

A VOLUME IN
CONTEMPORARY PERSPECTIVES IN
PHILOSOPHY AND TECHNOLOGY

HACKING EDUCATION IN A DIGITAL AGE

Teacher Education,
Curriculum, and Literacies

Bryan Smith
Nicholas Ng-A-Fook
Linda Radford
Sarah Smitherman Pratt, Editors

Hacking Education in a Digital Age

Teacher Education, Curriculum, and Literacies

A Volume in Research in
Contemporary Perspectives in Philosophy and Technology

Series Editors

Nicholas Ng-A-Fook
University of Ottawa

Bryan Smith
James Cook University

Cristyne Hebert
York University

**Contemporary Perspectives in
Philosophy and Technology**

Nicholas Ng-A-Fook, Bryan Smith, and Cristyne Hebert, Editors

*Hacking Education in a Digital Age:
Teacher Education, Curriculum, and Literacies* (2018)
edited by Bryan Smith, Nicholas Ng-A-Fook,
Linda Radford, and Sarah Smitherman Pratt

Hacking Education in a Digital Age

**Teacher Education, Curriculum,
and Literacies**

edited by

Bryan Smith

James Cook University

Nicholas Ng-A-Fook and Linda Radford

University of Ottawa

Sarah Smitherman Pratt

University of North Texas



INFORMATION AGE PUBLISHING, INC.

Charlotte, NC • www.infoagepub.com

Library of Congress Cataloging-in-Publication Data

CIP record for this book is available from the Library of Congress
<http://www.loc.gov>

ISBNs: 978-1-64113-200-8 (Paperback)

978-1-64113-201-5 (Hardcover)

978-1-64113-202-2 (ebook)

Copyright © 2018 Information Age Publishing Inc.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, microfilming, recording or otherwise, without written permission from the publisher.

Printed in the United States of America

CONTENTS

Acknowledgments	vii
Introduction—Hacking Education in the 21st Century <i>Bryan Smith, Nicholas Ng-A-Fook, Linda Radford, and Sarah Smitherman Pratt</i>	ix
1. An Existential Hack of Neoliberal Discourses in Education <i>Sean Wiebe</i>	1
2. Hacking Minds: <i>Curriculum Mentis</i> , Noosphere, Internet, Matrix, Web <i>Yu-Ling Lee and Stephen Petrina</i>	15
3. “If the Stars Are Spotlights, I Wanted the Sun”: Hacking Children’s Literature in Raziell Reid’s <i>When Everything Feels Like the Movies</i> <i>Linda Radford</i>	37
4. Curricula of Identity-Subjectivity in Distributed Social Media Spaces <i>Paul William Eaton</i>	53
5. Hacking “The Matrix”: Teacher Ontology at the Abyss of the Žižekian Real <i>Brian R. Gilbert</i>	73
6. Cyborg Politics: Body-Data Assemblages and the Limits of Institutional Resistance <i>Nichole E. Grant and Pamela Rogers</i>	91

vi CONTENTS

7. New Literacy Threshold Concepts as a “Life Hack” <i>Patricia Allass and Sean Wiebe</i>	105
8. Hacking Structures: Educational Technology Programs, Evaluation, and Transformation <i>Michelle Schira Hagerman, Leigh Graves Wolf, and Heather Woods</i>	121
9. Digital Learning as Aesthetic Experience: A Call for a <i>Meaning-Full Curriculum</i> <i>Mei Wu Hoyt and Milan Jilka</i>	139
10. Hacking My Way Through Digital Discomforts as a Literacy Teacher Educator <i>Elisabeth Johnson</i>	159
About the Authors.....	177

ACKNOWLEDGMENTS

I, *Bryan Smith*, would like to first thank the editorial team for working together on this project. Undertaking this project with each of my colleagues has been a wonderful learning experience and I know that my own teaching and scholarship is better because of their suggestions and thoughts. I am also grateful for my partner, *Cristyne*, whose support and generosity continues to make these endeavours possible. Finally, I would like to thank the contributors to this collection for helping me to rethink what it means to “hack” education and the foundations of teaching and learning itself.

I, *Linda Radford*, would like to extend my gratitude to my coeditors for their dedication and hours of work to bring this collection together. To *Judith Robertson*, my mentor, in bringing this collection together, whose work as a teacher and scholar continues to inspire me. Thank you to my family whose ongoing support enables me to pursue writing endeavors that “hack” education. Finally, to my colleagues, *Tasha Ausman* and *Avril Aitken* who have engaged with me over the pressing and ongoing questions of identity emerging in youth fiction, which led to my chapter on *Raziel Reid’s When Everything Feels Like the Movies*.

I, *Sarah Smitherman Pratt*, wish to acknowledge the countless hours of work that *Bryan Smith* has contributed to editing the contributing chapters, as well as *Nicholas Ng-A-Fook* for continuing to keep us moving forward through his management skills and graduate student support. To *Bill Doll*, whose life inspires me to live differently in this world, I thank you for all you do to inspire me to listen with hope and in anticipation for how diverse

perspectives will impact all of our understandings in rich and meaningful ways. And to Donna Trueit, who encourages me to see the beauty in those around me. Lastly, to my girls who continue to challenge me to live life to the fullest, that no matter what adversity we face, we will get through it. Together we are stronger. Thank you for the privilege of being allowed to be part of this book. I have learned from editors and authors alike, and I am inspired to find ways to hack education in my own work.

