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Scientific Contribution

Promoting critical thinking in health care: Phronesis and criticality

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Abstract. This paper explores the notion of 'expert' health care practitioner in the context of critical thinking and health care education where scientific rather than philosophical inquiry has been the dominant mode of thought. A number of factors have forced a reappraisal in this respect: the challenge brought about by the identification of complex ethical issues in clinical situations; medicine's 'solving' of many of the simple health problems; the recognition that uncertainty is a common and perhaps innate feature of clinical practice; debate about the concepts of illness and disease; plus insights from psychology, sociology and medical anthropology. Together these have prompted alternative ways of thinking which have the aim of identifying the best rather than the right decision (where best equates to good and right equates to correct in the sense of true or approved). It is argued that phronesis adds a necessary corrective dimension to modern Western medicine's over-emphasis on techne and is one of the factors that differentiates novice from expert practitioner. However, this attracts certain conflicts of interest: phronesis can only be gained and assessed from experience of praxis; agencies with legitimate interests in medicine such as government and professional registering bodies require more substantive criteria.

Key words: criticality, expert, medical education, novice, phronesis, praxis, professionalism, techne

Introduction

What rôle does critical thinking play in the work of a clinician and particularly an expert clinician? Does it have the same importance in clinical practice as that which is claimed for it in Higher Education (HE)? In the University system, critical thinking is taken as a defining characteristic; is it also a mark of good health care practice? The medical education literature suggests that critical thinking is a highly desirable attribute in a practitioner. In a recent survey 79% of medical teaching staff rated being a critical thinker an important characteristic of medical students compared with, say, having high order study skills, which rated 69% (Marley and Cameron, 1999). If it is important in both HE and health care practice, do educationalists and clinicians mean the same thing by it?

To answer these questions, it will be necessary to explore two key issues: what is meant by critical thinking in health care practice and in HE; and, is high order critical thinking one of the factors that differentiates an expert clinician from a novice?

Defining critical thinking

Critical thinking is commonly linked to problem solving and finding better solutions or explanations for certain problematic events as the following definitions show:

> the ability to solve problems by making sense of information using creative, intuitive, logical and analytical mental processes.
> the art of thinking about . . . thinking, while . . . thinking in order to make . . . thinking better.
> a) identifying and challenging assumptions; b) challenging the importance of context; c) imagining and exploring alternatives; d) reflective scepticism.
> a process for surfacing, exploring and validating assumptions through reflection and inquiry. (Quoted from Ulsenheimer, Bailey, McCullough, Thornton and Warden, 1997, p. 151.)

Barnett has critically reviewed critical thinking and suggests that the model generally adopted by Western Universities is restrictive; that only a wider conception and practise of, what he terms 'criticality', can meet the needs of the 21st century (Barnett, 1997). He

argues the need for critical review, not just of knowledge, on which HE has focused, but of the self and of the world, that is, the personal, social and political structures that form and perpetuate a particular world view. In his opinion, education is not just concerned with acquiring information, it is a search for truth that entails the person seeking, and the context within which the search takes place. Criticality thus involves: reason, self-reflection, and action; applied to knowledge, self and the world (for an overview of Barnett's schema see Appendix 1). The identification of action here as a key element in critical *thinking* is particularly interesting. Health care practice by its nature involves practitioners in taking some kind of action, and raises the question of whether action itself, rather than just the theory behind the action can be critically assessed. While practical *skills* have had a clear emphasis in medical education, practical *knowledge* in health care has been largely under-explored, probably because of difficulties in describing and assessing it.[1]

I will suggest that a broader concept of criticality that includes practical knowledge as a blend of personal experience and professional wisdom[2] lies at the heart of the best health care (as well as other professional practices) but perhaps in a form and context that makes it difficult to recognise. The reason for its unfamiliarity may, paradoxically, be due to the practice focus of health care. I will argue that medicine is different in a number of significant respects from how it was at the beginning of the 20th century and that theoreticians are looking for more appropriate ways to describe modern health care endeavour. I will explore the blend of practical and experiential knowledge for which I am seeking greater acknowledgement, in the context of Aristotle's conception of thought – in particular, *phronesis* as the mark of the expert practitioner. Finally, I will note that practical knowledge of this kind attracts particular conflicts of interest and expectation from within and outside health care.

