education would benefit by 'Giving up the science claim' (Montgomery 2006, p. 175), which is seen as a badge of legitimacy—an issue of power—rather than an accurate description of what doctors do. For Montgomery (2006, p. 186), two issues arise from the claim that medicine is a scientific apprenticeship. First, doctors are socialized to disguise the permeating uncertainty of their work, as if this would lose the trust of their patients. Second, to invite doctors into the identity construction of 'scientist' is misleading. Where 'medical students have committed themselves to a self-altering course of study,' the identity that emerges is that of friend, counselor and advocate, as much as that of 'scientist,' stereotypically cold and distant.

Bligh and Brice (2008), however, remind us of the reality of publishing medical education research—that medical education is more representative of science than social science. The main medical education journals are listed in Science listings (Thomson ISI Citation Index), rather than Social Science listings. For these authors, 'Our primary concern must be to demonstrate the value of medical education research to those who commission and use our work, in ways that they can understand' (Bligh and Brice 2008, p. 653). The concern here is not so much with the

argument of how we shall characterize medical education as a discipline (science, art, social science, science-using, ethical practice and so forth), but how we *apply* what we know for patient benefit.

This shifts the ground of justification for a dedicated (inter)discipline of ‘medical education’ even from Aristotle’s notion of ‘practical wisdom,’ for now we ask of that ‘practice’—how do we know that it is of *use* to patients? Medical education research is just beginning to address this tough question (see Chaps. 15 and 16) and to be persuasive in addressing a tough-minded science and health services research audience will need to go beyond patient satisfaction (perception) surveys (Fitzpatrick and White 2001) to consider measurable health outcomes in relation to complex educational interventions.

Bligh and Brice (2008, p. 653) continue, with the rhetoric of response to crisis or neglect that we noted in Chap. 1, that ‘we must as a matter of *urgency*, research, assess and demonstrate clearly how what we do is important for the improvement of patient care.’ Without this evidence, we are working in a vacuum. In summary, evidence is currently paltry and this is the great challenge facing medical education in the new millennium. As Norman (2008) points out, in fairly well-researched areas such as clinical reasoning we have failed to operationalize notions such as ‘problem solving’ in a medical context. Such accounting for what is actually *done* in the name of a vague and broad descriptor is even worse for areas such as ‘communication skills.’

Articulating what is meant, for example, by ‘clinical communication skills’ may be a more pressing issue than agreeing that medicine proceeds by way of ‘practical wisdom.’ We need illustrative examples of practical wisdom in action—rich, situated accounts of complex medical settings to articulate what characterizes practical wisdom from its ‘impractical’ or ‘unwise’ alternatives. Besides ‘clinical communication skills,’ other descriptors that need to be more intensively articulated and researched in medical education are: ‘professionalism,’ ‘reflective practice’ and ‘identity.’ The medical education literature is peppered with terms that have not been well conceptualized before they are used as explanatory notions. Empirical studies can be set up to investigate, for example, ‘clinical communication skills,’ but, unless this is preceded or paralleled by intensive conceptual clarification, such studies remain invalid by definition.

Let us give two examples to illustrate this point. First, there is a current drive in health care to develop ‘teamwork.’ A team has been defined as consisting of two or more individuals who have specific roles, perform interdependent tasks, are adaptable and share a common goal (Xyrichis and Ream 2008), but such a definition conceals as much as it reveals. Actually, what various practitioners do is to communicate—however well or poorly—and to at least cooperate and coordinate to offer patient care and safety. Moving to a deeper level of collaboration, between professions and across boundaries, is a tough call, but evidence suggests that where collaboration is poor, patient care is compromised (Borrill et al. 2000). The engagement of health professionals in various ways may be described as activity systems working around agreed, common objects (patients, equipment, shifts), but ‘teams’ does not capture the dynamic of such activity, which may be better described through



an image- and metaphor-rich vocabulary, as ‘teeming,’ ‘streaming,’ ‘networking,’ ‘meshworking,’ ‘negotiated knotworking,’ ‘swarming,’ ‘clustering,’ ‘intentional collaboration’ and so forth (for example, Bleakley 2006a; Engeström 2008).

