

Critical Thinking in Education: Reflections on its perceived levels, method and point

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Abstract

In an increasingly information-rich and knowledge-oriented world, where the pace of political, economic, technological, scientific and communication advances often outstrips the pace of educational reform, it is pleasing to see that the development of critical thinking competency in students, at all levels, has continued to permeate educational discourse. This ought to come as no surprise. An investment now in critical thinking competency in students is a direct investment in a nation's future intellectual capital. It is why it has been embedded in the Australian curriculum. This paper, however, posits questions and concerns about the way critical thinking, including its perceived levels, method and point, has been traditionally conceived by educational theorists and practitioners. It argues that a clearer understanding of this key competency in teaching and learning is still needed and must precede attempts at finding reliable and valid ways of measuring and testing critical thinking. It argues further that critical thinking competency cannot be separated from a person's disposition to use that competency.

Keywords: philosophy of education, critical thinking, teaching critical thinking, Australian curriculum, skills and dispositions, General capabilities

Introduction

The explicit development, assessment and reporting of critical thinking competency has recently emerged as one of education's most important, albeit in theoretical and practical terms, most formidable endeavours. Long fostered and fleshed out in philosophy, its role in promoting habits of effective thinking and learning is now considered indisputable. (See Bowman, 2010.) As a key, life-long and transferable generic competency, with profound application in much wider study, work and life contexts, understanding critical thinking has continued to dominate educational discourse.

However, and unlike discipline specific competencies, where the teaching of domain or content-knowledge has largely governed proceedings, critical thinking has been deemed too broad a competency to be contained to any single learning area or discipline. Newly devised educational taxonomies of student learning, therefore, including Australia's new National Curriculum Framework: Foundation to Year 10 (<http://www.australiancurriculum.edu.au>), have instead gravitated towards a cross-discipline embedded approach to the explicit development, assessment and reporting of critical thinking; this having been perceived as the least abrasive of the available models. (See Facione, 1990.) Consequently, the development, assessment and reporting of critical thinking, at least in the Australian context, now reside with teachers across very diverse learning areas and grade levels.

This decision by curricular developers to move, firstly, from the implicit to the explicit teaching of critical thinking, coupled with what has emerged as the preferred cross-discipline embedded approach to its teaching, has also brought with it a renewed urgency to finally find some sort of consensus as to what this key competency actually amounts to. As Jennifer W. Mulnix, professor of philosophy at the University of Massachusetts, rightly points out in her timely and invigorating paper 'Thinking Critically about Critical

Thinking' (Mulnix, 2012), 'if we are charged with teaching students to think critically, then we need to clarify the concept; otherwise we will be shooting arrows at a target that we cannot see.' (p. 464)

In this article I will firstly reflect on an interrelated batch of questions connected to the concept of critical thinking; some of which, I argue, have been the source of considerable confusion and debate. I will then examine Mulnix's account of critical thinking. Mulnix conceives of critical thinking as fundamentally a skilled activity of thought; one that 'consists in acquiring, developing, and exercising the skill of being able to grasp inferential connections holding between statements'. (Ibid, pp. 464-465) I will argue that this only captures part of the story, because critical thinking necessarily demands an antecedent dispositional element for it to be exercised. Lastly, I will suggest that recognising this fundamental dispositional element is as important to educating for thinking as are the more widely recognised inferential elements.

1. Some Confusions

Critical thinking's recent prominence on the educational scene has been accompanied by numerous and often very conflicting conceptions of this elusive competency (too many to list here) as well as how it ought to be taught. Meanwhile, the question of what critical thinking actually consists of has continued to be the cause of considerable *Angst* and anguish. (Kennedy *et al.*, 1991, Pithers & Soden, 2000) After all, what precisely is critical thinking? Uncertainty and confusion have reigned on multiple fronts: Is critical thinking a skill or disposition? Is it a matter of degree, or is it instead an all or nothing affair? What motivates us to think critically? Indeed, why ought we to think critically and what is its point? Whether or not critical thinking can be taught or measured will in large part depend on how we answer these deep philosophical questions. Let us turn first, however, to a mistake in the theory of critical thinking that has proven particularly difficult to eradicate.