The expert and the novice

Let me begin with an anecdote. I have been a car driver for almost 30 years. I don't consider myself to be an exceptional driver, but I think I not only understand the mechanics of driving, but have a feel for what is happening on the road around me. I instinctively know what to do in difficult or unusual circumstances, I know the limits of the car, I know my strengths and limitations as a driver, and on the whole I can anticipate and cope with problems.

A few years ago I learnt to ride a motorbike for the first time. What I found surprisingly difficult was not so much the mechanics of controlling the bike – my skill gradually developed with practise – but I lost the instinctive feel for driving that I had in a car. With my instructor I found myself trying to do the 'right thing', I would pause too long at roundabouts just to be sure and would ask myself what I was expected to do in situations where I would normally just act. I resorted to rules; although I was a car driver, I wasn't yet a biker. A few thousand miles on and I feel that I am becoming a biker; so what has changed?

Reflecting on this experience and being aware of Barnett's conception of criticality, I can identify three areas that perhaps mark the expert as the person *who is*, from the novice *who* (merely) *does*. Across a range of familiar and unfamiliar situations, the expert professional will be:

1. able competently to apply necessary instrumental skills;
2. able to give a realistic appraisal of their capability – strengths and weaknesses;
3. able to assess the context of a problem and use their capabilities to create the most effective outcome.

Expertness is not possessed like a skill or knowledge, though skills and knowledge are necessary for being an expert, it is something that the person is and embodies. I can *have* skills and knowledge, but I *am* an expert. I want to suggest that being an expert practitioner is not just a matter of doing something competently, it is a characteristic of the person. The expert not only knows their subject, they know their practice and know themselves. Knowledge about a subject does not necessarily make someone an expert. There are people who know about music and there are musicians; there are people who know about philosophy and there are philosophers; there are people who know how to make a diagnosis and prescribe, and there are physicians. It is related to being a professional. It is the difference between *techne*, the productive, instrumental skills required to perform the work of a profession, and *praxis*, the practical endeavour that is that profession. The ontological question is, 'what kind of knowledge distinguishes the expert?', the epistemological and educational questions are, 'how do we recognise an expert; and how does someone become an expert?'

Jensen et al. looked at the differences between a novice physical therapist and an expert clinician, and concluded,

> The analysis of data, coupled with findings from other studies, suggest that experienced clinicians possess attributes that are different from those of novices. We currently lack understanding of the

development of physical therapy expertise (Jensen, Shepard and Hack, 1990).

In other words, the authors recognise that there is a difference between a novice and an expert, but they can't say just what that difference is, and more crucially, do not know how a novice becomes an expert and therefore do not know how to educate the novice.

Squires, in discussing these issues with respect to teaching, argues for a pluralistic concept of professional practice. He suggests that the dualistic division between theory and practice is unhelpful – are case study discussions theoretical or practical? – and suggests six elements that constitute professional expertise: general frameworks (as taught by the profession), specific knowledge (as acquired by the practitioner), routinized skill, contingent analysis, action and reflection (Squires, 1999, p. 130). He points out that Aristotle had a tripartite concept of thinking which included theoretical, practical and productive intellectual activity, applied through *episteme*, *phronesis* and *techne* (p. 112). These represent three different activities applied to different domains; one is not simply the application of another. Professional expertise requires all of them. This contrasts with our largely dualistic concept that divides theory from practice and sees one as a different expression of the other.

I will be arguing that: (i) a notion of criticality that embodies practical as well as theoretical knowledge is a necessary component of professional health care practice and equates to the Aristotelian concept of *phronesis* as the application of *praxis*; (ii) pursuing criticality, as Barnett describes it, is one way of achieving *phronesis*.

Perhaps the main difference between a novice and an expert in the area of health care is the ability to make sense of and take action on the basis of large amounts of information with few firm rules to guide in relation to an individual patient. It is here that the novice can be distinguished from the expert who tends to be guided by rules of thumb and principles rather than prescriptive rules (Meyer and Cleary, 1998). Despite this mark of an expert, modern conventional medical teaching and practice has focused primarily on the technical, instrumental practice of health care procedures rather than on practical wisdom. The issues of uncertainty and underdetermination as facts of life in clinical decision-making remain major challenges for the novice practitioner and medical teacher.

