

**FREE
KNOWLEDGE
CONFRONTING THE
COMMODIFICATION OF
HUMAN DISCOVERY**

**EDITED BY
PATRICIA W. ELLIOTT
& DARYL H. HEPTING**



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*To all those who work tirelessly to
share knowledge so that all may benefit.*

INTRODUCTION

Patricia W. Elliott and Daryl H. Hepting

Broadly speaking, this collection looks at the question of knowledge: how it is generated and shared, and to what purpose. This includes both applied knowledge and what contributor Arthur Schafer refers to as “knowledge for its own sake” (page 46)—for one can hardly exist without the other. The devaluing and withdrawal of public support for the latter, and simultaneous profit-seeking commandeering of the former, leads us toward a future when human knowledge, in all its myriad forms, is diminished in the public sphere.

In particular, alarms are being sounded around the globe, and across multiple sectors and disciplines, over the rapidly unfolding appropriation of public knowledge for private benefit. A recent example is a report released by the Canadian Association of University Teachers (CAUT) in November 2013, which outlined deeply troubling relationships between Canadian universities and their external research partners. CAUT researchers analyzed twelve collaboration agreements between Canadian universities and corporations, donors, and governments. The roster of partners included some of the country’s major corporate interests in the energy, pharmaceutical, and manufacturing sectors, such as Imperial Oil, Pfizer, and Bombardier Aerospace. CAUT’s research aimed

to determine how closely collaboration agreements adhered to the group's recommended broad principles for effective collaboration agreements.

One such principle is central to the subject of this book: "Protect the university's commitment to the free and open exchange of ideas and discoveries."¹ How well—or, more precisely, how poorly—this open exchange was faring on Canadian campuses could be gleaned from the outset; when CAUT's researchers sought copies of the collaboration agreements, just two of the twelve documents were publicly available, leaving the researchers to seek the remainder through access to information requests. In several cases, documents arrived with significant sections redacted.

Once the pieces were gathered, a disturbing picture emerged: notions of academic freedom, collegial governance, and peer review were largely absent from or, in some cases, directly supplanted by the terms of collaboration agreements. In some cases, government and corporate sponsors held vetoes and majority decision-making power over the allocation of university resources and staffing, as well as the right to delay publication of results. The agreements also typically assigned intellectual property rights to corporations and universities rather than to creators, and placed external controls on the public announcement of discoveries. CAUT's analysis presented a sobering challenge to the public perception that "a university produces knowledge for the general public not for any particular individual, corporate or organizational interest, including its own material interest."²

These revelations rang true at our own institution, the University of Regina, which had just undergone the painful experience of publicly acknowledging that a highly touted carbon capture research project was fraught with conflicts of interest and lax accountability, as revealed in a series of CBC investigative journalism reports.³ The International Performance Assessment Centre for the Geologic Storage of Carbon Dioxide (IPAC-CO₂) was established at the University of Regina with the support of Royal Dutch Shell and the provincial and federal governments. In 2005, the centre negotiated a carbon capture technology licensing agreement with HTC Purenergy, Inc., which in turn signed a global licensing agreement with Doosan Babcock Energy of the UK, and Doosan Heavy Industries and Construction of South Korea in 2008. The Purenergy announcement stated, "Saskatchewan developed technology will now be offered and presented to customers through twenty Doosan commercial offices world wide with significant emphasis on the opportunities within the People's Republic of China."⁴

How and if the University of Regina was to be included in the profits of this university-generated technology became the subject of legal proceedings

in March 2013.⁵ Once revealed, these and other developments contributed to what can only be described as a crisis of confidence in the university's academic mission, leading to the calling of the first, full, University Council gathering in more than thirty years. At the council meeting, some three hundred faculty, students, and professional staff discussed not only financial accountability issues but also the nagging sense that the university was adrift from its core public service mission, as described in the university motto, "As One Who Serves," and in its values statement: "We employ our expertise to serve each other and society. We illuminate socially relevant problems. The knowledge we generate enriches the community."⁶ In this case, the incident contributed to a positive and ongoing institution-wide discussion of the role of the university, and of the value of knowledge in service of the public good.