I, *Nicholas Ng-A-Fook*, must first thank all the contributing authors. Your ongoing innovative interdisciplinary research and teaching across the fields of philosophy, digital technologies, and curriculum studies make groundbreaking collections like this possible. I would also like to acknowledge the commitment of my fellow editorial team to the vision and academic rigor of *Hacking Education in a Digital Age*. No doubt, this collection promises to be the first of many in our series *Contemporary Perspectives in Philosophy and Technology*. Our editorial team would also like to thank Jesse Butler, Tylor Burrows, Jonathan Weber, and Carol Lee who all worked as committed University of Ottawa research assistants and copyeditors on the initial drafts of the collection. Finally, I would like to offer my deepest thank you and gratitude to my mentors who once were, or are still at, the *Curriculum Theory Project* at Louisiana State University. Their curriculum theorizing continues to inspire my thinking and writing as a form of “hacking” education.

INTRODUCTION

HACKING EDUCATION IN THE 21ST CENTURY

**Bryan Smith, Nicholas Ng-A-Fook,
Linda Radford, and Sarah Smitherman Pratt**

The Matrix is everywhere, it's all around us, here even in this room. You can see it out your window or on your television. You feel it when you go to work, or go to church, or pay your taxes. It is the world that has been pulled over your eyes to blind you from the truth.

(Wachowski & Wachowski, 2000, p. 300)

Furthering the Wachowskis' curricular and pedagogical assertions, digital technologies now enter the social, political and subjective corners of one's public and private rooms. They pour in like rays of sunlight through a window, or shadows slipping underneath the door, slowly filling the room with darkness, the *real* with *virtual reality*. And yet, what are we actually seeing, that is, the *real* or the *virtually real*? If there is a line—a threshold or window—separating the *real* from the *virtually real*, it has become an increasingly blurred one. Despite the potential educational unease, the continual evolution of technology and its respective corporate proliferation of mediated realities into our living rooms, our classrooms, via social media platforms like Twitter, Facebook, or Google Classroom seems to be unstoppable.

Hacking Education in a Digital Age:
Teacher Education, Curriculum, and Literacies, pp. ix–xxiv
Copyright © 2018 by Information Age Publishing
All rights of reproduction in any form reserved.

The 1999 film *The Matrix* foreshadowed many epistemological, ontological and ethical questions that now trouble us about our technological world. During the film, Morpheus, an enigmatic freedom fighter and a critical pedagogue, tells Neo that machines have enslaved humanity. Further, he explains that the world Neo has known his whole life is nothing but a sophisticated computer program called the *matrix*.¹ Neo has a choice either to stay happily entangled in his *virtual real* or to be free and face the ugly truth of the *real*. After Neo is freed from his enslavement, Morpheus introduces him to another computer program called the *construct*—a digitally constructed space, another *virtual real*, in which Morpheus can bring into existence anything by willing it with his mind. Both programs oblige us, as viewers, to contemplate the reach of what *is* and *is not virtual or real*, and from what or whose perspective reality or virtual reality is created and lived. Questions of agency are central to this contemplation.

The Matrix, viewed as an allegory, offers a warning of the possible dangers the future holds, but it also offers possibilities for reimagining our relationships with the technologies that pervade the social, political and bodily realms. In this regard, *The Matrix* provides insights into both how we imagine technology and are imagined by it. The film asks viewers to reconsider how technologies both shape and are shaped by our inter-techno-subjective relations. The film asks viewers to examine the dominant role machine learning promises to play in our lives through Neo's unique characterization as both hacker and gamer. As viewers, we watch him respond to machine learning at first tentatively and then as he practices and acquires skill, to the point where he can manipulate the digital coding within which he participates and plays. Here Isin and Ruppert (2015) remind us that social, political, and cultural contexts are also powerful forces. They impact how we are shaped by the presence or absence of digital technologies. Yet, we would be remiss not to acknowledge that while context plays a key role in determining how digital appendages like smartphones attach themselves to our lives, and how with them we can attach ourselves to a world beyond the reach of our fingers, digital technologies not only fill the spaces of our homes and places of work, but also fill our bodies and souls (as *The Matrix* reminds us). Through these educational, philosophical and technological contexts, in this edited collection we examine the pedagogical and curriculum implications of “hacking” education in the 21st century.

Hacking Kung Fu

To begin to understand the meaning of hacking, we turn to a scene in *The Matrix* where Morpheus invites Neo to reconsider the socially con-

structured limits imposed on his lived experiences. In this scene, Morpheus and Neo enter a dojo and begin to spar. Morpheus's goal here is pedagogically instructive. Within the digitally constructed space of the *matrix*, Morpheus compels Neo to consider both the imposed (curricular) limits and his pedagogical responsibility as a student to respond to these (social) constraints. During this educational moment, Neo (un)learns the bounds of the possible as he pushes up against the "reality" of the *matrix*. Morpheus asks Neo to understand that what he thought was once impossible is only a socially constructed limit. "What you must learn," Morpheus says, "is that these rules are no different than the rules of a computer system. Some of them can be bent. Others can be broken. Understand?" (Wachowski & Wachowski, 2000, p. 318). During this pedagogical exercise, Neo finds himself unable to keep up with Morpheus. He cannot land a successful punch or kick, not because he is incapable, but because the two of them are playing by different rules. In an effort to advance Neo's skills, Morpheus asks him: "Do you think my being faster, stronger has anything to do with my muscles in this place?" (Wachowski & Wachowski, 2000, p. 319). This situational moment within the constructs of the *matrix* is one of realization for Neo; he is forced to reconsider the very nature of reality, his social imaginary, and the rules that forge his understanding of what reality can be in that situated moment.

