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## Primitive Accumulation and Enclosure of the Commons: Genetically Engineered Seeds and Canadian Jurisprudence

WILHELM PEEKHAUS

*ABSTRACT:* Legal decisions in the case of Percy Schmeiser, who was sued by Monsanto for patent infringement, are related to the attempt by the Organic Agriculture Protection Fund to obtain class certification in its efforts to sue Monsanto and Bayer for genetic contamination of organic canola. Together these two cases establish an unacceptable incongruity at common law between the rights enjoyed by intellectual property owners and any corresponding duties that might attach to their inventions. Marx's concept of primitive accumulation offers a suitable theoretical register for apprehending contemporary erosions of the commons through the enclosure effects that follow in the wake of agricultural biotechnology and these two legal cases.

**O**N MARCH 29, 2001, THE FEDERAL COURT Trial Division of Canada found Percy Schmeiser guilty of infringing Monsanto's patent for its genetically engineered canola seeds, a ruling subsequently confirmed by the Supreme Court of Canada. In upholding the validity of Monsanto's intellectual property rights the Federal Court held that regardless of how the seed may have arrived in a farmer's fields, be it through spillage, by wind, or germination by pollen carried into a field from elsewhere by birds, insects, or the wind, ownership of the right to use the patented gene, or the seed or plant containing the patented gene, remains vested in the patent holder. Applying this logic, a group of Saskatchewan organic farmers attempted in early January 2002 to launch a class action lawsuit against Monsanto and Bayer CropScience for damages caused by the

widespread dispersal of their patented genetically engineered canola throughout the province that resulted in contamination of organic farmers' fields and a consequent destruction of organic canola markets. Yet in this instance the courts demonstrated a strong disinclination to attach liability rights to the bundle of monopoly intellectual property protections afforded these companies by their respective patents, ultimately refusing to certify the cause as a class action. On the one hand, the Schmeiser case provides us with a strong precedent in common law that reinforces the rights of patent holders to control the use of their inventions, while on the other hand the failed class action in Saskatchewan highlights the exemption of these same rights holders from any corresponding duties of care in respect of their genetically engineered seeds. The consequent result is a situation of extreme incongruity with respect to the rights and potential duties that attach to the patents issued to a company for its biotech products.

My intent in this paper is to elaborate and conceptualize these two cases in a way that, while highlighting the paradoxical logic that emerges from these rulings, demonstrates how both can, in fact, be interpreted as instances of contemporary processes of primitive accumulation. There is certainly no shortage of literature that has examined critically the political economy of biotechnology, and particularly the increasing commodification of genes and their components through to biological processes, entire organisms and even nature itself (Burkett, 1999; Busch, *et al.*, 1991; Castree, 2003; Gottweis, 1998; Kenney, 1986, 1998; Kevles, 1998; Krimsky, 2003; Parry, 2004; Thackray, 1998; Yoxen, 1981). More particularly, there also exists a robust corpus of scholarship that focuses on various aspects of agricultural biotechnology and its increasing subservience to capitalist accumulation imperatives (Best and Kellner, 2004; de la Perrière and Seuret, 2000; Heller, 2001; Kloppenburg, 1988, 2004; Lewontin, 2000; Prudham, 2007). Situating itself within and striving to contribute to this literature, my goal will be to assess the ways these two cases confirm and strengthen ongoing practices of enclosure being waged by large agricultural biotechnology companies and now sanctioned by the courts; practices that can be understood as instances of primitive accumulation.<sup>1</sup>

1 Although beyond the scope of the current paper, it does bear mentioning that international differences in intellectual property regimes could have implications for the processes of primitive accumulation articulated below.