Where areas other than learning in ‘team’ contexts are also undergoing radical reconceptualization, for example, as mentioned earlier, our understanding of what ‘curriculum’ itself may mean—as varieties of text (such as a gendered, ethical, political or institutional text) (Pinar et al. 1995)—we can confidently talk of a sea change that in turn calls for a new literacy in medical education. Our aim in this book is to provide the foundation for such literacy.

Our second example refers to the dangers of medical education operating as a colonizing, or imperial, force. Naranchimeg (2008) reports on introducing ‘professionalism’ to Mongolian medical education. Professionalism is defined as ‘communication skills, the doctor–patient relationship, teamwork and procedural skills.’ This may look fine on first glance, but let us consider what is happening here—a wholly Westernized version of what an ethical doctor should be is introduced to another cultural context without any explanation of the difficulties of cross-cultural translation (for a fictional exposition of this conundrum, see Patterson’s (2007) novel *Consumption*). We expand on this issue in Chap. 12, where we consider the phenomenon of globalization and the exportation of Western medical education as a potential neo-imperialism. *Phronesis*, first delineated by Aristotle and then developed within a Western metaphysical system, is culture-specific.

Ludmerer (1999, p. 378) agrees with Montgomery (2006) that ‘the greatest deficiency of medical education throughout the twentieth century... was the failure to train learners properly for clinical uncertainty.’ Education for uncertainty, or tolerance of ambiguity, is seen as an opposite trajectory to science’s drive to rational certainty. But both Ludmerer and Montgomery are talking about ‘positivist science’ (Montgomery 2006, p. 174), or rather positivism as a framework for medical practice. Positivism describes an approach to knowing that is based in empirical observation and experiment. The simplified, reductionist and linear cause-and-effect model proposed by positivism has long been supplemented in science by multifactorial models of causation (Cornwell 2004). The emergent era of science in the twenty-first century is not about linearity but about the science(s) of nonlinear complexity, which explore, rather than attempt to control, uncertainty and ambiguity (Sweeney 2006; Bleakley 2010a).

It is inappropriate to badge the new medicine as ‘positivist’ and, as we argue in Chap. 15, medical education research can be ‘scientific’ without being positivist, because positivism in the twenty-first century has been supplemented by the new science(s) of complexity, such as systems approaches (Jencks 2007). Through a series of articles in the *British Medical Journal* (for example, Plsek and Greenhalgh 2001, p. 625), Trish Greenhalgh and her colleagues have described this approach to medicine as one of ‘complexity science.’ In such nonlinear, non-mechanical and holistic science, that challenges the stereotype of ‘positivist’ medical science in the new millennium, ‘unpredictability and paradox are ever present.’ As long as we stereotype ‘science’ as of one kind (positivist, mechanical, linear and non-imaginative), we may be overlooking the fact that science is also ‘a discipline of the imagination’

(Pinar 2004, p. 193) and a contested ‘universe of discourse’ (Oakeshott 1959, p. 27), demanding narrative explanations, tolerating competing forms of evidence, using metaphors and engaging in a variety of ‘styles of explanation’ (Cornwell 2004).

We will use a variety of styles of explanation throughout this book, as we also draw on interdisciplinary models in a deliberate attack on stereotypical views of theory. Theory does not need to be marginalized where practical reasoning comes to displace the current dominant model of critical thinking in higher education for the professions. In medical education, practice (as work) can now be theorized eloquently through the new work-based learning theories that we draw on throughout this book, such as activity theory (Engeström 2008). Theory building in medical education in itself can become practical, engaged work, far removed from the languorous drifting of ‘the curtains in the house of the metaphysician’ in Wallace Stevens’ 1923 poem of that title:

It comes about that the drifting of these curtains  
Is full of long motions; as the ponderous  
Deflations of distance; or as clouds  
Inseparable from their afternoons;  
Or the changing of light, the dropping  
Of the silence, wide sleep and solitude  
Of night, in which all motion  
Is beyond us, as the firmament,  
Up-rising and down-falling, bares  
The last largeness, bold to see.