On practical and theoretical reason

Now there has existed a longstanding misconception in certain circles in philosophy, evident even today, that the only possible role that critical thinking has to play in reasoning is in the determining of facts or discovering of truths. This mistake, however, of consigning the function of critical thinking to this limited role, of practical reasoning, is one that historically has afflicted the philosophy of education but also the development of ethics. Turning to the latter, and it is a misconception that some in philosophy, most notably English moral philosopher Richard M. Hare, have been eager to put to rest:

That there can be practical as well as theoretical reason was a cardinal thesis of Kant; and Aristotle, with his concept of *phronēsis*, or practical as opposed to theoretical wisdom, showed that he thought the same. But now nearly everybody, whether or not he calls himself a rationalist, seems to agree in thinking that *if* one wishes to be a rationalist (if, that is to say, one wishes to find a place for rationality in moral thinking), one has to be a descriptivist (that is to say, one has to believe that there are moral facts to be discovered). This almost universal mistake has had the most harmful consequences in recent moral philosophy... (Hare, 1989, p. 99)

I believe that Hare was right. And, moreover, that there is a parallel lesson to be learnt in the philosophy of education; where the temptation to similarly dissolve or to wed practical reason with theoretical reason still persists. In fact, one does not need to travel too far in the past to find commentators who continue to view the 'processes of thinking [as being] intertwined with the content of thought (that is domain-knowledge).' (Willingham, 2008, p. 21) Cognitive psychologist, Daniel T. Willingham, in particular, states quite explicitly how he thinks this to be the case. Moreover, he adds: 'You can teach students maxims about how they ought to think, but without background knowledge and practice, they probably will not be able to implement the advice they memorise.' (Ibid) Willingham, is of course correct to the extent that critical thinking is dependent on content or domain knowledge in order to be flexed. But, as Mulnix rightly points out:

There is a difference between having information at our disposal on the one hand, and knowing what to do with that information in order to reach reasonable and justified conclusions on the other. The former is domain knowledge, the latter is critical thinking. Willingham's criticism

seems to rest on the fact that he takes critical thinking to depend on the memorization and application of intellectual ‘maxims’. But this requires no more than a mechanical application of procedures without any need to understand the ‘deep structure’. (Mulnix, 2012, p. 470)

What Mulnix is alluding to here by ‘deep structure’ is, precisely what Hare, as well as Kant and Aristotle before him, had all forewarned us about; that there is more to critical thinking than its role in the determining of bare facts (content knowledge) or discovering of truths (intellectual maxims); and that to connect the two is to simply confute practical reason with theoretical reason.

On skills and dispositions

So what, then, is critical thinking; this, so-called, ‘deep structure’?

In 1987 the American Philosophical Association (APA) through its Committee of Pre-College Philosophy turned its attention to the critical thinking movement and to just this question. It did this by initiating a two-year inquiry using, what it called its ‘powerful qualitative research methodology known as the Delphi Method’. (Facione, 1990, p. 2) Comprising an interactive panel of forty-six experts from across Philosophy, Education, the Social Sciences and the Physical Sciences, critical thinking (CT) was eventually defined, albeit somewhat clumsily, as:

[The] *purposeful, self-regulatory judgement which results in interpretation, analysis, evaluation, and inference*, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgement is based. (Facione, 1990, p. 2, emphasis added.)