In setting out my arguments the first section of the paper will very briefly outline the traditional justifications employed to undergird the intellectual property system as well as elaborate the scope of legislative patent protection in Canada. I will similarly examine here Monsanto's Canadian patent and the company's efforts to enforce its associated intellectual property rights. Situated against this backdrop I then proceed to an interrogation of the two cases. Juxtaposing the logic and arguments constructed in the two lawsuits will reveal an incongruity that has made it possible for companies to obtain *de facto* control over entire organisms that strictly speaking are beyond the realm of patentability in Canada, while simultaneously being absolved of any associated liability for these same organisms. Having established this context the following section will attempt to make conceptual sense of these legal decisions. Specifically, I will argue that patent protection and corresponding legal precedent at common law can be understood as powerful instances of contemporary practices of primitive accumulation, a concept that provides us an apposite theoretical lens through which to analyze and understand the two legal cases elaborated in this article. I will illustrate in some depth the contours of "primitive accumulation" as a concept, including its relationship to enclosures and commons. It is also here that I will attempt to bring together more explicitly the theoretical and the empirical in a way that demonstrates the vigor of primitive accumulation as an explanatory framework. By way of conclusion I will take an opportunity to comment on some of the normative issues and challenges that attach to agricultural biotechnology patents as illuminated by the two cases in question.

### *Patent Protection in Canadian Law*

Canada's intellectual property regime, like that in most other developed nations that are signatories to the World Trade Organization's Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs), is premised on utilitarian considerations of efficiency that seek to balance the incentives presumed necessary to promote the creation of intellectual works with a corresponding public interest in access to such works. Advocates of strong protection champion the notion that the state is obliged to endow creators with monopoly rights in order to ensure creative development and corresponding societal

progress. Drawing in part on Locke's "just deserts" thesis,<sup>2</sup> this perspective on intellectual property reifies economic rationalism as a natural human characteristic and therefore fits well within the expansionary logic of capital in its drive to stimulate consumer demand and pursue new markets. The economic rationalism inherent in this conceptualization of intellectual property creation is reflected in the substantiating myth of the system, namely that of the particular, spontaneous genius of an individual creator. But as Marx long ago made clear, "all scientific labor, all discovery and all invention . . . depends partly on the co-operation of the living, and partly on the utilization of the labors of those who have gone before" (Marx, 1967, 104). According to one critical contemporary observer speaking in the context of biotechnology, "the patenting of these . . . [genetically engineered agricultural] products . . . can no longer be interpreted as an economic recognition of an individual innovation, but should rather be seen as a political action to give companies an exclusive right to introduce new social relations in global food systems" (Ruivenkamp, 2005, 13).

The predominant intellectual property device applied throughout the biotechnology industry is the patent, which provides an inventor or her legal representative a set of monopoly protections that include the exclusive right to *make, construct, and use the invention*, as well as the right to *sell it to others* to be used. The duration of patent protection in Canada is currently 20 years from the date of filing the patent application (the minimal period permitted under TRIPs). Similar to most other TRIPs members, in Canada an invention is defined as any *new and useful* art, process, machine, manufacture or composition of matter, or any new and useful improvement in any art, process, machine, manufacture or composition of matter. Based on this definition we can derive three substantive elements that must be met in order for something to meet the statutory definition of an "invention" and thus attract patent protection: novelty, utility (the invention must work), and patentable subject matter, meaning that the subject must

2 Building on his contention that a person has "a Property in his own Person," John Locke postulated that a person's labor power is also her own. Therefore, "whatsoever then, he removes out of the State that nature hath provided, and . . . hath mixed his Labor with, and joynd to it something that is his own, thereby makes it his Property" (Locke 1988, 27). In the context of intellectual property, the argument invoked by proponents of strict protection is that once an individual has applied his labor to even intangible things, some form of monopoly protection is warranted — what Gordon (1993) labels a Lockean "I made it — it's mine" justificatory pattern.

fall within the definition of an invention in order to be patentable. A fourth condition for patentability inferred from the requirement of novelty is that of non-obviousness (also referred to as inventiveness).