Before exploring what *techne* and *phronesis* mean for clinical practice, I will briefly identify the context in which medicine may find itself operating in order to explore why this issue is of such importance.

Changing perception of medical problems

21st century health problems are likely to be different from those of the early 20th century. Gillett suggests that medicine has exhausted the 'simple' problems amenable to reductive theoretical methods (Gillett, 1995). 'Simple' refers only to the causal underpinning of certain diseases which may well require sophisticated, technologically complex responses. The challenges of the present time are those health problems that have no clear theoretical basis, e.g. heart disease; diseases whose aetiology entails multiple risk factors that are subtly but significantly different for each patient according to their circumstances. Added to this is the increase in illnesses associated with ageing, plus the ethical dilemmas modern technical medicine has attracted. Analysing these kinds of problems requires skills that are different from those traditionally developed and utilised by Western medicine. It signifies a move away from:

- right and wrong diagnosis (and treatment) to most significant or best outcome;
- patient treatment as a technical challenge, to patient management;
- a focus on cure to one on care.

In addition it contributes to the age-old debate about medicine as science and art, and on medical care as an instrumental technical challenge versus a moral endeavour that attempts to identify and facilitate the good in a given situation. The specific issue for this paper, is the extent to which critical thinking is catalytic in defusing these conflicts and re-establishing *phronesis* as a necessary component of modern medical practice.

Conflicts

At the heart of the dilemma over clinical decision making is this: clinical decisions are made about an individual suffering person, but informed from knowledge of suffering people in general. In turn, knowledge of suffering people is derived from:

- similar clinical experiences of other individuals, but who experienced their suffering in different contexts;
- changing medical knowledge about health and disease that is developing and being added to at a fast rate.

In addition, decisions are made from the background of a constantly changing world that influences the patient-practitioner relationship and the expectations of patients together with practitioners' perception of

their rôle. Bringing these two areas of medical practice together – the general body of knowledge and the accumulated wisdom and experience of generations of practitioners on the one hand, with the clinical application of that knowledge to specific suffering individuals on the other – is still one of the most difficult conflicts to resolve in medical education; what Kathryn Hunter termed, 'pedagogical stenosis' (Hunter, 1989). This results in two issues: 'What information is relevant?' (a decision that medicine is good at addressing though perhaps not at answering), and, 'What decision will be good for the patient?' (which medicine appears reluctant to address in any meaningful way).

Experts are people who can make effective decisions with good outcomes when confronted with a specific situation that appears not to be responsive to the usual rules of practice. They are neither frozen into inactivity by the complexity and uncertainty of the situation, nor driven to make unsuitable reflex decisions based on inappropriate professional dogma. The expert clinician must be technically competent, but also able to evaluate a complex and unique situation creatively in order to benefit the patient. It is my contention that medical teaching has been strong on the former but merely optimistic about the latter.

Techne and *phronesis*

On this analysis there are three kinds of medical knowledge represented by *episteme*, *techne* and *phronesis*. Broadly speaking the Aristotelian conception is that: *episteme* embodies scientific deductive knowledge (but lies outside the focus of interest for this study);[3] *techne* is concerned with the craft, the productive act, of the practitioner; and *phronesis* with knowing how to act in a situation in order to achieve the goals of professional practice.

For this account of *techne* and *phronesis*, I draw on papers by Araya (1996), Beresford (1996) and Davis (1997).

Techne is primarily instrumental and a means to production. It is knowledge derived from *poiesis* which is the identification of specific desired ends. The end for medicine is, to use Araya's term adapted from Heidegger, the 'unconcealment of health'. The physician decides what must happen for health to be unconcealed. *Techne* is the knowledge that enables unconcealment; it is the physician's craft in overcoming disease. It is therefore also productive; having an identified goal and a productive outcome. To use a music analogy, *techne* describes the technical skills required to play an instrument or orchestrate a piece of music; it says nothing about the musicianship of the person.