Note that by separating the evidential, conceptual, methodological, criteriological and contextual considerations upon which judgements are based, from the judgements themselves, the Delphi panel were very deliberate in acknowledging the difference between practical reason and theoretical reason (the sort of deep structure that Mulnix refers to). And, their findings did not stop there:

CT is essential as a tool of inquiry. As such, CT is a liberating force in education and a powerful resource in one’s personal and civic life. While not synonymous with good thinking, CT is a pervasive and self-rectifying human phenomenon. The ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgements, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused on inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit. Thus, educating good critical thinkers means working toward this ideal. It combines developing CT skills with nurturing those dispositions which consistently yield useful insights and which are the basis of a rational and democratic society. (Ibid)

Emerging, then, from this consensus statement was an acknowledgement that what had been proposed looked unashamedly like an intellectual or educational virtue or ideal, and, additionally, that no person is actually ‘fully adept at all skills and sub-skills that the experts found to be central to CT’. (Ibid) The implication, too, was that critical thinking competency is a matter of degree; a view that has been echoed by many others, including, more recently, by Mulnix (2012), Michael Scriven and Richard Paul: ‘No one is a critical thinker through-and-through. But only to such-and-such a degree, with such-and-such insights and blind spots, subject to such-and-such tendencies towards self-delusion.’ (Scriven & Paul, 2008)

The Delphi Report also included amongst its findings that good critical thinking was comprised of both a skill dimension and a dispositional dimension. Beginning with the skill dimension, and it was decided that critical thinking included six *central* or *core* skills, each with corresponding and clarifying sub-skills which, it was envisioned, could be used as possible future instructional or assessment strategies:

CRITICAL THINKING COGNITIVE SKILLS AND SUB SKILLS

SKILLS	SUB-SKILLS
1. Interpretation	<ul style="list-style-type: none"> • Categorization • Decoding Significance • Clarifying Meaning
2. Analysis	<ul style="list-style-type: none"> • Examining Ideas • Identifying Arguments • Analysing Arguments
3. Evaluation	<ul style="list-style-type: none"> • Assessing Claims • Assessing Arguments
4. Inference	<ul style="list-style-type: none"> • Querying Evidence • Conjecturing Alternatives • Drawing Conclusions
5. Explanation	<ul style="list-style-type: none"> • Stating Results • Justifying Procedures • Presenting Arguments
6. Self-Regulation	<ul style="list-style-type: none"> • Self-examination • Self-correction

Table 1: “Delphi Report” consensus list of CT cognitive skills and sub-skills. (Facione, 1990, p.6)

Just as importantly, was their widespread agreement that:

[E]ach cognitive skill, if it is to be exercised appropriately, can be correlated with the cognitive disposition to do so. In each case a person who is proficient in a given skill can be said to have the aptitude to execute that skill, even if at a given moment the person is not using the skill. (Facione, 1990, p. 11)

Most significantly, though, there was widespread disagreement when it came to deciding the precise logical or conceptual status of the sorts of personal traits, habits of mind and attitudes, in short the affective or normative dispositions, which all Delphi discussants agreed were characteristic of sound critical thinkers:

[T]here is a critical spirit, a probing inquisitiveness, a keenness of mind, a zealous dedication to reason, and a hunger or eagerness for reliable information which good critical thinkers possess but weak critical thinkers do not seem to have.’ (Facione, 1990, p. 11)

To summarise, then, the Delphi Report’s findings were: firstly, that critical thinking constitutes a purposeful self-regulatory tool of inquiry, which results in interpretation, analysis, evaluation, and inference, and that it is not just a body of content-knowledge. It is one member of ‘a family of closely related forms of higher-order thinking, along with, for example, problem-solving, decision making and creative thinking’ (Ibid, p. 5) Secondly, critical thinking is comprised of two modes or levels: It is both a *skilled* activity of thought, comprising of skills and sub-skills, and a *dispositional* activity of thought. Thirdly, the dispositions are, in turn, categorised as being either cognitive (if they correlate with particular procedural skills) or affective (if they are

more normative in character). Cognitive dispositions are the dispositions that are implied by the sort of reasoning that conforms to the rules of rationality and that one would typically find being taught in first year Logic. They would include, for example, 'the willingness to evaluate arguments that are congruent with one's own goals and beliefs critically'. (Edman, *et al*, 2000, p. 3) Examples of affective dispositions include being habitually inquisitive, open-minded, diligent in seeking relevant information and being fair-minded.