On February 23, 1993 the Canadian Intellectual Property Office issued Monsanto Company Patent No. 1,313,830. Entitled “Glyphosate-Resistant Plants,”<sup>3</sup> the 52 claims protected by the patent relate to the invention of genetically engineered genes and cells containing those genes that, when inserted into plants, substantially increase the latter’s ability to survive applications of glyphosate-based herbicides. In addition to the genetically engineered genes, patent protection also extends to the process Monsanto developed to create and insert glyphosate-resistant genes into seed, in this case canola. Glyphosate, another Monsanto-patented invention (at least until 2000 when the patent expired) is the active ingredient in the company’s non-selective systemic herbicide that is typically sprayed and absorbed through the leaves of a plant. Its mode of action is to inhibit an enzyme involved in the synthesis of the amino acids tyrosine, tryptophan and phenylalanine, which are critical to plant survival. Because it is a non-selective herbicide, glyphosate kills a broad spectrum of plants/weeds other than those that are genetically engineered to be resistant. This has made it easier for farmers to prepare fields for planting and to control weed growth, although evolving weed resistance is rapidly becoming a major problem.<sup>4</sup> Roundup-Ready is the trade name Monsanto uses to market its line of glyphosate-resistant seeds. Agricultural producers who wish to purchase any of Monsanto’s genetically engineered seeds must sign and adhere to Technology Use Agreements (now rebranded as “Technology Stewardship Agreements”), which contain the following terms: only Roundup or another authorized herbicide may be used; growers must implement an insect resistance management program when planting crops genetically engineered to resist certain insects; a grower may *use* (as we will see below, the wording here is important) the seed solely for planting a single commercial crop; none of the seed may be given to another person or entity for

3 Although technically incorrect, Monsanto’s choice of title for the patent was actually quite prescient, as we will see below.

4 According to the International Survey of Herbicide Resistant Weeds, 20 species of weeds in 16 different countries have developed resistance to glyphosate. Evolved resistance against glyphosate has become especially problematic and prevalent given the popularity of this broad-spectrum herbicide.

planting; none of the seed from the resulting crop may be saved for planting in subsequent years; seed may not be used or allowed to be used for crop breeding, research, generation of herbicide registration data, or seed production; Monsanto expressly limits its liability for any loss incurred from using the product to the price of the seed and dictates how farmers must proceed if they launch a claim; farmers must provide Monsanto complete access rights to their fields and records to conduct what the company refers to as Technology Protection Audits; and Monsanto reserves the right to enjoin growers found in breach of contract from ever again using or selling its seed (Monsanto Canada Inc., n.d.).

Monsanto has long made it publicly clear that it will launch civil suits against farmers who refuse to adhere to the terms it imposes on sales of its genetically engineered seeds. For example, in June 1998 the company published the following warning to farmers in various newspapers:

When a farmer stores and sows biotech seeds (genetically modified seeds) patented by Monsanto, he should understand that he is in the wrong. This holds true even if he has not signed any contract at the time of procuring seeds (that is, if he recycles or if he buys seeds illegally from a neighbour). He is pirating. . . . Moreover, this pirating of seeds could cost the farmer hundreds of dollars per acre by way of damages, interest and legal costs, apart from having to undergo the inspection of his fields and records over many years. (Cited in de la Perrière and Seuret, 2000, 12.)

In order to prosecute such claims the assay of crops, commonly referred to as “genome control” by seed producers, is becoming a major activity of these multinational corporations, who devote significant laboratory resources to developing detection tools to aid in enforcing their Technology Use Agreements (Lewontin, 2000). According to a report issued by the Washington, D.C.-based Center for Food Safety (2004), Monsanto has an annual budget of US\$10 million that includes a toll-free number for people to inform on others suspected of “seed piracy” and a staff complement of 75 people who are dedicated to investigating and prosecuting farmers.

They fan out into fields and farm towns, where they secretly videotape and photograph farmers, store owners, and co-ops; infiltrate community meetings; and gather information from informants about farming activities. Farmers say that some Monsanto agents pretend

to be surveyors. Others confront farmers on their land and try to pressure them to sign papers giving Monsanto access to their private records. Farmers call them the “seed police” and use words such as “Gestapo” and “Mafia” to describe their tactics. (Barlett and Steele, 2008, para. 9.)