In the same way that Neo learns to reimagine his socially (digitally) *constructed* world by playing with the rules of the game, hackers also bend and break the rules of the socially or digitally *constructed* world we live in. Sometimes it takes immediate effect, and sometimes it is initiated when a specific condition is met. Regardless of its manifestation, a hacking event almost always builds on deconstructing code toward reconstructing something else. Hacking as a malicious intrusion or hacking as a reimagining a construct represents an intrinsic philosophical tension that is explored throughout the book. In what follows, we articulate what this tension means for education. Moreover, we ask what it means to consider "hacking" as both an intrusion or as a creative response to the constraints of education in contexts structured by the reach of digital technologies.

What Does It Mean to "Hack?"

In the middle of the 20th century, in Cambridge, Massachusetts, members of the Tech Model Railroad Club (TMRC) at the Massachusetts Institute of Technology (MIT) were building and working away on model trains. At first glance, their specific work did not appear to be an important contribution to what now constitutes our technological history; model trains, after all, are not often seen as a means through which to catalyze

important considerations of language and/or technology. Yet, it was there in Building 20 at MIT, “a shingle-clad temporary structure built during World War II” where “hacking” entered into the vocabulary of tinkerers, builders and explorers (Levy, 2010, p. 7).

The hackers of the TMRC. The TMRC was divided into two groups —“The Knife-and-Paintbrush Contingent” obsessed with the aesthetics, historical and emotional dynamics of model trains and the “Signals and Power Subcommittee” which occupied itself with *The System*, “a collaboration between Rube Goldberg and Wernher von Braun” that focused on the operation and mechanics of the trains (Levy, 2010, p. 8). “S&P people,” Stephen Levy (2010) argues, “were obsessed with the way *The System* worked, its increasing complexities, how any change you made would affect other parts, and how you could put those relationships between the parts to optimal use” (p. 8). The S&P people built their own vernacular to describe the kind of tinkering, engineering and optimization that they focused their energies on. Broken machinery, for example, was “munged” (mashed until no good) and garbage was “cruft” (pp. 9–10). Included in this vocabulary was the word “hack,” “a project undertaken or a product built not solely to fulfill some constructive goal, but with some wild pleasure taken in mere involvement” (p. 10). It is here, in this collection of linguistic adaptations and portmanteaus, that “hack” was given the kinds of respect and meaning that it has today.² From this early definition, we learn something important about hacking that deviates from popular cultural uses of the word that emphasize the destructive and nefarious intentions of hackers. Far from an act undertaken with malicious intent, hacking is ultimately pedagogical, an act wherein people seek to unravel, deconstruct, devise and create in support of our desires to know more about the worlds we live in.

Despite the origins of the word rooted in a context of “productive destruction” where that very deconstruction is catalyzed by desires to build knowledge, it is the destructive essence of the word that continues to have a hold over the social imaginary of what it means to “hack.” In this collection, we reframe the focus back onto the productive capacity, while not denying that the popular use of the word has social clout. Here, then, instead of simple destruction, hacking is understood as both nefarious and “destructively constructive,” a breaking down for the purposes of making something better. It is also about pleasure; hacking is an act, an ethos and a belief about an enterprise that is rooted in a deep love of creation and learning. Hacking, in this sense, is about “immersing oneself in the guts of the machine” (Rose, 2003, p. 43). Or, as Raymond (2001) argues, it is about people coming together towards a shared goal to develop and create. Hacking is about sinking into one’s passion and engaging in an activity of creating and rethinking, spurred by an affinity for innovation and not exclusively about destruction for destruction’s sake and/or economic gain.

While hacking certainly does suggest a breaking or chipping away, a connotation all too familiar in public technological discourse, we want to stress that hacking is primarily about satisfying a persistent penchant for inquiry and a clamoring for creative curricular and pedagogical possibilities both inside and outside the contexts of 21st century education.

A theory of immersion, ends, and ingenuity. If we take seriously this idea that hacking is about the desire for productive ends, what might it mean to hack education? Schooling certainly is (re)productive—it produces citizens, workers, and systems of compliance and, as mentioned earlier, increasingly the productive dynamic of education centres on shaping students into workers for the digitally connected economy. Education in this neoliberal context does not “hack” ideas, histories, and knowledges, as creative ingenuity is elided in favour of the (re-)production of the “isolated, self-perfecting, neoliberal subject, [who is] focused on their responsibilities to the state” (Kennelly & Llewellyn, 2011, p. 911).³ Within a pedagogical context dominated by neoliberal concerns about the creation of market subjects, the myopic understandings of “hacking” from popular culture become useful in reconstructing a neoliberal subject as one who ought not to engage in a practice of “productive destruction.” Within this context, we suggest that hacking is necessary, and for this reason, we put forth the following theory of hacking that introduces not just “hacking” to education but privileges the “productive destruction” that is key to hacking beyond popular media representations.