Controversially, though, a deep theoretical division had also clearly emerged from the Delphi Report; one, I think, that has continued to stymie contemporary educational theory: Do the sorts of affective dispositions that are pivotal to sound critical thinking (like, being trusting of reason, open-minded and flexible in one's thinking, fair-mindedness and honesty, etc.), comprise part of the *meaning* of critical thinking? That they are important, is indisputable; but are they *constitutive* of critical thinking?

It is important to pause and examine the far-reaching implications on the theory of critical thinking of how we answer this question. If affective dispositions, like being fair-minded or diligent in seeking relevant information, are *not* part of our characterisation, or are at the very least, derivative of critical thinking, then we run the risk of construing a critical thinking model that is effectively a collection of separate substantive principles, similar to, say, moral-like virtues. And as Mulnix rightly points out, 'any model of critical thinking that asserts that there are definite ends at which critical thinking aims – in terms of what we should or should not believe, or how we should or should not behave – is deeply suspicious'. (Mulnix, 2012, p. 466) It would be to beg the question. If, on the other hand, affective dispositions *are* constitutive of critical thinking, then, we require some logico-conceptual framework to accommodate them. And this effectively brings us to the broader problem of motivation: Why ought one to exercise sound critical thinking? What is its point?

I, like almost two-thirds of the contributors to the Delphi Report, believe that affective dispositions are indeed constitutive of critical thinking. And, moreover, that understanding why will go a long way towards shedding some much needed light on the related and equally essential question of *why* one ought to think critically in the first place. Critical thinking may well be, as proponents of the Delphi Report have suggested, a cognitive tool of enquiry; each one of us with varying degrees of skilfulness or proficiency in the use of the tools of reason and rationality. But, and like all other skills, it requires a *raison d'être*; a *motivation* for why one ought to learn or exercise it in the first place; and, additionally, why it presumably trumps the non-rational methods of enquiry every time.

In other words, just as it is incumbent on a complete theory of morality to provide an account of *moral* motivation prompting us into action, so, too, it is incumbent on a complete theory of critical thinking to provide an account of *critical* motivation. Critical motivation has to be a necessary, antecedent and intrinsic feature of critical thinking; part of its logical or conceptual make-up, and one which warrants explanation; especially for the purposes of educating for thinking.

2. Critical Thinking as Intellectual Virtue

In her recent account of critical thinking, Mulnix sets out to directly resolve the problem of motivation. It is an account that has been informed by Michael Scriven, Richard Paul and Linda Elder's work in the area. (Scriven and Paul, 2008a, Elder, 2007). To understand how, we first need to unpack their respective contributions to the debate.

Scriven and Paul define critical thinking not unlike their 'Delphi' predecessors had done, thirty years earlier:

Critical thinking is the intellectually disciplined process of actively and skilfully conceptualizing, applying, analysing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness. (Scriven and Paul, 2008a)

Importantly, though, Scriven and Paul's definition of critical thinking as an intellectually disciplined process based on certain universal intellectual values, seems to suggest that they are cognizant of the need to account for critical motivation: All that we do, they would later argue, 'we do on the basis of some motivations or reasons. But we rarely examine our motivations to see if they make sense. We rarely scrutinize our reasons critically to see if they are rationally justified' (Scriven and Paul, 2008b)

Mulnix, goes a step further than Scriven and Paul by explicitly positing the existence of what she calls a *metacognitive awareness* on the part of the thinker for the need to improve his or her own thinking. Critical thinking, she announces, cannot merely consist in the mindless and mechanical application of logical principles and arguments, as suggested by those who support a purely *proceduralist* account of critical thinking and that includes amongst its proponents almost one third of the contributors to the Delphi Report. (See also Petress, 2004, Vaughn, 2005)

I think Mulnix is right, as were the majority of the Delphi contributors who likewise thought of the necessary habits of mind, crucial to sound critical deliberation, as being constitutive of sound critical thinking. So what, one might ask, does this 'metacognitive awareness' of the necessary habits of mind and attitudes constitutive of critical thinking derive from?