While these events unfolded, the seed for this book had already been planted some years earlier (and appropriately) in the field of agriculture. On a miserable winter night in 2004, Terry Pugh and Terry Boehm of the National Farmers Union (NFU) travelled to Regina to speak to a small but enthusiastic crowd about the NFU's Seed Saver campaign. One of the editors of this book, Daryl Hepting, had been asked to organize the talk for the Council of Canadians. The event poster read:

Do farmers have the right to save and plant the seeds that they have helped to develop over thousands of years? Are seeds intellectual property to be patented? Percy Schmeiser vs Monsanto⁷ was just the beginning. Find out what the recent Seed Sector Review means for YOU!

As a computer scientist, Hepting was intrigued by what he heard that evening. There were obvious parallels to be drawn between the struggles of farmers and software developers seeking to freely share their knowledge. He had just been reading about Microsoft's expression of "fear, uncertainty and doubt" regarding open GNU/Linux.⁸ There appeared to be a double standard at play: spreading openness through GNU Public License software was bad but spreading "closedness" through Monsanto's seed patents was good. But good for whom?

Taking this question forward, Hepting and University of Regina colleagues Roger Petry, Claire Polster, David Gerhard, Patricia Elliott, and Philip Fong organized the conference, "Free Knowledge: Creating a Knowledge Commons in Saskatchewan," in November 2005. This title involved a certain conceit: the participants were not creating a knowledge commons but

were rather helping to understand, publicize, and defend the concept. The posters went up, and people began wondering what it was all about. While the term “knowledge commons” had been kicking around the Internet and academic conferences for nearly a decade, the group learned it had yet to break through to public consciousness. “What is a knowledge commons?” was a question asked of the organizers many times as the event approached.

In our view, a *knowledge commons* is a public place where knowledge is made freely accessible for the public good. The terminology is based on the concept of a European village commons, where grazing land was shared for public use—but where it was also open to overuse and exploitation. To this end, movements to “reclaim” the commons are, as Bollier explains, essentially movements to restore balance in relationships among those who inhabit an arena of shared knowledge, to avoid practices of exploitation and overextraction that make a commons unsustainable.⁹ Bollier further suggests that the term is, in fact, more appropriately referred to in the full plural sense, in that knowledge commons are diverse and variable, defying a single description.¹⁰ Hess and Ostrom add:

*Trying to get one's hands around knowledge as a shared resource is even more challenging when we factor in the economic, legal, technological, political, social and psychological components—each complex in their own right—that make up this global commons.*¹¹

With these concepts in mind, panellists were invited to the conference from many walks of life, such as farming, rural development, the fine arts, software development, medicine, academia, Indigenous Traditional Knowledge (TK), the media, and environmental organizations. It was an excellent beginning to ongoing linkages that have since spread from local, to national, to global.

The idea for a book that would reflect the topic's inherent diversity and global scope germinated during Hepting's sabbatical in 2007–2008, motivated by a visit to Regina by Ralph Nader. The original call described the intended scope of this volume: “The increasing privatization of knowledge is changing our society in important ways, but for the benefit of very few. Of interest are essays that deal with current challenges, and promising alternatives, in specific sectors such as (but not limited to) farming and food, computer software, medicine, media, arts, and libraries. Essays dealing with, for example, TK, economics, or the historical context of this issue are also welcome.”

The road to the final volume has been a long one, with plenty of interesting correspondence. Our goal was to link locally generated discussions to the

global arena by inviting national and international contributors to mingle their experiences with ours. We sought out voices working to emancipate the flow of knowledge in diverse fields, including pirate radio, co-operative education, TK, and open source technology. The response was enthusiastic and encouraging. However, we also received an important reality check; Eben Moglen, legal counsel for the Free Software Foundation, asked why people should spend their days working on books when they could be undertaking action. It was a valid question that presented a strong challenge to all of the participants in this project. Every contributor to this volume is undertaking actions in their daily lives, in fields ranging from media to medicine. Our answer to Moglen's tough question is that stories about the actions being taken need to be shared, so they can be sustained and enhanced. We hope this book serves that purpose and inspires further action.