True to its word, Monsanto has sued a number of Canadian and American farmers. As of 2005 Monsanto had been awarded over US\$15 million in the United States against farmers, although that number underestimates the true amount collected by the company since it does not include those sums obtained in the large number of lawsuits settled out of court (Center for Food Safety, 2004). Despite these more recent cases, arguably the most well-known example of Monsanto’s penchant for patent infringement litigation against farmers remains the lawsuit launched against Percy Schmeiser.

*Monsanto v. Schmeiser, aka Goliath v. David*

Percy Schmeiser, who has been farming for over 50 years in Bruno, Saskatchewan, engages in the practice of saving and crossbreeding seed for use in future plantings. In 1997 he planted a crop of canola using seed he had saved from the previous year — a year in which five neighboring farmers planted Roundup Ready canola. During the course of growing year 1997 Schmeiser sprayed Roundup herbicide around power poles and ditches near the road that were infested with “volunteer” canola<sup>5</sup> and weeds. Upon noticing several days later that a number of the volunteer canola plants had survived the spraying, Schmeiser proceeded to test for more intensive volunteer canola by spraying an adjacent three-acre patch with Roundup. Approximately 60% of the plants on this tract of land survived. Schmeiser subsequently harvested the canola from the patch he had sprayed with Roundup, although he did not sell it and stored it separately on his farm. In the same year Monsanto inspectors, acting on an anonymous tip from a neighboring farmer, took samples from the public road allowances around Schmeiser’s farm and confirmed that he had Roundup Ready canola growing in his fields without the company’s permission. In March 1998 Monsanto representatives informed Schmeiser of their

5 Volunteer canola is considered by farmers to be a weed and, in fact, herbicide-tolerant volunteer canola is now prevalent across much of the Canadian Prairies.

belief that he had grown Roundup Ready canola without a license. At around the same time Schmeiser had the plants he had harvested from the three-acre patch treated at a local seed plant for use as seed, which, together with some other bin-run seed and fertilizer, were subsequently sown on 1,030 acres across nine of his fields in 1998. Monsanto stepped up its sample taking and analysis activities in 1998, including from the seed treatment facility Schmeiser had employed to have his seed cleaned. According to independent analysis between 95 and 98% of Schmeiser's 1998 canola crop was Roundup resistant.

Monsanto then initiated and prevailed in a lawsuit against Schmeiser for patent violation. Counsel for Schmeiser attempted to argue that Monsanto's patent was invalid on the grounds that genetically engineered canola is not patentable subject matter under the Canadian *Patent Act*, and that the claimed invention with regard to replication of the gene is not caused by human intervention but by natural means. In his judgment, Mr. Justice McKay of the Federal Court Trial Division wrote that the replication of the gene through natural events did not preclude registration under the Act because the invention to which patent protection attaches is for the creation of the gene and the process for inserting it (*Monsanto Canada Inc. et al. v. Schmeiser et al.*, 2001, para. 81; hereafter cited as *Schmeiser-FCTD*). Schmeiser's counsel furthermore sought to argue that any infringement was unintentional and that the source of the original contamination was unclear.<sup>6</sup> McKay made short shrift of the former claim, pointing out that "infringement occurs when the essence of an invention is taken, regardless of the intention of the infringer" (*Schmeiser-FCTD*, para. 115). In respect of the latter, Mr. Justice McKay wrote that the evidence suggested Schmeiser "knew or ought to have known" that the seeds he saved and planted the following year contained Monsanto's patented invention, thus establishing infringement (*Schmeiser-FCTD*, para. 120). Finally, a principal defense raised on behalf of Schmeiser was that he had not made use of the patented invention because he

6 Canola, unlike corn and wheat, has not been domesticated and continues to possess a number of wild species traits. Canola seeds can remain dormant for anywhere between six and ten years and they can germinate at any point in the season, not just in the spring. The physical characteristics of the seed (small, round, and smooth) allow it to be transported easily by wind and its pollen can be moved several kilometers by insects. Also, once a field has been planted with Roundup Ready Canola the soil remains contaminated with shattered seeds from that year's harvest, even if in subsequent years conventional canola seed is planted (Clark, 2001).

did not spray the 1998 canola crop with Roundup. Again, Justice McKay rejected this reasoning:

In my opinion, whether or not that crop was sprayed with Roundup during its growing period is not important. Growth of the seed, reproducing the patented gene and cell, and sale of the harvested crop constitutes taking the essence of the plaintiffs' invention, using it, without permission. In so doing the defendants infringed upon the patent interests of the plaintiffs. (*Schmeiser–FCTD*, para. 123.)