Hacking is, by design, a productive force. Consequently, any theory of hacking as it pertains to education ought to honour the spirit of inventiveness and determination to create that is embodied in the work that engineers such as those in the TMRC undertook with such passion. This theory will necessarily also require, to use the language of engineering, some retrofitting to more sufficiently fit with a theory reflective of the kinds of thinking and theorization needed in education. Such retrofitting, however, requires the use of technological language and meaning which itself occupies a potentially problematic spot in education and in curriculum theorizing more broadly (Pinar, 2013; Pinto, 2016; Smith, 2016; Weaver, 2010). Nonetheless, we argue that the philosophical essence of hacking, and a focus on the “productive destruction” central to its etymological roots, can serve as a powerful theoretical metaphor for the work that we can do as “hackers” in education.

A theory of hacking education. First, as Rose (2003) reminds us (and as noted earlier), hacking is about “immersing oneself in the guts of the machine” (p. 43). Here, machine ought to be replaced by “profession,” “responsibility” or “passion” and focus be drawn not to the mechanics of teaching but rather, the ethical and pedagogical commitments. Said differently, hacking education is about immersing oneself in the commit-

ments that underlie one's attraction to the educational project. Many of the authors in this collection immerse themselves in versions of these metaphorical "guts" whether they are pedagogical, epistemological or ethical. While such curricular immersion is varied in its character, its pedagogical work involves tinkering, where possible, and reimagining the often repetitive and prescriptive institutional rules of schooling.

Second, a "hacker sees computing as an end in itself rather than as a means to balancing a budget or writing a letter" (Rose, 2003, p. 43). In many respects, schooling as an educational enterprise is conceptualized as a means to an end. For example, practices of streaming pre-determine possible futures as professionals and increasingly, schools in places such as Ontario where teachers are expected to teach "financial literacy" across various disciplinary areas. Rather than articulating a vision of education informed by the love of learning that shaped philosophical inquiry in the Greek tradition, schooling often becomes a means of "balancing a budget or writing a letter" (p. 43). Learning within this socially constructed reality becomes less about joy and more about future success. In the United States and elsewhere such conceptualizations of education are often referred to as 21st century skills.

Contrary to this, an educational hacker sees the educational project as a both/and logic of process and product, a bifurcation that implies a movement between understanding education as the means and education as the end in itself. Education is an intellectual endeavour sought after, challenged and worked within and against. Much like the TMRC S&P team, who tinkered and tweaked because they loved learning and building, educational hacking is about the practice, not of meeting objectives or targets. Indeed, as Pinar (2011) argues, "that—the loss of adventure—is the catastrophe of objectives" (p. 15). Hacking is a reclamation of that which is lost—the adventure—and a critique of objectives, rigid targets, and instrumental processes as the motivating factor for teaching.

Finally, as cited in the *Jargon File*, a slang dictionary and the "[hacking] culture's defining document" (Raymond, 2001, p. 5), hacking is "an appropriate application of ingenuity" (Raymond, n.d., para. 2). It is from this perspective that some of our authors enter into the idea of hacking, exploring the possibilities and limits of ingenuity within an institutional framework that all too often renders ingenuity inert by positioning it as something that must fit within the narrow limits of rules, obligations, curricula and pedagogical "best practices" or assumed to be "what works." This is an important notion to entertain, for scholars have long noted that classrooms can be spaces of producing compliance. Speaking nearly 40 years ago, for example, Apple and King (1977) observed that "[kindergarten] children were relatively powerless to influence the flow of daily events, and obedience was more highly valued than ingenuity" (p. 353).

Such concerns persist now, albeit differently, in a “21st century” context where schools and educators more broadly are called to “develop the next generation of technolaborers” who are compliant and instrumental in their thinking and practice (Ng-A-Fook, 2016, p. 30). It is worth reiterating at this point that hacking is a process of explicitly resisting obedience; hacking is about defying conventional and prescribed uses for objects and is thus intrinsically ingenious. Hacking, as the “application of ingenuity,” requires educators to spurn obedience to common-sense patterns of acting/teaching/being. Ingenious solutions demand, by definition, inventiveness and originality that are not always possible by the (artificial) limits of “traditional” classroom practices.

Our theory of hacking speaks to what is often missing in conversations of “hacking” in popular culture, namely, an understanding of hacking as a generative act (whether this be in the form of lessons and/or tools). Applying and using such an understanding in our own theories, however, cannot deny the importance of black hat hacking (purposeful intrusion and theft of content for reasons of malice) and the threat this poses to the ever-increasing encroachment of technologies into our lived realities. If we take seriously some of the implied cautions offered by something like *The Matrix*, we necessarily need to attend to the homonymous duality of hacking as destructive and hacking as a site of fruitful creative possibilities to ensure that students and teachers are aware both of the nefarious implications and the productive possibilities.