The book begins with a prologue by Brewster Kneen, a farmer and public intellectual who was also the first to speak at our long-ago Free Knowledge conference. At the time, we felt his words adequately captured the simplicity, complexity, and beauty of the commons, and we wanted to hear more. His contribution to this volume begins by placing diverse perspectives at the foundation of knowledge commons theorizing, with his observation that placing two simple words side by side—"free" and "knowledge"—unleashes a wide spectrum of "conflicting thoughts and visions." Kneen cautions against conceptualizing knowledge as a single, universal bank, leading to "monoculture epistemology" (page ix). Such an epistemology comes with the trappings of cultural and species imperialism, he argues. He advises us to instead look to the humble seed as a guidepost for differentiating between information and knowledge, and overcoming human-centric conceit in the bargain. A scientist who describes, classifies, and perhaps even patents a seed does not unlock its true stories. In contrast, a subsistence farmer is acutely aware of a seed's history and relationship to its surroundings; the seed is not a mere object but is a companion to be tended. From this, Kneen argues that all knowledge is relational—an essential concept missing from reductionist science that seeks to manage and control organisms as objects. The idea of the organism as a packet of genetic information that can be owned and patented fails to express the deep knowledge farmers have of seeds and animals, and, indeed, is an abhorrent concept to much of the world's population.

From Kneen's thought-provoking prologue, the collection moves into four parts. Part I sets out some of the essential dilemmas of an increasingly corporatized academy. Despite the widespread use of buzz phrases such as "knowledge mobilization" and "knowledge use" in today's academic

institutions, it stands to reason that much actual knowledge is left behind when the academy marches lockstep into the narrow, self-interested realm of patentable research. However, there is more at stake than knowledge loss, according to Joel Westheimer. Universities were founded on the ideal of scholars working together toward a common end, he writes. When this mission is lost, so, too, is a powerful democratic mandate that understands—not perfectly, but at least in principle—that knowledge and learning should serve the public interest.

The implications of losing this path are clearly evident in the two articles that follow Westheimer's contribution, both of which focus on corruption in medical research. Physician Sally Mahood echoes Westheimer's concern for the future integrity and reliability of the academy in a corporatized world: "Open communication and knowledge sharing, long considered the lifeblood of scientific endeavour, are lost in the competitive atmosphere of rival firms," she observes (page 27). Further, corporate encroachment on scientific knowledge distorts the direction of research, resulting in a wide variety of treatments for erectile dysfunction and baldness, while research on tuberculosis and malaria is neglected. She notes, in particular, that patent protection and privately held drug information have disastrously restricted access to HIV drugs in Africa.

In the following chapter, noted medical ethicist Arthur Schafer illustrates the life-and-death consequences of Faustian private-sector bargains in his review of the Vioxx scandal, where evidence of damaging side effects of a popular arthritis medication was suppressed. In an environment of "marketing dressed up as science," he writes on page 43, the pursuit of university-industry partnerships leads to the erosion of independent, critical perspectives that the public expects of university researchers. Consequently, by the time Vioxx was withdrawn from the market in 2004, millions of patients had been exposed to a drug that increased the risk of heart attack by 400 per cent, and over one hundred thousand Vioxx users suffered heart attacks and strokes. These examples from the medical field form a powerful argument for a return to public science in the public interest.

How might this be accomplished? Claire Polster looks to the university itself as an important arena of reform in the reordering of how knowledge is created and to what end. There is much at stake: "The public university cannot be sustained when its lifeblood—public knowledge—is diminished" (page 59). As one potential solution, Polster suggests the introduction of mandatory, nonexclusive licences that would prohibit university-based research from being appropriated by private interests. Under this proposal, all

university-generated knowledge—whether publicly or privately financed—would have to be placed in the public domain. Polster argues that not only would this prevent conflicts of interest and abuses of the public trust (as illustrated in the Vioxx scandal), it would contribute to protecting and revitalizing the knowledge commons beyond the university. Polster realistically concedes that such an across-the-board solution is likely to raise a number of objections and alternative proposals, ranging from tinkering with legislation to the establishment of nonprofit oversight boards. While such debates and questions are welcome, she concludes that we must first “successfully build a consensus that the privatization of knowledge in Canada’s universities should come to an end” (page 63).