Phronesis on the other hand, is without specific measurable goals. It is that knowledge which knows how to act and is able to respond to situations and challenges in accordance with the general expectations of the profession. It derives from *praxis*, the internal customs, mores and values of a profession. We expect a cardiologist to know how to deal with heart problems no matter how unusual they may be and so demonstrate *phronesis*, but in so doing he will also demonstrate *techne* by, say, performing a heart by-pass operation. In musical terms *phronesis* is the musicianship rather than the technical skill of the instrumentalist, though without some technical ability it is not possible to demonstrate musicianship.

So why is *phronesis* so important to clinical practice?

> The ultimate challenge of clinical reasoning is the choice and pursuit of a particular course of therapeutic action in a concrete situation pervaded by uncertainty (Davis, 1997, p. 186).

Gadamer in defining *phronesis* states

> . . . the knowledge that gives direction to action is essentially called for by concrete situations in which we are to choose the thing to be done and no learned or mastered technique can spare us the task of deliberation or decision (quoted in Beresford, 1996).

Alasdair MacIntyre refers to Aristotle when he says that *phronesis* is about "*exercising judgement in particular cases*."

The key points are that *phronesis* involves engagement with actual concrete situations, requires knowledge of and familiarity with the values and practice mores of a profession and involves making moral judgements, i.e., judgements based (in part) on the values of a profession.

In his tribute paper to Edmund Pellegrino, Daniel Davis concludes by describing Pellegrino as a physician who sought

> always and ever, to do what is right and good for this patient under these circumstances. A philosopher-physician (who) offers a living exemplar of the *phronimos* in medicine (Davis, 1997, p. 192).

Phronetic knowledge is required in those cases where the normal rules fail to deliver a clear decision; where what constitutes good practice is unclear. Beresford points out that *phronesis* by its nature is not procedural and criticises MacIntyre for appearing to be seeking a procedure or set of rules to decide what to do when the rules break down (Beresford, 1996). If *phronesis* is to be helpful in this situation it must provide insight into

identifying what is good practice without resorting to rules.

The argument is this:

- A rule-governed decision-making process fails at the crucial point where there is conflict over competing goods or which rules apply. Does the physician keep the patient alive and suffering or relieve the suffering but shorten life? What has caused this person's heart attack, his hypertension, poor diet, lack of exercise or personal sense of low esteem; how can a physician know what advice to give the patient? It assumes that there is a right (and wrong) answer rather than a range of possibilities. The best doctor will know the patient, know the disease and be in the best situation to identify what is good and best for *this* patient.
- Secondly, each case is a unique synthesis of events, and rules can only be drawn up in response to what has gone before. The world is changing and even though events may be similar to some that have occurred before, their effects are different because the context in which they take place is different.
- Finally, the concrete case may contain new and unrepeatable elements that rules could not have taken into account.

Because *phronesis* is about seeking what constitutes good practice in a unique situation, it isn't much help to know what would have been good in previous circumstances. Perhaps an analogy can be drawn with analysing what makes a successful song, film or TV comedy. From analysis we may be able to suggest what makes them successful; we might be able to identify elements that are common to all successes. However, what has been successful in the past doesn't help us to identify the rules to produce another success. In fact, as parodies of the Eurovision Song Contest demonstrate, applying rules can produce something that is even more ridiculous than the real thing.

The characteristics of *techne* and *phronesis*

Successful, effective health care practice requires both *techne* and *phronesis* as productive outcome and professional expertise; one cannot substitute for the other. The best musicians must be technically able in order to express their musicianship, but they must have good musicianship in order to make the most of their technical skills. It is important to identify the ways in which *techne* and *phronesis* represent different areas of knowledge yet complement each other. Table 1 contrasts their characteristics, but raises another challenge which is, what determines how a practitioner moves between *techne* and *phronesis*? I have claimed that *phronesis* is one factor that differentiates the expert from the novice, it follows therefore that in the context of practitioner development, *phronesis* is a higher order capability and the decision to adopt a particular technical approach to a problem involves a *phronetic* judgement.

