An Introduction

Following the publication of my first book, *Critical Thinking: Conceptual Perspectives & Practical Guidelines* (Cambridge University Press, 2017), I was invited by *Psychology Today* to write an ongoing blog regarding all things critical thinking, with opportunities to extend beyond that as appropriate. I took up the offer and started 'Thoughts on Thinking'. Let me be clear by saying that I never thought I would write a blog. I recall even making fun of some bloggers before having been presented the opportunity. Does that make me a hypocrite? Maybe.

Another way of looking at it is as being consistent with one of the core fundaments of critical thinking (CT) – exhibiting the willingness and ability to change one's mind. That's what I did. I changed my mind, because a specific purpose for the blog became clear to me – I had the opportunity to reach a larger, wider audience than ever before with respect to informing people about CT, its importance and how we can improve it. Indeed, that has always been the goal of my research. Does the format of how I share my message really matter? As an educator, I saw this blog as a tool for education.

Don't get me wrong; I'm not so self-important as to think that I could change the world with a blog. Honestly, for as cliché as it might sound, I genuinely felt that if the blog could meaningfully impact just a handful of people beyond the reach of my book, then it'd be worth it. Besides, it's not like I'd have to regularly produce pages upon pages; blog posts are relatively short – you need to get your point across quick and strong. If anything, it might help my writing.

So, I started the blog and one of the first things I noticed confirmed this notion: people won't read it if your entries are too long – TL; DR (too long; didn't read), as they say online. If I wanted to have meaningful impact on anyone – especially those not from an academic tradition – I'd need to maintain their attention. I had to be as succinct and concise as possible, while still maintaining clarity. However, academics often have

this implicit desire to be as accurate as possible with their wording so as to not be misconstrued. If you're familiar with academic papers, they're generally a good bit longer than a typical blog post, regardless of how 'succinct and concise' they can be. That was one pitfall of communicating with the public through the blog – I couldn't be as thorough and, subsequently, as accurate as I would like to have been with my language. Thus, pretty early on, I found myself writing the blog in an almost serialised way – constantly referring back to previous posts where complex concepts were 'fleshed out', so as to save me from reiterating the same things over and over.

On the other hand, one thing that ended up being quite a strength of the blog format was the informal nature of the communication. I found myself telling stories and getting my point across to readers through examples and analogies. As research suggests, examples and personalised anecdotes are very powerful means of communicating messages, even though they're not the most credible way of arguing for one's perspective (see Chapter 5 for more on that). Nevertheless, I figured 'fight fire with fire'; and so, I looked at the narrative structure and colloquial nature of blog writing as a potentially more entertaining means of achieving my goal of conveying educational material to readers and, also, a welcome break from the stylistically limited nature of typical academic writing.

I've taken pride in the fact that I've received positive feedback on the blog over the past eight years that it has been on the go. The most useful pieces of feedback have pertained to indicating topics of interest, different avenues to explore, new research to read and, of course, disagreement in perspective (be it from academic or non-academic readers), which inevitably leads to re-evaluation of my own thinking – a true example of CT. Simply, it has been a learning process for me just as much as I hope it has been for readers.

Over the course of writing the blog, my mind has changed on topics, new ideas have arisen and my excitement for the field of CT research has further grown. The fun I've had writing the blog and engaging readers, along with the feeling that I am, in many ways, achieving the aforementioned purpose and goal of my blog, has led me to write this book – while taking into consideration both the strengths and weaknesses of the blog medium.

The goal of my first book was to engage academics, students and anyone who wanted to learn about CT and get better at it. While I do imagine (and hope) that many readers of this book will be academics and students interested in CT, its target audience – much like my blog – is truly anyone,

regardless of academic background, who wants to learn about CT and get better at it. This book is for everyone. Thus, I'm going to take a page out of my blog-writing experience in my approach to *Knowledge Doesn't Exist*; I'm going to adopt a conversational approach – following the more informal tone and narrative structure of my blog – in discussing the various topics and concepts within this book. But, given that it is a *book*, I'm allowed more room to play with in terms of being accurate in my wording and meaning – and ensuring you, the reader, are provided a sufficient amount of information to take in and consider for yourself in your own CT. Sure, one goal of this book is to similarly tell you about what CT is and how it can be improved, just as it was in its predecessor (in light of more recent research and further consideration since my first book's publication). However, another important goal is to address the complexities surrounding what CT *really* means, in a conversational way, with respect to applying it in our modern world.