Helpfully, while the enslavement of knowledge for profit appears to be a dominant paradigm in the twenty-first century, it is certainly not the only paradigm. Part II is meant to provide some examples of how people have worked together to share and disseminate knowledge on a more equitable, empowering basis—as well as their struggles to maintain and build on such movements. While we may congratulate ourselves for being very cutting-edge with our current-day discourse, today’s knowledge commons advocates are hardly the first pioneers of the concept. Indeed, the idea of knowledge for the common good has been the guiding principle of co-operative education over many decades, writes Mitch Diamantopolous. “The modern co-operative movement is fundamentally rooted in the political struggle over who defines, owns, produces, and distributes economic knowledge, and for whose purposes,” he writes (page 74). Through adult education programs, local meetings, and progressive publications, early co-operators aimed to break the knowledge monopoly held by capitalist entrepreneurs. Diamantopoulos argues that the success of this approach led to a thriving co-operative sector in Quebec—just as its gradual neglect led to an erosion of co-operative development in Saskatchewan. It is a fascinating history that illustrates how the degree of attention paid to active knowledge mobilization and dissemination plays a central role in advancing—or impeding—the success of alternative institutions.

In the sphere of media, Marian van der Zon takes a close look at the creation of alternative media institutions, focusing on unlicensed, low-power radio, popularly called pirate radio. She opens with an observation that “our ‘public airwaves’ are not truly public at all” (page 102). State control of the broadcast frequency spectrum is the norm, leading to media that is tailored to reproduce dominant ideologies and social constructs, she argues. In this environment, commercially oriented knowledge monopolies grow strong, while diverse, community-based knowledge is devalued and suppressed.

Van der Zon's own hands-on experience in pirate radio has convinced her of the importance of keeping knowledge, via access to the media, free. "It is perhaps in emancipating knowledge that we emancipate ourselves," she writes (page 107).

Returning to the sphere of the university, Patricia W. Elliott examines participatory action research as a form of knowledge sharing that is ultimately connected to academic reform, shaking up the paradigm under which knowledge has traditionally been held and transmitted within the academy. Action research "challenges the templates we use, forcing us to acquire new knowledge about the world from new sources," the author observes (page 128). It also challenges current accepted trends in knowledge dissemination, including the priority given to academic journals as the primary "knowledge product" of university-based research. To community research partners, such journals represent a closed, inaccessible world that is not held accountable to community-based peer review. Elliott argues that, ultimately, genuine community engagement amounts to a reordering of power relations on many levels. "It should come as no surprise, then, that [action research] may upset the status quo not only within marginalized communities but also within power centres, including our universities," she cautions (page 131). The chapter includes suggestions for reform, as well as examples of existing campus-based initiatives aimed at accomplishing the wider social imperatives embedded in all action research projects. Whether you are a marginalized citizen or a stressed-out scholar, the reward, Elliott posits, is a more humane and just world for all.

Elliott's chapter introduces the concept of community self-determination over knowledge collection and dissemination. To wit, if a researcher regards community participants as equal partners in knowledge generation, it stands to reason that community members would then also play a major role in determining the management and end use of their knowledge, in the service of mutual social benefit. This view offers some distinction from the free/open source movement, which holds the premise that knowledge should be universally and freely accessible to all, including the freedom to modify, reconfigure, and disseminate knowledge products on a global scale. The problematic edge to *carte blanche* appropriation was made abundantly clear on April 23, 2013, when a group of scientists connected to a private synthetic biology venture, Genome Compiler, turned to the popular crowd-funding website Kickstarter as a means to finance the creation of a glow-in-the-dark houseplant. The group proposed to insert computer-written genetic code into *Arabidopsis* plants, which would then be distributed to citizens who made donations to the research. Buoyed by the popular film

Avatar and its bioluminescent forest, the campaign far exceeded its original goal of \$65,000, raising \$484,013 in two months.¹²

Not surprisingly, the campaign also raised questions about the wisdom of creating and releasing synthetic organisms outside the guidance of scientific peers and public regulators. The technology-monitoring ETC Group launched an international “kick-stopper” campaign to shut down the plant give-aways, drawing on the UN Convention on Biological Diversity’s call for a “precautionary approach...to the field release of synthetic life, cell, or genome into the environment.”¹³ Although an online petition against the project was signed by fourteen thousand people, the campaign reached its planned end date on June 7, 2013, without interference.¹⁴ The following month, Kickstarter quietly introduced a ban on handing out genetically modified reward gifts via its website.¹⁵ However, the science itself continued outside the Kickstarter campaign, with an online website for pre-ordering the plants, as well as souvenir t-shirts and a “How-To” instruction book for creating synthetic life forms.¹⁶

This incident alone should give us pause on the path to knowledge freedom. Accordingly, Part III of our collection places an important codicil on the knowledge commons. Many Indigenous groups would outright reject unfettered deployment and modification of their traditional knowledge (TK). Part III raises a model of the commons that accepts sovereign collective control over culturally based knowledge. This is driven by historical experience that has shown knowledge can be swiftly colonized, devalued, and diminished in an “open” marketplace of ideas, leaving whole populations bereft of key teachings that previously enabled their survival.