Navigating Tensions

As noted earlier, one of the defining features of the social imaginary around hacking is the perception that the act is exclusively oriented to destructive ends. While we argue that there needs to be a move away from this limited definition, we would be remiss not to acknowledge its role in how hacking is often imagined. Popular culture often focuses on this dynamic of hacking, ignoring the historical context from which the term arose. In many respects, this is not surprising given both the tendency towards sensationalism and dramatic effect in the media and legitimate concerns over one’s data, privacy and control over content that they produce. To the media’s credit, concerns over black hat hacking become more important to consider given the ever-increasing global connectedness.⁴ This connectedness extends beyond the proliferation of connected devices—we as people become “hackable” in a postmodern context where technology’s invasiveness blurs the line between person and technology (Hayles, 1999; Weaver, 2010).

The philosophical postulations and concerns expressed through the narrative of *The Matrix* can be seen in tangible ways in life today as technology invades every facet of our lives. Swedish startup EpiCenter, for example, “offers to implant its workers and startup members with microchips the size of grains of rice that function as swipe cards: to open doors, operate printers, or buy smoothies with a wave of the hand” (Brooks, 2017, para. 2). These invasions of bodily spaces become potential sites for black hat hackers, something highlighted in a recent news article about the potential exploitability of pacemakers and defibrillators, a concern that emphasizes the ever-increasing reach of black hat hacking (Abdollah & Perrone, 2017; RedOrbit, 2013). This, of course, is complemented by nonbodily hacking which, according to a research report by Juniper Research (2015), could cost more than 2 trillion dollars by 2019. Part of this, the report suggests, is due to “the rapid digitisation of consumers’ lives” (para. 1). Indeed, the push to further the reach of the “Internet of things” (the effort to connect as much as possible to the Internet) and the digitization of consumer life has already been subject to hacking, including automobiles and coffee machines (Greenberg, 2015; Margaritelli, 2017). When considering this holistically, we begin to see how the infection of technology is virulent in nature, digitizing every dimension of human life in the name of “convenience” and “utility.” *The Matrix*, in this respect, is not so much allegorical as it is a reflection of contemporary life.

Yet, despite this, it is easy to fall into the fatalism of this critique and, in so doing, fail to see the potential offered by a return to the historical context that provided popular vocabulary with the term “hacking.” This is not to minimize the importance of black hat hacking but rather to draw attention to the productive possibilities and the original intent of the term hacking. Here, we need to reimagine pedagogical, social, and political praxis as an enterprise oriented to furthering meaningful, aesthetic and/or critical inquiry into the taken-for-granted practices that structure day-to-day life. We need to “hack” learning and teaching in ways that better attend to some of the original meanings to foster critical thinking skills and a love of immersing oneself in the “guts” of curriculum theorizing, teaching and learning. This calls us to attend to the tensions that exists between the two competing conceptualizations: (a) hacking as an act intent on doing personal, economic and social damage; and (b) hacking as the application of ingenuity, creativity and desires for improvement to preexisting functions, practices and objects.⁵

In this collection, the authors take up hacking holistically, navigating the dual definitions with a focus on how hacking must be understood simultaneously as a practice informed by desires for malice and a creative and productive possibility. The authors ask us to consider the following:

- How do we hack beyond the limits of circumscribed experiences, regulated subjective encounters with knowledge and the limits imposed by an ever constrained 21st century schooling system in the hopes of imagining better and more meaningful futures?
- How do we foster ingenuity and learning as the end itself (and not learning as economic imperative) in a world where technology, in part, positions individuals as zombie-like and as an economic end in itself?⁶
- Can we “hack” education in such a way that helps to mitigate the black hat hacking that increasingly lays ruin to individual lives, government agencies, and places of work?
- How can we, as educators, facilitate the curricular and pedagogical processes of reclaiming the term hacking so as to remember and remind ourselves that hacking’s humble roots are ultimately pedagogical in its very essence?

In his brilliant curriculum theory work, Ted Aoki (1996/2005) asks us to reconsider what teaching might mean in tensioned spaces of both “and/not-and,” which he calls “a space of conjoining and disrupting, indeed, a generative space of possibilities, a space wherein in tensioned ambiguity newness emerges” (p. 318). Using this logic, as well as reconsidering the logic of an inclusive “or,” hacking education is about the juxtaposition of what it means to “hack,” where “the differences are not separate distinctions; rather, the differences enhance the qualities of the system” (Pratt, 2008, p. 126). Here, the hacker is continuously redefining the system. As we invite the reader to endeavour with the authors around differing ideas of hacking, we encourage the consideration of these questions not as distinctly unique but as intertwined ideas that enrich or provoke differing interpretations of the chapters put forth in this collection.

Addressing Collective Assemblies

In this collection, the authors articulate historical, contemporary, and differing philosophical ways to “hack” concepts like “curriculum,” “education,” or “pedagogy” in response to the various cultural, economic, social, and technological changes that have taken place within policymaking, teacher education, and, more broadly, public education itself. Several chapters are more conceptual, historical, philosophical, and theoretical in terms of structure and thematic content, while others critically examine their pedagogical implications. Taken together, the authors in this collection call on us as educational researchers, curriculum theorists, teacher educators, and students to hack our curricula and pedagogies in terms of differing

cultural, gendered, and/or racialized representations. They highlight how the languages of technology and culture intersect in nontraditional ways to reconceptualize our ways of knowing, teaching, and learning.