Specifically, this book starts with a thorough discussion of what CT actually is in Chapter 1, before moving on to the 'why' and 'when' of its application in Chapter 2, where the conversational tone really 'kicks in'. Chapter 3 introduces the nature of the information we think about and how that affects what we might conceptualise as 'knowledge', thus addressing the book's titular perspective. Chapter 4 discusses how we might store, retrieve and apply whatever it is we refer to as 'knowledge', before addressing the issue of such information's credibility – and how to evaluate that – in Chapter 5. Assuming we have appropriately evaluated such information, Chapter 6 presents a discussion of how one might go about changing the minds of others (and even our own) who hold misinformed views as true. Chapter 7 begins the move of our focus to a more applied look at CT, specifically through a discussion of the nature of problem-solving. Chapter 8 presents ways one might enhance their CT, particularly through training methods. Chapter 9 discusses how other people and the world around us can affect our application of CT, with respect to various examples of real-world events from recent years. Finally, Chapter 10 concludes the book and discusses the various ways one might express CT in real-world scenarios; the possibility of separating the ideal from the practical (in terms of how we might *really* go about application); as well as the implications of our considerations throughout the book, and where such associated efforts to enhance CT might focus on in the future.

The information we 'think about' in real-world settings, how we do it and the very nature of both information and thinking are fundamentally important issues for consideration. When we think critically, the process

must be applied to some information. In a very basic way, we can consider that information to be *knowledge*, regardless of whether it's true, false or even somewhere in between – a half-truth if you will. But, what is knowledge *really*? Isn't it just the information that someone stores in their head? If that's the case, then knowledge isn't necessarily 'true'; rather, it's just the way in which someone understands something. If we look at it in a collective sense, knowledge might refer to all the existing information out there, over the course of history. Regardless, once we start collating it, we start seeing discrepancies and contradictions.

Did humans evolve over millions of years to become what we are today, or were we intelligently designed by some omnipotent force to serve some purpose in the world? These rather 'foundational' perspectives represent two different 'knowledges' that often seem to be in direct contrast. So, which one is right? Or can they co-exist? For the purpose of this example, it doesn't matter because without a definitive answer (and means to check it), can we really say that one is 'knowledge'?

Isn't knowledge supposed to be correct? Sure, you might argue that this is an issue of semantics regarding how one defines knowledge – or even 'right' for that matter; but in a colloquial sense, we must question whether or not knowledge actually exists or if everything is just a series of stand-alone or integrated concepts that are considered with varying degrees of likelihood. Thus, if you care enough about an idea or concept, you will think critically about it – regardless of label – because without it, how can you *know*? Perhaps such consideration has never been so important as now, in light of the exponential increase in the amount of information created over the past twenty-five years and the 'age of misinformation' that many have argued we find ourselves living in (e.g. with respect to 'fake news', gaps between political views in the general population, various social movements and the COVID-19 pandemic). Indeed, never in human history has there been such an abundance of health information and misinformation from sources so wide-ranging in levels of trustworthiness (Abel & McQueen, 2020), noted in the recent literature as an 'infodemic' (Rubinelli et al., 2021) – and this was based on research data from before the COVID-19 pandemic!

So, when it comes down to it, this book is about CT – as a process. But it's also about the *nature* of thinking, as well as the nature of the information we think about. Happy reading and critical thinking.

CHAPTER I

What Exactly Is 'Critical Thinking'?

Despite often being considered a 'buzzword' in the realm of educational outcomes, the term critical thinking is typically thought to have been introduced in the early 1940s by Edward Glaser. However, its concept can be said to transcend such terminological tradition, given its use and value in Greek antiquity. Nevertheless, it has been argued that there remains confusion regarding what critical thinking actually is, which might help explain its 'reinvention' or 'rediscovery' every so often – like a 'buzzword' in the zeitgeist.