Developing *phronesis*

I suggested that future health care problems will require the practitioner to focus more on the ability to act effectively in underdetermined situations than has previously been necessary; an approach that I have equated with the Aristotelian notion of *phronesis*. So how do the best clinicians learn to make *phronetic* judgements?

Here we can return to Barnett's three dimensional view of criticality in decision-making: reason, self-reflection and action, with respect to knowledge, self and the world (Barnett, 1997). Clinicians require specialised knowledge, their problem is in selecting that knowledge which is relevant to a particular case. Critical reflection on knowledge – perhaps involving refashioning of that knowledge – will, on Barnett's account, allow the practitioner to select and link knowledge to a specific clinical context in accordance with professional principles and mores. *Phronetic* knowledge describes an inward state of professionalism – it is something practitioners are, not what they have or do. This can only come about through critical self-reflection – making an honest assessment of strengths, limitations and professional motivation. Finally, *phronesis* is the ability to act in the concrete situation which involves engagement with real cases and interaction with peers and other professionals. It can't be done theoretically, it can't even be prepared for, because it is action in a new situation.

At one end of a spectrum clinical decisions involve straightforward problem solving and require technical knowledge, but at the other end they are complex and challenging requiring *phronetic* knowledge which may be transformatory – Ignaz Semmelweis washing his hands before visiting the delivery wards, or John Snow removing the handle from Broad Street pump to prevent the spread of cholera. In these two examples uncertainty and complexity were met with a response that was an amalgam of a critique of contemporary knowledge, recognition of and reflection on what today we might call a critical incident, and a courageous willingness to take action despite inadequate information and ridicule from colleagues.

There remains the issue of how *phronesis* is encouraged in a practitioner. It may be possible to recognise

Table 1. Contrasted characteristics of *techne* and *phronesis*

Characteristics	
Techne	Phronesis
Technical skill	Appropriate action
Taught/learnt	Developed through experience (clinical and educational)
Rule based	Principle led, creative/innovative
The practitioner is competent	The practitioner is wise/insightful
Decision-making is explicit, cognitive & technical	Decision-making is implicit, though open to rational analysis
Productive outcome – 'unconcealing health'	Moral outcome – 'unconcealing good'
Relies on past experience to guide present practice	Relies on insider knowledge to do the right thing
Critical thinking refines decision-making and skill; finds more effective ways of reaching explicit goals	Critical thinking challenges assumptions; experience informs and refines decision-making

it when it occurs but how is it promoted? Brockbank and McGill comment on Barnett's general analysis and concur with his stated aim of promoting criticality among students of higher education. However they argue that in most cases it will only come about when the critical reflective process is facilitated through dialogue (Brockbank and McGill, 1998, pp. 96–98). Facilitation is thus identified as one of the chief rôles of the teacher; teacher and student venture together into complex and underdetermined situations where both are free to question and challenge assumptions including the analytical framework in which the knowledge is presented. This challenges the traditional rôle of medical teachers as imparters of knowledge and emphasises their rôle as facilitators of learning. *Phronesis* is acquired through engagement with and reflection on concrete situations; this does not result in rules of engagement for future situations, but facilitates the promotion of professional values, principles and mores which guide action.

Conflicts of interest

Conflicts arise when criticality challenges elements of *praxis* as Semmelweiss found; threatening the *status quo* and traditions of practice is inevitably met with a hostile response. But conflict also arises from the fact that *techne* is accessible to many outside a profession; laymen may not be able to carry out total hip replacements, but they do make judgements on who does them well and who badly. Debate rages over whether appropriate measures of effectiveness are selected. *Phronesis*, on the other hand, requires familiarity with *praxis* and *praxis* is only achieved through engaging with and applying the values, concepts and mores of a profession in actual situations. On this analysis, only a doctor can truly appreciate or judge a doctor's actions. While this may apply to some aspects of practice, clearly it is not true of it all and those outside a profession, who generally hold the purse strings, unsurprisingly emphasise those aspects of practice they can understand and, importantly, measure. Thus for various reasons, *techne* rather than *phronesis* is emphasised in the increasingly political context in which health care is practised.