In Chapter 1, Sean Wiebe addresses the differing ways in which neoliberal discourses conflate schooling with economic prosperity, leading to systems, structures, and knowledges that over-substantiate the value of measurement and accountability. Beginning with Foucault's notion of the "neoliberal" subject, *homo oeconomicus*, Wiebe outlines how a predominant style of *thinking* in education has emptied education of its humanity and how it is in need of an existential hack. He provokes us to reconsider what kinds of social imaginaries are being produced in what he calls an *age of accountability*, where the schooling system is a neoliberal service for hire that excludes the lived experiences of teachers and students. In response, he asks us to consider how *poiesis* might provide an existential hack that restores the very integrity of being human.

In Chapter 2, Yu-Ling Lee and Stephen Petrina offer a historical rereading of the *curriculum mentis* toward *thinking machines*. Hacking minds in relation to such rereadings, they remind us, may be an exhilarating adventure or loathsome practice, depending on one's philosophical appetite or preference. They ask us to consider the following educational questions: What is a mind? What is hacking? What is curriculum? Their chapter seeks to introduce us to the longstanding curricular and pedagogical problems of tracing the concept of *curriculum mentis* through time toward extending it through a rereading of its relations with cosmology, metaphysics, Greek philosophy, and thinking machines.

In Chapter 3, Linda Radford addresses the hacking of English language arts (ELA) through her analysis of Raziell Reid's (2014) *When Everything Feels Like the Movies*. Reid's work, Radford contends, hacks the genre of children's literature, subverting the conventional melodramatic forms in children's fiction and exposes the matrix of heteronormativity. Reid's work plays out both in the physical and the digital, with his protagonist renarrating the real into the virtually real uncertainty of social media and, throughout, hacks the readily consumable trope of the unproblematic child. Radford pushes us to consider these digital representations of self, and the contradictions that inhere: the quest for recognition; possibilities associated with restorative reconstructions of the self; and the ability to seek out dangerous spaces to perform recklessly or with justice as one chooses.

In Chapter 4, Paul Eaton invokes Rosi Braidotti's concept of nomadic becoming to challenge 21st century educators interested in expanding our discursive, theoretical, and philosophical frameworks for understanding how identity-subjectivity unfolds among digitally connected students. Rather than viewing identity-subjectivity from dichotomous, *either-or* perspectives, Eaton advocates for complex, *both-and* thinking when discussing

the role of social media platforms as curricular spaces. He discusses how social media platforms function to both release processes of subjectification—akin to nomadic becoming—and simultaneously constrain such movement—akin to reinforcing normative identity. In order to unpack these simultaneous processes, Eaton highlights the practices of seven college students highly engaged in multiple social media spaces. Ultimately, the movements across social media spaces allow students to hack normative constructions of identity, even as their being plugged into the digital networks forces some conformity to normative identity processes. Taking up a more nuanced understanding of identity and subjectivity in the digital age invites curriculum scholars, Eaton suggests, to be less concerned with control, representation, and stasis, and more open to processes of movement, contingency, ambiguity, and becoming ourselves.

In Chapter 5, Brian Gilbert describes how a Žižekian reading of the *Real*, as a crisis of teacher ontology, can help us to reconsider a radical pedagogy where the *real* and the *virtual* are in a constant flux of restructuring. Does *The Matrix* (curriculum, schooling, pedagogy) prevent individuals from seeing reality as it *is*? The metaphorical trap to be avoided in education, Gilbert stresses, is that the *Real* (or Reality) cannot be found by contrasting what constitutes the *virtual* against *material* realities. He cautions us that it is often the teacher's subjective fantasy that misperceives *reality* such that the Lacanian *Real* is bearable. Given that, each pedagogical movement begins from a sense of lack within every subject and proceeds toward a radical pedagogy by pathologically restructuring its failures of the subjective frame itself, how might shifting our understandings of teacher ontology radically alter the reality of what we call education?

In Chapter 6, Nichole Grant and Pamela Rogers tell us that social media has increasingly become one of the main forms of resistance against institutional racialized violence and against exclusion. Drawing on an antiracist Tumblr photo campaign started by students of color at Harvard University, they hack into the body's entanglements with technology, discursive regimes of circulation, objectification, and signification of data. The philosophical works of Deleuze and Guattari (1987) and Delanda (2006) are invoked to illustrate how the elemental assemblage of the bodies of students, the institution's own identity, and the social media platform reveal the material and the technological components that make up socially mediated identities. Further, these campaigns come not to be separate interacting appendages, but rather a shifting symbiotic fusion of what Haraway (1991) calls a cyborg body. Such philosophical and technological fusions are never neutral. Moreover, Grant and Rogers illustrate how power, histories of interaction, and marking processes of territoriality continually (re)constitute our bodies and identities in and with social media campaigns towards what they call a "cyborgian politics."

In Chapter 7, Patricia Altass and Sean Wiebe look to hack the approach to ELA curriculum design in Canada. Evolving digital and Internet technologies, they note, have fundamentally altered and augmented our ways of communication for work, play and life. Breaking away from predigital era ELA discourse, Altass and Wiebe contend that the New Literacy Threshold Concepts of *data*, *genre*, *audience*, *perspective*, *innovation*, and *agency* provide a framework for effective communication in the 21st century and beyond, one that can be applied to ELA curriculum design to better prepare students to succeed in an increasingly digital and globally interconnected world. Rather than interpreting these concepts distinctly or independently, however, Altass and Wiebe advocate for their holistic consideration, exploring the relationships between each of these concepts.