Critical thinking (CT) is a 'metacognitive process consisting of specific skills and dispositions, that, when applied through purposeful, self-regulatory, reflective judgment, increase the chances of producing a logical solution to a problem or a valid conclusion to an argument' (Dwyer, 2017; Dwyer et al., 2014). No wonder confusion exists over CT's definition. It's long and full of abstract concepts. Most definitions of CT are this way, even the good ones (see, for discussion, Dwyer et al., 2014; Ennis, 1998; Halpern, 2014). To be fair, 'well, they did it that way, so I should too' is not a good rationale for individuals hoping to provide a description of CT to engage such length and abstraction in defining the term; but, in this context, it does reveal a trend. CT definitions – and many definitions in general – are long for the purposes of ensuring accuracy and to avoid being vague (even if they might come across as vague or ambiguous to novices in the field). No one likes reading a *short* definition of some term and then still being baffled by what it means. On the other hand, sometimes *too long* a definition has a similar effect. So, a lengthy definition of CT for the sake of accuracy perhaps isn't a very good excuse – especially for the non-academic population who should, arguably, be at the fore in terms of a target audience.

So, I admit that my own definition, as presented earlier, may not be the most accessible one either. As a result, when I teach CT, I often break to summarise what it is as simply as possible – accruing, over the years,

various simplified descriptions. On one occasion, I was asked as part of an exercise to explain/describe CT within the confines of 140 characters (as per some social media). Here are a few of my attempts:

1. 'Playing devil's advocate'[1]
2. 'Taking your time and using caution with thinking'
3. 'Leaving emotion at the door'
4. 'The application of specific skills, dispositions and reflective judgment to draw a conclusion or solve a problem'
5. 'Skill involving the identification of the structure of an argument, the role propositions play within, as well as their sources'
6. 'Skill in assessing an argument's strengths and weaknesses regarding credibility, relevance, logical strength, balance and biases'
7. 'Skill in gathering evidence and drawing a reasonable conclusion'
8. 'An inclination, tendency or willingness to perform the necessary cognitive skills'
9. 'Understanding the nature and limits of *knowing*, and how this can influence the defence of reasoning and potential falsification'

Though the first four explanations are accurate, they remain problematic: the first three explain CT to some extent but don't truly encapsulate the 'full story'; and the fourth explanation, though comprehensive of CT's 'full story', remains vague with respect to some abstractions. What skills? What disposition? What's reflective judgment?

So, I tried further in the next five offerings, as it seemed that the first four were insufficient without further explanation. Without being able to rely on the fourth entry as an 'umbrella' for the following five, these attempts did nothing to advance progress either. None could both address the 'full story' and ensure enough clarity for any real meaning to be derived by those unfamiliar with educational research – or perhaps even those *in* the field of educational research!

Though I received some positive feedback from this exercise, I ultimately viewed it as a failure (making the positive feedback worry me a bit – we'll get to that). But, despite such failure, something positive

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[1] Refers to arguing against your own point as a means of ensuring multiple perspectives are accounted for within decision-making. Essentially, it makes you ask yourself 'what if I'm wrong?' and forces you to develop an alternative conclusion/solution, working well to combat confirmation bias (see Chapter 6). I explain it here because, though I assume many readers are familiar with the phrase, on one occasion following my recommendation of 'playing devil's advocate', I was questioned by a student (who had not previously heard the phrase) regarding how I could recommend messing around with the occult. Yikes. This is just one of many examples of why we need CT.

emerged in my thinking – a great lesson was learned. It may be the case that efforts made to simplify the concept of CT actually lend themselves to increasing the confusion, uncertainty and/or debate. The reality of why good CT definitions are as long as they are is because CT is quite a complex concept. Indeed, conducting CT is not easy either; otherwise, everyone would be doing it and we'd live in a world with far fewer poor decisions. It is, perhaps, the case that long explanations are necessary to ensure not only accuracy but clarity as well (albeit with some level of needing to break it down to its component parts). With that, the issue of defining CT has never been easy.