Conflicts also arise in medical education and professional registration (Edwards, 1998). One of the main functions of registering bodies is to set standards of competence and capability in order to protect the public and promote the development of the profession. Because of the difficulties of assessing abstract (even if desirable) attributes such as professionalism, the tendency is to measure knowledge and skill, where minimum levels of ability can be judged to meet minimally acceptable levels of competence. This is driven by an expediency to assess the justifiable and establish a ground base of professional capability that avoids the difficult issues of judgement in complex and atypical situations. It is obviously necessary to have competent practitioners who can recognise and know the approved response to the problems they will face in everyday practice, but surely it is more than merely 'desirable' for those practitioners also to be capable of responding effectively in complex situations. How is professional expertise, the *phronetic* knowledge of practitioners, to be developed and assessed? Apart from 'knowing it when I see it', there is no clear 'objective' answer to this question.

From this brief analysis it can be seen that *phronesis* cannot be delivered only in the context of lectures and tutorials. Because of its nature it can't be taught as a procedure. Instead it must be acquired through engagement with concrete problems in the context of *praxis*, hence the traditional emphasis on clinical experience in medical training. However,

Appendix 1. Overview of Barnett's three forms of criticality: critical reason which focuses on the domain of knowledge; critical self-reflection which focuses on the domain of the self; and critical action which focuses on the domain of the world. Each of these can be accessed at different levels of criticality. Barnett's argument is that higher education should be aiming for a transformatory critique

Levels of criticality	Domains		
	Knowledge	Self	World
4 Transformatory critique	Knowledge critique	Reconstruction of self	Critique-in-action (collective reconstruction of world)
3 Refashioning of traditions	Critical thought (malleable traditions of thought)	Development of self within traditions	Mutual understanding and development of traditions
2 Reflexivity	Critical thinking (reflection on one's understanding)	Self-reflection (reflection on one's own projects)	Reflective practice ('meta-competence', 'adaptability', 'flexibility')
1 Critical skills	Discipline-specific critical thinking skills	Self monitoring to given standards and norms	Problem-solving (means-end instrumentalism)
Forms of criticality	Critical reason	Critical self-reflection	Critical action

Barnett's insights into criticality suggests that there are three paths that students and practitioners alike can be encouraged to explore – critical evaluation of the immense medical knowledge base; critical self-reflection and critical action.

Conclusions

I have argued: that the traditional model of critical thinking in HE, including medicine, is best applied to instrumental and procedural medical acts for which I have used the Aristotelian term, *techne*; that the greatest challenge to health care today is not technical or procedural, but moral; how to do the best thing for the patient in response to the uncertainty inherent in clinical decision-making and a changing world state and the uniqueness of each patient-practitioner encounter. This problem focuses on the question, 'What is the best thing to do in this case?' One way to address this is through *phronesis*, that is, through the demonstration of *praxis* in the concrete situation. It is here that Barnett's concept of criticality provides insight. His threefold approach to criticality involves critical reasoning (parts of which medicine has been good at), critical self-reflection (which is gradually being incorporated into some areas of health care), and critical action (which is largely demoted to political activity).

The practice of medicine is highly advanced, but the expert practitioner requires abilities over and above knowledge and technical acumen when dealing with the complexities of illness. *Phronesis* with its emphasis on right action in the context of the individual patient and the concrete situation, has the ability to meet that need. My claim is that Ronald Barnett's concept of criticality in Higher Education offers an educational model for encouraging *phronesis* in health care students.

I conclude with a quote from Daniel Davis's excellent paper:

> the *telos* of clinical reasoning is a particular act, a right and good healing action on behalf of the individual patient – not the theoretical truth of *episteme* nor the production of an object ... as is the case with *techne*. ... *phronesis* offers a paradigm for the entire process of clinical reasoning ... (Davis, 1997, p. 191).

Notes

1. An exception to this is a recent book by Geoffrey Squires, (1999) to which I will refer later.
2. By wisdom, I mean the body of knowledge, practice values and mores that is acknowledged to be an appropriate guide to good practice in a particular profession.
3. For the remainder of this paper, although not explicitly referred to, it will be assumed that *episteme* is an essential and necessary element in medical thinking.

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