(Stevens 1954, p. 62)

Beautiful and tantalizing as it may be, ‘The last largeness’—as grand theory, or ultimate metaphysical explanation—is not the concern of this book. Our concern is ‘hands-on’ theory—the understanding of work activity as patient–doctor and patient–clinical team interactions in the clinic and at the bedside.

The ‘new model of undergraduate teaching’ (Sullivan and Rosin 2008, dust jacket) claimed by the Carnegie report can be added to our list of emerging trends in medical education discussed in the previous chapter. First on this list was the view that medical education is in crisis, and that we must move on from the crossroads of stasis through urgent, decisive action. The Carnegie report’s response to the crisis in the professions is to reformulate the nature of *learning for the professions*. In summary, as we have already stated, this is described as a shift from a critical, analytic discourse, in danger of becoming the abstract, distancing ‘metaphysician’s curtains’ in Wallace Stevens’ poem above, to a more ethically engaged practical reason, a collaboration with patients, that in turn forms the character of the medical or clinical educator. Let us now flesh out this process.

## A New Wave of Medical Education Thinking

Cooke et al. (2010) translate the Carnegie Study on higher education—*Shaping a Life of the Mind for Practice*—specifically for medical education. The Carnegie Foundation’s study of education for the professions offers a cross-comparison of



professional education for clergy, lawyers, engineers, nurses and doctors. The physician study has included 14 site visits, 184 interviews, 104 focus groups and more than 100 observations, plus immersion of the study team in the ‘learning sciences’ literature to draw out best evidence and principles. There is a focus on clinical learning. The mission of the study is to prepare knowledgeable, skilful and compassionate physicians committed to advancing the field.

The Carnegie study suggests that in many respects, North American medical education still follows the Flexner Report of 1910, but has made progress in many medical schools in establishing a knowledge-generating culture of inquiry and discovery, including active learning methods. Since Flexner, however, there has been (1) an explosion of biomedical knowledge leading to expansion in core curriculum knowledge, (2) a rise of interdisciplinary/integrative curriculum and research agendas, (3) transformation of teaching hospitals where education has been largely sidelined and (4) the introduction of national licensing examinations.

The Carnegie New Agenda for Higher Education, as outlined above, offers a basic framework for medical education—a shift from critical thinking to practical reasoning (developing clinical reasoning) as creating ‘habits of the mind.’ This is based on a formative model, a shaping of professional identity as compassionate, respectful and responsible practitioners, or creating ‘habits of the heart’ (Bellah et al. 2007). The New Agenda is realized in medical education through four big ideas: (1) integrating formal knowledge and experience (integration), (2) standardizing on outcomes (and competencies) while individualizing learning process (individualization), (3) developing habits of inquiry and excellence (insistence upon excellence) and (4) focusing upon the forming of a professional identity as a doctor (identity formation) (Irby et al. 2010).

*Integration* involves connecting multiple forms of knowledge, learning and roles in service to patients. In practice, as an educational program, this will involve three elements: first, connecting formal knowledge with practical, contextual, experiential knowledge in the development of clinical reasoning expertise; second, engaging in multiple forms of knowledge-in-action: analytical and practical reasoning, automatic pattern recognition and creative, imaginative and adaptive forms of thinking and reasoning and third, the integration of multiple physician roles.

This formulation has important implications for the undergraduate curriculum. First, clinical (applied) and formal knowledge must be integrated across the undergraduate years, formally abandoning the Flexnerian legacy of strong division between the preclinical and clinical phases. Second, integrated, patient-centered, longitudinal clerkships should be established, where students follow a *panel of patients, not rotations or team attachments*. And third, assessment should focus upon *integrative* reasoning and action, rather than isolated pieces of knowledge and skills. Formal knowledge will then be embedded in clinical expertise. Clinical expertise is further embedded in a culture of inquiry, discovery and innovation. This culture is realized through the longitudinal activity of authentic patient contact—following a panel of real patients in real life and clinical settings, not paper or standardized patients.