In a 2007 study, the University of Western Australia found that while 92 per cent of academic staff believed it important to provide students with opportunities to engage critical evaluation of their personal beliefs and perspectives with a view towards changing them, 54 per cent of students felt that they were not actually provided such opportunities by their educators. A potential explanation can be found in the response of one university lecturer interviewed as part of research by Lloyd and Bahr (2010) exploring qualitative descriptions of CT provided by academics: 'we expect students to do it [think critically], but now you are questioning me on my understanding of it, I wonder if I actually understand it myself'. Further reinforcing this notion, Lloyd and Bahr found that only 37 per cent of academics involved in instructing or assessing CT in university courses at least acknowledged the dispositional and self-regulatory aspects of CT; and only 47 per cent described CT in terms of involving processes or skills! Assuming there is a 'trickle effect' (i.e. from educators to students, to the wider population), if those teaching CT are in the dark about it, how can we expect others to know its meaning?

For many years, I believed one of the biggest issues faced in the area of CT was that of debate regarding definition – that too many definitions exist and state disparate things. However, it's also the case that many, if not most, of the more highly cited definitions agree that CT is a purposefully engaged process of cognitive and metacognitive strategies, consisting of both skills and dispositions (e.g. Dwyer, 2017; Ennis, 1996; Halpern, 2014; Ku & Ho, 2010a; Perkins & Ritchhart, 2004). Indeed, forty-six experts in the field of CT gathered in 1988 to discuss conceptualisation and definition, as part of the Delphi Report. They identified analysis, evaluation and inference as the core skills necessary for CT (i.e. through 95 per cent consensus agreement), alongside a number of positive dispositions towards thinking (Facione, 1990a). Despite this, it is often concluded that debate lingers on. Perhaps this is a result of historical

convention (i.e. with respect to describing such a complex concept) or not seeing the level of CT development we might hope to see in light of a standard description of CT (see Chapter 8 for further discussion).

Sure, it could be the case that 'debate lingers on' (particularly with respect to the more intricate details) to some extent, but perhaps the real issue is that researchers in the field of CT fail to see beyond the boundary of expertise. Just because we 'get' what CT is, in the broad sense, doesn't mean everyone else does. So, maybe it's not a matter of whether the experts are on the same or even a similar page regarding what CT is (with respect to the intricacies); rather, perhaps the problem is what's conveyed to others – be they teachers, students or the public (alongside their willingness or ability to engage it).

Both for good and bad, *critical thinking* has become a buzzword. We all know it's important, useful and we want both others to do it and to do it ourselves; but, maybe it's the case that, consistent with the qualitative excerpt earlier, many educators don't really know what 'critical thinking' is and/or simply haven't researched it themselves (see also Eigenauer, 2017). *So, what can we do?*

There's the very idealistic academic's answer, of course, which would suggest that initiatives need to be developed to reinforce a better understanding of CT and its instruction as part of teaching programmes. Though I agree with this sentiment wholeheartedly, I'm also not naïve. Such initiatives cost money, and more often than not, it seems, education is underfunded (especially if a specific topic seeking funding is not on trend in the 'zeitgeist'). Moreover, not everyone has the opportunity to engage such education. Couple that with the fact that there is no guarantee that such an initiative would work.

Playing devil's advocate (consistent with the earlier recommendations), I can imagine being on a teacher-training course and not really giving my all to topics in which I have little interest. It's not about being a 'bad student' in this context, but rather having only so much time to complete *all* coursework and maintain other concurrent responsibilities. Sure, some individuals will; but, many won't – and again, we must not assume everyone's interest in the field. I, along with many colleagues in the past, have 'got stuck' with teaching topics in which we have no interest. Why should CT be any different for anyone else?[2]

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[2] At the start of a new semester, I was introduced to a new lecturing colleague (from a different department in one of the institutions where I've worked) and noticed they were carrying a book on CT. I won't mention the author of said book for reasons of courtesy, but it's not a book I would rate

Of course, I don't mean this as an indictment against educational systems or individual teachers not interested in teaching CT. Rather, it's simply an observation that may have a seed of truth; in which case, the implications are important. It needs to be made clear that if one is not getting training in CT to the requisite standard – or if they want supplementary material – they should be independently engaging literature on CT. This goes for educators, students and people interested in CT alike. In fact, that's part of the impetus for this book and this chapter specifically: to provide readers with the full story of what CT is, thoroughly exploring its complexities, but in a manner that clarifies the abstractions.