In Chapter 8, Michelle Hagerman, Leigh Wolf, and Heather Woods use Wark's (2004) definition of *hackers* and *hacks* to interrogate teaching practices and to explore the extent to which Wark's hacker philosophy, which places value on subverting constraints that undermine authentic knowledge generation, might allow for a transformative learning experience for educators enrolled in an educational technology master's degree program. Inspired to create something new that could transform students and the system *from within*, These authors' hacks are driven by an integrated set of goals: to empower teachers to design, openly share, and refine their pedagogies in and across networked communities of participatory scholarship where collaboration, risk-taking, and the acquisition of new technological skills by doing are valued. Hagerman et al.'s analyses of student work show how their integrated set of instructional hacks may have contributed to changes in their understandings of teaching, learning and leading with technologies.

In Chapter 9, Mei Wu Hoyt and Milan Jilka explore how digital technology has transformed our relationships with ourselves and each other, and how meaning is explored. Hoyt and Jilka hack the notions of educational performance and curriculum, suspending the technical system that shapes controllable experiences and actions so as to exercise the *currere* of aesthetic experience. They begin with an aesthetic and *meaning-full* curriculum made through the method of *currere* and explain why *currere* is important in opening a territory of meaning that each of us can live within. To explore meaning and experience, then, Hoyt and Jilka suggest that digital learning must involve learning experiences that are personally situated, significant, and relational, provoked and felt through one's sensibilities and sensations. They conclude by providing their own curricular practices that are embedded in the framework of experience and aesthetics, unfolding learning as an aesthetic *currere* of *meaning-full* responses to hack away at *The Matrix*.

In Chapter 10, Elisabeth Johnson shares narratives of hacking her educational technology integration course for preservice teachers. Johnson's

hacks signify active, conscious efforts to change circumstances, remove obstacles, or create access for her students. Throughout the chapter, she recounts her efforts to perform, as a successful associate professor of literacy, the teaching of one section of educational technology integration: educating students away from device-, app-, or tool-based understandings of educational technology toward an understanding that emphasizes skills and processes that can be used across devices, disciplines, classrooms and real-world contexts. To this end, Johnson describes the successes and stumbling blocks of seeking out equal access to technology for her students—and the new challenges created by her successful hacking. Johnson concludes by reflecting on how and why she hacked the course *for* her students.

Together, the authors ask us to consider questions of pedagogy, curriculum and praxis and what it might mean to hack education. In so doing, this collection seeks to shift the narrative around hacking and teaching, one where education can be reimagined as something new and productive in service of more meaningful learning. Woven through the arguments and insights offered by the authors here questions the ways that we come to take for granted particular ways of learning and knowing as practitioners, theorists and people in the world. The collection, then, seeks to probe into the very basic assumptions of education by providing a new way of thinking about our obligations to always tinker with the very machinations of teaching, language and praxis.

As a collection of theoretical and pedagogical pieces, the chapters in the collections are of value to both scholars and practitioners who share the same passion and commitment to changing, challenging and reimagining the script that all too often constrains and prescribes particular visions of education. Those who seek to question the nature of teaching and learning and who seek to develop a richer theoretical vocabulary will benefit from the insightful and rich collection of essays presented in this collection. In this regard, the collection offers something for all who might wish to rethink the fundamental dynamics of education or, as Morpheus asks of Neo, bend the rules of conventional ways of knowing and being.

NOTES

1. We are using the convention of *The Matrix* (capitalized) to denote the 1999 film and the *matrix* (lower case) to denote the computer program referred to within the film.
2. Levy (2010) argues that the word *hack*, “may have been suggested by ancient MIT lingo—the word ‘hack’ had long been used to describe the elaborate college pranks that MIT students would regularly devise, such as covering the dome that overlooked the campus with reflecting foil” (p. 10). However,

he argues that, “as the TMRC people used the word, there was serious respect implied” (p. 10).

3. While Kennelly and Llewellyn speak here of civics education, we suggest that the production of this type of neoliberal subject is the primary function of schooling more broadly.
4. The World Bank (2016) notes that, as of 2015, the global penetration rate for mobile cellular subscriptions was 98.3 per 100 people with many countries experiencing a penetration rate well over 100. While this does not suggest that nearly every person on the planet is connected (in places with rates well over 100, for instance, it is common for people to have multiple cellular subscriptions), it does suggest that cellular access is quite global in scope.
5. For an example of this, see Palfrey (2015) for a discussion of how librarians are hacking libraries and library practices.
6. It is helpful to remember here that many of the “free” services we use are free to the extent that there is no upfront cost. However, the cost of the service is in submitting one’s own life experiences and time in support of advertising networks and systems. Indeed, major online services such as Google’s varied services and Facebook are designed to generate ad revenue for their companies.