*Individualization* involves developing focused expertise around individual differences in physicians and in specialties. This will include focus on individual

differences; honoring multiple paths to learning and reasoning; and noting, but also celebrating, the fact that achievement of mastery occurs in different ways at different speeds in differing contexts (differing forms of engagement in communities of practice). The latter should offer a resource and opportunity, rather than a hindrance to learning. This focused expertise will be achieved through promoting workplace learning, or learning through participation. In this process, learning must be carefully structured, including selection of tasks and activities, responsibilities, sequencing, continuity of learning and recording what has been learned. Further, the academic community must build relationships with the practice community, including schemes of supported participation and mentorship. Finally, work practices themselves must adapt to the presence of learners, looking carefully at issues such as time pressures and organization of work.

The implications for the curriculum of individualization are dramatic. This will require a fundamental change in mindset, moving away from specialty-based, compartmentalized thinking to integration. The core curriculum will need to be reduced to accommodate the new emphasis upon work-based experience with the added factor of continuity with a panel of patients. Individual learning plans, with clear longitudinal sequencing of activities around patients, will need to be devised. Assessment must focus upon mastery (performance) through practical reason. Electives can be used to focus upon specialized areas meeting individual needs.

Individualization of the learning process is, however, nested in standardization achieved through stated learning outcomes. Standardization through achievement of stated competencies assessed in multiple domains means that, in principle, a scenario can emerge where students and doctors progress at their own pace across the entire trajectory of a medical education. Education and training can be shortened where stated competencies are the goal. Those who achieve mastery in core medicine requirements can be encouraged to widen their education through an extended curriculum where the prior experiences, needs and talents of the individual learner are recognized and addressed. Irby et al. (2010, p. 224) then offer a radical challenge to curriculum planners: to 'Individualize learning within and across levels, allowing flexibility in approaches to learning and the opportunity to progress as students achieve competency milestones' and to generate 'elective programs...in such areas as public health and advocacy, global health, medical education, clinical and translational research, and molecular medicine.'

*Insistence upon excellence* refers to the development of habits of inquiry to promote excellence and adaptive expertise. This involves pursuit of lifelong learning and advancement of the field, promoting the capability to continuously learn new knowledge, setting out to generate adaptive, as well as routine, expertise through deliberate practice and progressively advance expertise and working within a community of practice not simply as a passive student, but with a view to advance a field of expertise. Here, senior medical educators must reframe the doctor's identity, moving beyond mere clinical competence to include 'innovator,' 'pathfinder' and so forth. Learners will need to be engaged in challenging and contested areas of knowledge, skill and values and be involved in discovery. 'Excellence,' perhaps the most overused (and often abused) word in the medical education vocabulary, can be

added to our list of emerging trends in medical education. ‘Excellence,’ however, has a major redeeming feature, as we explore below—it offers a counter to the other most used and abused word in the medical education vocabulary—‘competence.’

Finally, *identity formation* involves cultures shaping the professional identity of the physician. This includes moral commitment to highest levels of patient care, commitment to high standards within a community of practice and role modeling. Issues of implementation in work placement include quality of clinical team interactions, quality of teaching, coaching and assessment of learning and an understanding of how the hidden curriculum shapes professionalism and identity. The implications for the curriculum in the area of identity formation include formal instruction, for example in ethics, informal socialization through storytelling and symbols, such as pledges and white coat ceremonies, modeling by faculty (the enacted values of the practice community), clear methods of both assessing professionalism of students and evaluating professionalism of teachers (to include a central place for formative feedback). These activities can be carried out in the context of longitudinal mentoring.

The purpose of introducing the ambitious Carnegie Foundation approach at this point is to continue to identify and explore trends in medical education and to see if the cumulative effect of change is indeed paradigmatic, as we suggest. The Carnegie program for medical education promises a radical but considered and refreshing overhaul in approach. It reinforces the now common rhetoric of ‘excellence,’ such as Tooke (2007) *Aspiring to Excellence* (in the context of addressing a crisis in postgraduate education in the UK, where a system had indeed gone so far from equilibrium that it became chaotic and sterile rather than transformative and fertile); and Gunderman’s (2006) *Achieving Excellence in Medical Education* in the context of North American undergraduate and continuing medical education. Normally, one is cautious about the use of such words as they can quickly become hackneyed. The concept of ‘excellence’ in medical education, as noted above, has come to serve another, vital, function. It is frequently used to critically counter the ‘competence’ movement, to which we now turn. ‘Excellence’ acts as a rhetorical device by which we can resist, counter and overcome the dominance (hegemony) of the term ‘competence.’