A better understanding of CT facilitates many positives, especially for those who engage it – CT allows people to gain a better understanding of complex information (Dwyer et al., 2012; Halpern, 2014); it facilitates good decision-making and problem-solving in social and interpersonal contexts (Gambrill, 2006; Ku, 2009); it decreases the effects of cognitive biases and heuristic thinking (Facione & Facione, 2001; McGuinness, 2013); and it yields a higher likelihood of better grades, becoming more informed and more active citizens, and being employable (Barton & McCully, 2007; Holmes & Clizbe, 1997; National Academy of Sciences, 2005). Arguably, these notions have been given a 'louder shout' over the past fifteen–twenty-five years in light of advancing technology and growing political, economic, social and health-related concerns (Dwyer, 2023). Thus, we shouldn't rely or wait on others to develop our CT through training, particularly when opportunities to engage good CT training aren't always feasible. So, let's work it out for ourselves and go back to the drawing board to break the definition down. CT is:

> A metacognitive process consisting of a number of sub-skills and dispositions, that, when applied through purposeful, self-regulatory, reflective judgment, increase the chances of producing a logical solution to a problem or a valid conclusion to an argument. (Dwyer, 2017; Dwyer et al., 2014)

as particularly 'good'. I jokingly asked why they didn't go with the book by Chris Dwyer, and so as to not look so 'full of myself' upon introduction, despite it being a joke (one can't assume their humour will land for everyone), I mentioned other books by researchers I highly rate (e.g. Halpern and Ennis). The reply I got was concerning for someone in my field. This lecturer – who would be delivering a full semester module on CT – had not heard of those other researchers and had only been 'landed' with the module in recent days. The book they were holding was one they 'just found' in the library. Given that CT was not a field that particularly interested them (hence being 'landed' with the module), coupled with the lack of time to adequately prepare for the module, all I could think about was how much of a missed opportunity this class might well turn out to be for the students.

In the definition, there are three key concepts that require attention: (1) skills, (2) dispositions and (3) reflective judgment.[3] The remainder of this chapter will address each in turn.

Skills

Consistent with the Delphi Report (Facione, 1990a), analysis, evaluation and inference are the core skills necessary for CT. This is not to say other cognitive skills are not important – they are, and fundamentally so, namely memory and comprehension (e.g. see Anderson & Krathwohl, 2001; Bloom et al., 1956; Dwyer et al., 2014). For example, if you can't remember specific information and understand it at an appropriate level, how can you think critically about it (see, for example, Halpern, 2014; Maybery et al., 1986)? However, beyond a foundational ability to store and retrieve information learned and encoded as knowledge, the CT process begins with analysis.

Analysis is used to identify and examine the structure of an argument,[4] the propositions within an argument and the role they play within this network of reasoning (e.g. the main conclusion, the reasons of support, objections to propositions and inferential relationships among them), as well as the sources of the propositions. Through such analysis, an argument's hierarchical structure begins to appear. This structure can be extracted (e.g. from dialogue and text) for subsequent evaluation.

Evaluation refers to the assessment of propositions and claims (identified through the previous *analysis*) with respect to their credibility, relevance, balance, bias as well as the logical strength among propositions. Such assessment facilitates justified judgment regarding the overall strength or weakness of an argument. If an argument (or its propositions) is not

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[3] Though the term 'metacognition' (i.e. thinking surrounding one's own cognitive processes, their regulation and their outcomes; see, for example, Flavell, 1979; Ku & Ho, 2010b) is important, it's role as 'thinking about thinking' is self-evident in discussion of the three key concepts addressed, particularly in reference to reflective judgment.

[4] An argument, as conceptualised throughout this book, refers to any verbal-based representation (e.g. through written or spoken word) of two or more propositions that interact in a manner to justify (or refute) some standpoint, typically signposted through words such as 'because', 'but', 'however', 'yet', 'therefore' and 'thus'. The 'heatedness' of debate plays no role in its classification as an 'argument'. We engage arguments all the time, across a variety of different forms; for example, a TV commercial provides a one-sided argument for why you should purchase some breakfast cereal, an editorial in the newspaper pushes an argument for a policy change, a two-sided argument at work determines which pitch is best to present to your potential client, or a two-sided argument with your spouse could be about how best to potty-train your toddler.