REFERENCES

- Abdollah, T., & Perrone, M. (2017, January 11). Hackers could remotely control defibrillator or pacemaker, U.S. warns. *CBC News*. Retrieved from <http://www.cbc.ca/news/world/cybersecurity-heart-devices-implantable-1.3930997>
- Aoki, T. T. (2005). Imaginaries of “East and West”: Slippery curricular signifiers in education. In W. F. Pinar & R. L. Irwin (Eds.), *Curriculum in a new key: The collected works of Ted T. Aoki* (pp. 313–319). Mahwah, NJ: Lawrence Erlbaum Associates. (Original work published 1996)
- Apple, M. W., & King, N. R. (1977). What do schools teach? *Curriculum Inquiry*, 6(4), 341–358.
- Brooks, J. (2017, April 4). Swedish firm “body-hacks” employees with implanted microchips that work as swipe cards opening doors. *National Post*. Retrieved from <http://news.nationalpost.com/news/world/cyborgs-at-work-employees-getting-implanted-with-microchips>
- Delanda, M. (2006). *A new philosophy of society: Assemblage theory and social complexity*. New York, NY: Continuum.
- Deleuze, G., & Guattari, F. (1987). *A thousand plateaus: Capitalism and schizophrenia* (B. Massumi, Trans.). Minneapolis, MN: University of Minnesota Press.
- Dobson, T. M. (2005). Technologies of text: Reflections on teaching, learning, and writing with/in digital environments. *Journal of the Canadian Association for Curriculum Studies*, 3(1), 123–137.
- Greenberg, A. (2015, July 21). Hackers remotely kill a Jeep on the highway—with me in it. *Wired*. Retrieved from <https://www.wired.com/2015/07/hackers-remotely-kill-jeep-highway/>

- Haraway, D. (1991). The cyborg manifesto: Science, technology and social feminism in the late twentieth century. In *Simians, cyborgs and women: The reinvention of nature* (pp. 149–182). New York, NY: Routledge.
- Hayles, N. K. (1999). *How we became posthuman: Virtual bodies in cybernetics, literature, and informatics*. Chicago, IL: The University of Chicago Press.
- Isin, E., & Ruppert, E. S. (2015). *Being digital citizens*. New York, NY: Rowman & Littlefield International.
- Juniper Research. (2015, May 12). Cybercrime will cost businesses over \$2 trillion by 2019. Retrieved from <https://www.juniperresearch.com/press/press-releases/cybercrime-cost-businesses-over-2trillion>
- Kennelly, J., & Llewellyn, K. R. (2011). Educating for active compliance: Discursive constructions in citizenship education. *Citizenship Studies*, 15(67), 897–914.
- Levy, S. (2010). *Hackers: Heroes of the computer revolution*. Sebastopol, CA: O'Reilly Media.
- Margaritelli, S. (2017, February 3). Caffeinated chaos: The easy way your “smart” coffee machine could get hacked and ruin your life. *Quartz*. Retrieved from <https://qz.com/901823/>
- Ng-A-Fook, N. (2016). Storying curriculum as technoeconomic progress: A lament! *Antistasis*, 6(1), 30–33.
- Palfrey, J. (2015). *BiblioTech: Why libraries matter more than ever in the Age of Google*. New York, NY: Basic Books.
- Pinar, W. F. (2011). *The character of curriculum studies: Bildung, currere, and the recurring question of the subject*. New York, NY: Palgrave MacMillan.
- Pinar, W. F. (2013). Modernity, technology, nationality. *Critical Literacy: Theories and Practices*, 7(2), 3–19.
- Pinto, L. E. (2016). Spectres of educational technology: Ghost-busting as a curricular response. *Antistasis*, 6(1), 8–11.
- Pratt, S. S. (2008). Bifurcations are not always exclusive. *Complicity: An International Journal of Complexity and Education*, 5(1), 125–128.
- Raymond, E. S. (n.d.). The meaning of “hack.” Retrieved from <http://www.catb.org/jargon/html/meaning-of-hack.html>
- Raymond, E. S. (2001). *The Cathedral and the bazaar: Musings on Linux and Open Source by an accidental revolutionary* (Revised ed.). Sebastopol, CA: O'Reilly & Associates, Inc.
- RedOrbit. (2013, May 17). Pacemakers could be hacked, researchers claim, but not easily. Retrieved from <http://www.redorbit.com/news/health/1112850020/pacemakers-can-be-hacked-051713/>
- Reid, R. (2014). *When everything feels like the movies*. Vancouver, Canada: Arsenal Pulp Press.
- Rose, E. (2003). *User error: Resisting computer culture*. Toronto, ON: Between The Lines.
- Smith, B. (2016). Mobile applications and decolonization: Cautionary notes about the curriculum of code. *Journal of Curriculum and Pedagogy*, 13(2), 144–163.
- The World Bank. (2016). Mobile cellular subscriptions (per 100 people). *World Development Indicator Database, 1960–2015*. Retrieved from <http://data.worldbank.org/indicator/IT.CEL.SETS.P2>

- Wachowski, L., & Wachowski, A. (2000). *Screenplay*. In S. Lamm (Ed.), *The art of the matrix* (pp. 273–394). New York, NY: Newmarket Press.
- Weaver, J. A. (2010). The posthuman condition: A complicated conversation. In E. Malewski (Ed.), *Curriculum studies handbook: The next moment* (pp. 190–200). New York, NY: Routledge.