Speaking from the perspective of a Kiche-Mayan timekeeper, Leonzo Barreno looks at the Mayan calendar as an example of a knowledge system that was essential to the understanding of time-space-energy among the Kiche-Maya and other Mayan groups. Under colonialism, this knowledge system was devalued, suppressed, and replaced by a European cultural monopoly, an experience shared by Indigenous peoples throughout the Americas. Now, after more than five hundred years of oppression and genocide, many Mayan people link their continuing survival on this planet to the recovery of the knowledge embodied in texts such as the Cholq’ij calendar, along with recovery of Mayan languages and ceremonies. “The reasons why Mayan intellectuals, professionals, students, and activists are choosing to learn their ancient knowledge are debatable,” Barreno states. “The fact, nonetheless, is that the uses of Mayan languages and the expansion of Mayan ceremonies are becoming part of the modern Mayan struggle” (page 146–7).

Beyond the specific historical experience of Mayan groups, Barreno's chapter implies a message to all the world's people about the importance of maintaining diverse knowledge systems as a key component of human survival. This speaks to Kneen's opening statement that we must be prepared to view the commons from multiple perspectives and experiences, as well as Bollier's advice that not every commons looks and functions the same way.

Indeed, alternative models of knowledge sharing have existed for millennia. Within Indigenous societies, customary laws and cultural protocols have long regulated the use of TK effectively and consistently, notes Gregory Younging, a creator's rights scholar and member of the Opaskwayak Cree Nation. In recent centuries, the parallel development of European-based intellectual property rights systems has provided ample opportunity for interaction and conflict between two very different knowledge systems. Younging's chapter includes a fascinating roster of legal case studies in which Indigenous communities fought to retain their collective ownership of cultural products, such as petroglyphs and traditional stories. In most situations, the court cases centred on the commercialization and/or patenting of TK by non-Indigenous profit-seekers. As Younging observes, Indigenous knowledge has contributed greatly to humanity. It is therefore distressing to see such knowledge become a prize to be won or lost in court battles.

In answer to this distressing scenario, Younging teamed up with Jane Anderson, a research fellow at the Australian Institute of Aboriginal and Torres Strait Islander Studies, to explore the potential to incorporate Indigenous knowledge traditions in the creation of new protocols for research and intellectual property. "In the absence of formal legal intellectual property mechanisms for recognizing and protecting rights in Indigenous cultural knowledge, and in ever increasing contexts where relationships with Indigenous peoples are sought, or where Indigenous knowledge is used, protocols are providing a productive tool for negotiating new kinds of equitable relationships," they write (page 181). Drawing on examples from Australia to the Arctic, their chapter examines the pragmatic utility of protocols that have been developed over the past decade, as well as their shortcomings. "Whilst protocols offer a practical possibility for protecting Indigenous knowledge, they can also be unintelligible, general, and useless," they note, concluding that reflexive practice must become part of the march toward protocol development (page 191).

Part IV of the book presents some by-no-means-exhaustive forays into advancing theoretical understandings and practical reforms. The need for reform is clear: Joshua Farley and Ida Kubiszewski warn that today's markets are not equipped to deliver the research we need to survive in a post-carbon

economy. As fossil fuels decline, major advances are needed in low-carbon energy technology. Meanwhile, there has been a concerted global effort to confine the free flow of knowledge via increased patent and intellectual property protection. Today's firms lock down potentially useful discoveries with patents they do not plan to use, simply to keep others from using them, Farley and Kubiszewski note. In the rush for consumer dollars, innovation slows and little heed is paid to the needs of future generations. Farley and Kubiszewski critically examine the alternatives, including public sector provision, science prizes, and commons-based peer production, and find all are hampered by the current economic paradigm. Open source/open access paradigms hold the advantage of allowing scientists to work full-time for the public good, if adequately funded. The authors predict that scientists will migrate to nonmarket alternatives as they become viable and respected, for one reason alone: "We suspect that in general scientists prefer to find cures for life-threatening diseases or improve technologies that mitigate environmental catastrophes rather than develop cosmetics for the rich" (page 217).

