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Book review

Samuel, MA, Dhunpath, R & Amin, N. (eds.). 2016. *Disrupting higher education curriculum: undoing cognitive damage.* Rotterdam: Sense Publishers.

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In my years as an engineering lecturer, I have often thought to myself, "are we not doing a disservice to our students?" I have grappled with the view that higher education curricula seem to be training students solely for the purpose of entering a vocation as opposed to supporting students on a journey of intellectual emancipation. I could never find the precise words to describe my inner understanding of how the outdated approaches to curriculum design employed in higher (as well as primary and secondary) education have been damaging students. *Disrupting Higher Education Curriculum: Undoing Cognitive Damage*, edited by Michael Anthony Samuel, Rubby Dhunpath and Nyna Amin, helped me not only to find the precise words for my experience – cognitive damage – but also helped me to identify and understand the mechanisms by which higher education curricula are propagating cognitive damage. More importantly, the book proposes meaningful ideas for curriculum redesign that may lead to cognitive emancipation for students and help higher education institutions rediscover their relevance in society.

The purpose of the book is captured succinctly in the title – the primary aim is to provide theoretical, philosophical and practical guidelines that the reader can employ in redesigning higher education curricula so as to undo cognitive damage. As the editors explain, the book is a collection of writing from emergent as well as established researchers in the field. These contributors are drawn from various disciplines, albeit primarily from the field of education, and are direct and unapologetic in their views. The intended audience are those that play a role in curriculum design – academics, management in higher education institutions, and higher education policy makers (although, I would

argue, much of this book has relevance for primary and secondary education as well). My perspective is that the reader need not be a specialist in the field of curriculum design or reform to grasp the insights and propositions offered.

The book is arranged in chapters which are self-contained pieces that tackle various themes or factors in curriculum design such as race, gender, language, decolonisation, digital migration and open versus borderless curricula to name a few. The chapters are divided into three parts. The first part contains chapters that deal with the definition of cognitive damage and proceed to philosophically outline the mechanisms by which cognitive damage is fostered and supported. Part two outlines alternative approaches and the practical implementation of such approaches in shifting curricula so as to undo cognitive damage. The concluding chapter forms the third part which explores curriculum reform through "curriculum without borders" which the author differentiates from an open curriculum.

In this review, I have broken an academic convention prominent in engineering and the natural sciences – I referred to myself in the first person. I will proceed by breaking another convention: rather than critiquing this book or comparing its quality to pertinent scholarship in the field, I will instead provide an introduction to some of the themes covered in the book by relating them to my personal engagement with curriculum in the discipline in which I teach (engineering). Given the title of the book, I hope that this break from convention will be forgivable.

Engineering students are passionate when discussing pertinent issues such as the role of engineering in solving problems around poverty and sustainability, as well as the economic and social implications of engineering activity. They have deep and insightful viewpoints. However, societal norms and engineering curricula convince them that the accuracy of the calculation is more important than the motivation behind it. This is done by relegating the above issues to the fringe in the form of 'complementary studies' modules. Thus, students do not truly perceive the extent to which engineering has the potential to effect positive social change. They begin to perceive the pursuit of a vocation and financial success as emancipation rather than seeking intellectual and moral liberation. Furthermore, complementary studies modules are often directly linked to the vocation, for example, management and communication modules. In this way, the student is not exposed to viewpoints from other discourses which may provide counter-balance and a greater view of the world.

To elaborate, would prominent exposure to discourses outside of engineering allow current and future generations of engineers to see the potential dangers of an even further mechanised and artificial intelligence-reliant society? One chapter in the book discusses how the removal of history of architecture from the architecture curriculum has dealt cognitive damage to architecture students. Similarly, has the glossing over of the industrial revolutions as great steps in technological advancement skewed engineering students' perception that technological advancement equates to positive societal change? If so, then we have failed to give engineers grounding in the impact such activity had on unemployment, poverty and subjugation, and how engineering can be used to reverse the effects of such impacts.

When reading the chapter on "The illusion of solid and separate things", I realised that conventional engineering curricula are defined by standalone modules that have sparsely discussed links to other modules. In this separatist method, students are expected to find the links between modules and are

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only tasked to do so in exit-level, capstone projects. Yet, students are taught a systems-based approach which requires examining separate pieces as a unified whole. This contradiction causes ambiguity and produces students who have missed the hidden, intrinsic links embedded in the curriculum.

Many of the themes in the book left me with a greater understanding (too exhaustive to detail here) of some of the mechanisms by which traditional engineering curricula root and propagate cognitive damage. Moving forward, the challenge for me is to use the insights from this book to play a role in enacting a shift in engineering curriculum to undo such damage.