Paul and Elder seem to think that the answer lies simply in the critical thinking skills themselves. Preferring to call them intellectual virtues, rather than skills or dispositions, and sounding ominously like moral virtues, they include 'intellectual integrity, intellectual humility, intellectual civility, intellectual empathy, intellectual sense of justice and confidence in reason'. (Elder, 2007)

It is at this point that Mulnix's view diverges from those of her contemporaries. Unpersuaded that the aforementioned intellectual virtues can provide the case for critical motivation, Mulnix's solution is to introduce what she calls an antecedent foundational skill from which all the other intellectual virtues are allegedly derived:

If a thinker is to live up to the standards of clarity, accuracy, precision, consistency, relevance, and so on, then she must first be highly capable of grasping evidential relationships that hold between statements. In other words, these other important aspects of critical thinking depend upon a prior ability to recognise inferential connections. Thus, the other skills suggested by Scriven, Paul and Elder are in fact derived from this more basic foundational ability... While I agree that critical thinking amounts to an intellectual virtue, I think that the above accounts of critical thinking fail to include this foundational skill, which is necessary for the acquisition and development of the other skills contained in the intellectual virtue of critical thinking. (Mulnix, 2012, p. 467)

For Mulnix, then, critical thinking is still an intellectual virtue, but a species of reasoning that 'consists in the ability to grasp inferential connections holding between statements in order to see a progression of evidence in the form of an argument to a specified conclusion'. (Mulnix, 2012, p. 473) The better one is at being able to do this and, importantly, the more adept one is at being able to give reasons in support of one's beliefs and to guard against fallacies, Mulnix concludes, then the better at critical thinking that person is.

To what extent, then, if at all, does Mulnix's introduction of this antecedent foundational skill resolve the problem of motivation?

The answer, I suspect, is that it does not; even though her account of critical thinking as the ability to grasp inferential connections holding between statements, is a significant step forward in explaining why the 'intellectual virtues' nominated by Paul and Elder (and what the authors of the Delphi Report called affective dispositions) are constitutive of critical thinking. After all, there exists a great deal of theoretical and empirical evidence to suggest that the values or standards of clarity, accuracy, precision, etc. are part and parcel of the processes involved in the very formation of inferential connections and the guarding against fallacies; that is, to the exercise of sound reasoning itself. However, it is far from clear how one's *proficiency* at being able to grasp inferential connections, can account for the *motivation* to exercise that skill. Being able to better grasp inferential connections holding between statements does not, in itself, suffice to motivate one to exercise its use;

any more than mastering the skill of, say, solving quadratic equations will endear anyone averse to mathematics from indulging in its use. As the authors of the Minnesota Test of Critical Thinking, too, warn:

It is not enough for the critical thinker to have skills to use reason when considering ill-defined problems. The critical thinker must also desire to use the skills even in situations in which reasonable reflection may lead to discomfort or difficult decisions on the part of the thinker. That is, the thinker must be willing to use critical thinking skills ‘against’ even her or his own opinions and biases. (Edman, 2000, p. 6.)

3. Critical Thinking as Logical Disposition

Mulnix’s mistake, I believe, can ultimately be attributed to her insistence that critical thinking is an *intellectual virtue* and fundamentally a *skilled* activity of thought, and that the development of all other cognitive skills and ‘intellectual values’ (affective dispositions) involved in critical thinking, can be entirely derived from, or justified, by her single antecedent skill.

It seems that Mulnix has been tempted by the following line of thought: A justification for the employment of sound critical thinking must come to an end somewhere. As a basic and overarching belief-forming method, the ability to grasp inferential connections holding between statements provides ‘a plausible place for such an end. So there is no need for a substantive account of our justification to employ [this] basic belief-forming method. The absence of an account poses no difficulty’. (Enoch & Schechter, 2008, p. 548)

This and other similar lines of thought in the theory of rationality are unsatisfactory, and not only because they are psychologically unsatisfying. In their paper, ‘How are Basic Belief-Forming Methods Justified?’ (2008) David Enoch and Joshua Schechter explain why such arguments fall short:

In virtue of what are we justified in employing the rules of inference and other belief-forming methods that we employ? Consider, for example, the rule of inference known as the Inference to the Best Explanation (IBE). We often reason by employing IBE, or a rule of inference like it. We are often justified in so reasoning. And we are often justified in believing that we infer justified beliefs using the rule. This justification requires explanation. Why is it that we are justified in employing IBE? Why is it that beliefs inferred from justified beliefs using IBE are themselves justified?