Indeed, as Roberto Verzola of the Philippines observes, the idea that another person might profit from your knowledge at your expense tends to hinder the natural flow of knowledge sharing. He notes that today's imposed, artificial model of knowledge scarcity hampers the natural flow of knowledge from farmer to farmer, generation to generation, even species to species. Yet the natural state of knowledge is one of abundance and sharing, not scarcity and propriety, he argues, pointing to examples from agriculture to the development of the Internet. He adds, "Today, the single biggest obstacle to the full realization of abundance in the information sector is the legal system of intellectual property rights" (page 224). His highly original conceptualization of abundance challenges us to reorder the traditional dictums of economics, including "the fundamental assumption of scarcity as gospel truth" (page 232). Unleashing the natural cascade of knowledge will lead to advances in fields ranging from human services to renewable energy, he theorizes. It is a hopeful message that sets this remainder of the book's chapters on the path toward solutions geared at liberating human knowledge for the common good.

Speaking from the standpoint of an organic farmer trying to grapple with the corporatization of agricultural knowledge, Doug Bone offers a series of needed policy changes for government to consider. Bone states that, like most small-scale Canadian farmers, he simply wants to make a decent living and to be able to pass the land undamaged to the next generation. However, powerful market forces conspire against these modest goals. "From a

corporate standpoint, sustainable and subsistence farming are forms of resistance and threats to their bid to dominate the food system,” he writes (page 250). In response, powerful transnationals work to co-opt political and regulatory regimes, and to enslave agriculture with chemical dependency. However, it is possible to resist this agenda by demanding a series of policy initiatives from provincial and federal governments, which are outlined in the chapter.

The last word in this collection belongs to a thinker grounded in library science, befitting the library’s role as steward and shepherd of the knowledge commons. Author Heather Morrison sees an unprecedented opportunity to disseminate library holdings through the Internet, provided the principles of open access are protected and promoted. “The expansion of access to knowledge made possible by the web is almost incomprehensible,” she writes, citing the example of the thesis paper, once relegated to a single library copy in the scholar’s home institution but now instantly available around the globe (page 257). Yet barriers remain, including online subscription fees that economically exclude libraries and scholars in developing countries. As well, there is a distinction to be made between full open access (free of charge) and *libre* open access (free of copyright restrictions). Morrison advocates author retention of copyright, which ultimately allows self-archiving for the purpose of full open access—meaning the author has the legal right to make an article available for free, even if the publishing journal requests a fee for the same article. Morrison observes that a number of research funders now encourage researchers to provide open access to their work, tipping off a backlash from some of the larger, more lucrative publishing concerns. Yet despite a well-heeled lobby to restrict open access, the number of open access journals continues to grow, evidence that the movement has strength. Morrison notes that publications by scholars in developing countries populate the list of open access journals, suggesting a rebalancing of the knowledge monopoly is in the works. As well, the open access movement is expanding from open access journals to open access databases and open education, including the production of free textbooks.

The book would be too heavy to lift if it contained all the stories that need to be told. If anyone would care to take on a second volume, we would suggest, for starters the story of Drugs for Neglected Diseases Initiative (<http://www.dndi.org>), an organization working to develop an alternative model for the research and development of new drugs for neglected diseases; Avaaz.org, a “global web movement to bring people-powered politics to decision-making everywhere”; the case of Steve Kurtz, founding member

of the award-winning art and theatre collective Critical Art Ensemble, who was accused of bioterrorism; Richard Littlemore's take on who pays the price when details of science and public policy are dictated by the highest bidder; Elizabeth Royte's analysis of the crisis of bottled and tap water; and Ian Mauro's work with Inuit people to document their knowledge of climate change.

As it stands, our final chapter provides an optimistic starting point for further exploration, suggesting that—despite the myriad pressing concerns this collection has raised regarding the present corporate stranglehold on knowledge production—in the long view, the knowledge commons is on the rise and knowledge privateers are in retreat.

Notes

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