## ‘Good Enough’ is Not Good Enough

Some 20 years ago, higher education in North America and Europe was gripped by the ‘learning objectives’ movement, itself a hangover from the dominance in the era after the Second World War of behaviorism in psychology, where learning outcomes had been described since the 1950s and articulated in taxonomies (describing hierarchies from the simple to the complex) covering the cognitive (thinking), psychomotor (doing) and affective (valuing) domains. Such outcomes were powerful tools, as they clearly set out what was expected of students and could double as assessment criteria. A set of learning outcomes can be attained through a variety of

methods and so standardization of outcomes does not translate into standardization of pedagogy. In fact, the opposite is the case—learning can be individualized.

Outcomes also served, in the language of behaviorism, as reinforcement of desired behaviors. Educational liberals and innovators, however, were always critical of the perceived reductionist nature of learning outcomes, because they were prescriptive, paradoxically curtailing the creative possibilities for learners and teachers to create new knowledge. The desired behaviors were desired by the educators and not necessarily by the learners. In other words, learning would be forever reproductive rather than productive. In fact, a distinction was even drawn between ‘objectives’ (what teachers wanted students to learn) and ‘outcomes’ (what students needed to learn to pass the course). As the latter took hold, tightening the grip on learners and their motivations for learning, learners recognized that they needed to ‘learn’ only what would be assessed, hence the drift to assessment-driven learning. This outcome for education is some way from the visionary agenda of educationalists such as Bereiter and Scardamalia (1993), who describe the gaining of expertise in the professions as ‘surpassing ourselves’—again, capability and excellence rather than competence.

Higher education started to borrow from the rhetoric of further education where the concern is with skills learning for trades rather than professions, focusing upon atomized skills and performance and reducing the wider discourse of ‘education’ to the narrow discourse of ‘training.’ While this reductive movement was being criticized and reformed in higher education by the 1980s, medical education eagerly adopted the new training mentality, where outcomes became listed as ‘competences’—discrete learning that could be observed. This was understandable because of medicine’s tradition of practice-based apprenticeship, but also because the itemizing and clarifying of what is expected of a graduate from a medical school had not been clearly set out and such outcome profiles promised parity between medical schools. However, as the competency movement has taken a firm grip on both undergraduate and postgraduate medical education, so it has produced an internal process of resistance—a call for focus on prospective ‘capability’ (which has now mutated to ‘excellence’), rather than retrospective ‘competence.’

‘Training’ derives from the Latin *trahere*, which literally means to ‘trail behind’ (as in the train of a dress). Despite the ease with which ‘training’ trips off the tongue in medical education contexts (again, a legacy of the skills-based apprenticeship tradition), no medical *education* should encourage ‘trailing behind,’ but should take up the challenge issued above by the Carnegie Foundation initiative for example, of trailblazing, producing knowledge, innovating, leading. Further, competence literally means ‘good enough’ and this has worried medical educators in practice. Students and junior doctors who demonstrate a ‘good enough’ approach are usually tolerated but thought to be potentially mediocre practitioners—hence the call for something more challenging than baseline ‘competence’ to aim for. Finally and importantly competence offers a retrospective account, tallying what you have accrued or what has sedimented as knowledge and skills capital, to reach a good enough level of expertise. In contrast, capability invites a prospective view, tracking—and then predicting—*potential* in a learner. This is a view of what Aristotle termed ‘human

flourishing,' where acknowledging potential indicates to teachers how further learning, or realization of potential, can best be supported.

How, then might we inform practices of medical education and clinical teaching? First, we must have theoretically coherent and testable models of 'learning' itself. Without a clear grounding in contemporary approaches to learning, the rest of this book and its central argument about patients leading learning will be less clear. The following chapter offers a primer in learning theory.

Medical Education for the Future

Identity, Power and Location

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