. . . We cannot justify our use of IBE with a justification that relies upon IBE (or otherwise assumes its privileged epistemic status) since such a justification would be objectionably circular. (Enoch & Schechter, 2008, p.547)

The problem that Enoch and Schechter rightly identify, can be generalised to other basic belief-forming methods too, including, Modus Ponens, and indeed all inferential connections that may hold between statements and on which Mulnix’s theory entirely relies.

The question of ‘how it is that we are justified in employing basic belief-forming methods is thus very pressing’ (Ibid, p. 548), particularly in our quest to account for critical motivation, And a satisfactory answer to this question is one which Mulnix’s theory of critical thinking (as fundamentally a skilled activity of thought) is ill-equipped to give.

Equally problematic is that Mulnix’s stance also lures her into some unpalatable pedagogical conclusions when recommending how to instil sound critical thinking in students:

Skills are taught (or, maybe more accurately, coached) in a rather straightforward way. It involves modelling the skill, having the student practice the skill, providing feedback on his performance, and some amount of natural talent. Though I can model the skill through a list of inferential patterns and fallacies, and I can model it through being a strong exemplar of the skill, nothing can replace repetitive practice. (Mulnix, 2012, p. 474)

If I am correct, and Mulnix's antecedent foundational skill, or indeed any other basic skill or belief-forming method, cannot account for critical motivation, then what can?

The answer, I believe, lies in the basic antecedent logical disposition that all rational, thinking beings manifest; and that is the fundamental disposition, or habit of mind, we all exhibit in seeking justification in the form of evidence or reasons for the beliefs that we hold. We do, as a matter of empirical fact, seek evidence for our beliefs; reasons for our conclusions. Some of us, admittedly, are better at consistently accomplishing this feat than others. Nevertheless, as rational beings, we simply don't pluck our beliefs out of thin air. Whether consciously or not, we avoid leaving ourselves open to the *charge of arbitrariness*; that is, the logical mistake of formulating beliefs based purely on our own subjective whims. We do, as a matter of objective fact, as rational adult thinking human beings, seek reasons for the beliefs that we hold and guard or rid ourselves of those that are devoid of any evidential support. As Derek Parfit suggests, 'to be rational is to respond to reasons'. (Parfit, 1997, p. 99)

Consider, to extend on a well-known example, that I were to suddenly and inexplicably, posit the existence of, say, a pink unicorn. Suppose too that I believed it to have two defining characteristics; firstly, that it was the most intelligent creature in the universe and, secondly, that it was the shyest creature in the universe. Suppose, further still, that owing to its supreme intelligence and consummate shyness that I, nor anyone else, have, nor ever will have, any evidential support for its existence. That is, the creature would be, in principle, neither verifiable nor falsifiable; even though his existence, however improbable, would be logically possible (conceivable).

The point here is that few of us would likely subscribe to such a belief; at least not without being insincere. And the reason for this is because we would have no evidential support for it. Any evidence would lie permanently beyond one's reach. Conversely, if one were to genuinely believe in its existence, it would not be its unfalsifiability or unverifiability that would warrant our suspicions. What would warrant our suspicions, is that it would constitute a belief entirely devoid of any evidential support; of reason.

The guiding idea of my account here is simple and not too dissimilar to what Enoch and Schechter have dubbed the 'explanatory project'; the project all rational beings share of understanding and explaining the world in which we live:

This project is of fundamental importance to us. Indeed, it seems that engaging in this project is central to rationality; a thinker who does not inquire about the world around him is intuitively doing something wrong. This counts in favour of employing whatever methods are necessary for successfully engaging in the explanatory project. It is plausible that employing IBE (or a close relative) is needed for successfully engaging in the explanatory project. And this explains why we are justified in employing IBE as a basic rule of thought.' (Enoch & Schechter, 2008, p. 546)

If it is the case that we as rational agents, as a matter of empirical fact, do seek evidence for the beliefs we hold, prompted, perhaps, by what Enoch and Schechter would claim is some intuitive desire to better understand and explain the world around us, then Mulnix's overarching foundational skill, of being able to recognise inferential connections holding between statements, quite obviously has a key role to play. To be proficient critical thinkers requires being able to see clearly the inferential relationships that hold between our reasons and beliefs; between our premises and our conclusions. Mulnix's mistake is to think that this skill could double as intrinsic motivation for the exercise of effective critical thinking.

To summarise, our predisposition to avoid leaving ourselves open to the charge of arbitrariness is, I suggest, part of what it means to *be* rational (or what Enoch and Schechter would, perhaps, prefer to call part of their *rationality required* project), and this is not to be mistaken for espousing a particular intellectual virtue or ideal, or ethical-like value. After all, it is, it must again be stressed, a fundamental requirement of any sound model of critical thinking that it be objective and not assert that there are definite ends at which it is aimed. It cannot prescribe or presuppose the truth of any particular virtue or value; be it ethical, prudential, educational or, in

Mulnix's case, intellectual. (See also Ten Dam *et al*, 2011, Yang and Chung, 2009) That after all, would be to beg the question.

Critical thinking, then, is, as Mulnix rightly describes, the 'attempt to understand what it is for a belief to be justified'. (Mulnix, 2012, p. 471.) This is precisely its point. However, our propensity to provide reasons in support of our beliefs and, additionally, 'the ability to recognise what would count as evidence against one's beliefs' (Mulnix, 2012, p. 473), are not, as Mulnix contends, mere proficiencies to be honed but also are dispositions to be understood and nurtured. We are logically constrained, on pain of inconsistency and insincerity, to doing no less. This, to repeat, is what it means to be rational; at least in one sense of the term 'rational'.

That cognitive dispositions, like consistency and sincerity, can provide a working model for critical thinking and rational motivation has been amply demonstrated in Hare's early work in moral philosophy; though to argue this here is beyond the scope of this paper. (For more on Hare's theory of universal prescriptivism, see Hare, 1981.)

Conclusion

Mulnix defines critical thinking as 'the ability to grasp the inferential connections that hold between statements. However, as she adds, one also requires to be 'proficient in providing reasons in support of one's beliefs' as well as being in possession of 'the ability to recognise what would count as evidence against one's beliefs'. However, I have argued that what Mulnix describes here as a 'proficiency' is not merely a skill, but that there exists an antecedent foundational logical disposition which alone can account for the motivation to exercise that skill and from which all the other critical thinking skills and affective dispositions flow.

Philosophy, having long been involved in honing critical thinking skills and in cultivating critical thinking dispositions, is, I think, singularly equipped to nurture this competency. The Australian Curriculum model, as an exemplar of the cross-discipline embedded approach, and with its curricular-wide emphasis on critical thinking, has, perhaps unwittingly, manoeuvred philosophy *ipso facto* to the very centre of this 21st century educational debate.

Notes

1. 'Educational taxonomies map sequences of skills and processes considered to be foundational and essential for learning'. Australian Curriculum, Assessment and Reporting Authority (ACARA, 2012).
2. 'A *belief-forming method* is a method (a procedure, for instance, or algorithm, or rule) that a thinker uses in forming beliefs and other belief-like mental states. To employ a belief-forming method, thinkers need not believe that they employ the method. They need only follow it... Certain belief-forming methods – rules of inference – govern transitions between beliefs. Other belief-forming methods govern the non-inferential formation of beliefs. These arguably include the methods guiding the formation of beliefs on the basis of perception and memory.' (Enoch & Schechter, 2008, p. 550)

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