Perhaps most troubling, the court concluded that even though Monsanto could not control how the gene was dispersed throughout the countryside it was nonetheless entitled to patent protection under the Act; trying to establish corporate liability for the agricultural, economic, and environmental ramifications of its genetically engineered seeds is precisely the issue around which the Organic Agriculture Protection Fund suit revolved (as elaborated more fully below). Schmeiser was enjoined from planting or selling any seed retained from his 1997 and 1998 canola crops or any other seed saved from plants which are known or ought to be known to be glyphosate-resistant. Moreover, any remaining plants or seeds from the 1997 and 1998 crops in Schmeiser's possession were to be delivered up to Monsanto. Schmeiser was also ordered to pay \$19,832 in profits to Monsanto and \$153,000 to cover the latter's legal costs.

Although the Federal Court of Appeal unanimously rejected Schmeiser's appeal, on May 8, 2003 he was granted leave to appeal to the Supreme Court of Canada, which heard the case in January 2004. Yet in its majority decision from May 2004, and despite the seeming contradiction with its Harvard oncomouse decision made in 2002 that refused the patentability of higher life forms, the Supreme Court upheld the validity of Monsanto's patent, finding Schmeiser guilty of patent infringement. In their 5:4 decision, written by Madame Chief Justice McLachlin and Justice Fish, the Justices reasoned that Monsanto's patent is valid because it is limited to the genetically engineered genes and the modified cells without including the plant itself. Justices MacLachlin and Fish went on to write: "infringement through use is thus possible even where the patented invention is part of, or composes, a broader unpatented structure or process" (*Monsanto Canada Inc. v. Schmeiser*, 2004, para. 43; hereafter cited as *Schmeiser–SCC*). As such, by cultivating plants that contained validly patented material

vital to the growth of the plant (*i.e.*, since the genes exist throughout it), the majority reasoned, Schmeiser necessarily infringed Monsanto's patent. Indeed, throughout the ruling the majority is at pains to establish a perceived vital connection between the genetically engineered gene and cells to which patent protection attaches and the plants that contain such genes and cells. The argument is thus made that "where a defendant's commercial or business activity involves a thing of which a patented part is a significant or important component, infringement is established. It is no defense to say that the thing actually used was not patented, but only one of its components" (*Schmeiser-SCC*, para. 78).

This position is disputed by the minority opinion, which, while affirming the product and process claims of Monsanto's patent, nonetheless points out that neither type of claim may extend to higher life forms since they are beyond the scope of patentable subject matter in Canada. In order to preclude *de facto* protection over the entire plant the minority reasons that the plant cell claim must not reach beyond the point where cells begin replicating and differentiating into plant tissues. Otherwise, the claim would extend to every cell in the plant, essentially meaning to the plant itself — something with which the majority seems comfortable. Similarly, the method claim must end at the point of the regeneration of the genetically engineered founder plant and not extend to methods for propagating that plant. This same claim limitation would also apply to the progeny of the regenerated plant. The minority thus concludes that Schmeiser cannot be held guilty of infringement.

The majority of the Supreme Court also rejected Schmeiser's claim that he was not guilty of infringement because he did not spray his crops with Roundup Ready herbicide and thus made no use of Monsanto's patented gene. According to their opinion, "whether or not a farmer sprays with Roundup herbicide, cultivating canola containing the patented genes and cells provides stand-by utility. The farmer benefits from that advantage from the outset: if there is reason to spray in the future, the farmer may choose to do so" (*Schmeiser-SCC*, para. 84). But as the minority opinion asserts, to allege stand-by utility is again tantamount to conferring patent protection on the entire plant itself. The Supreme Court did, however, reduce the damages awarded to Monsanto in the lower courts. It set aside the requirement to pay Monsanto the profits from his 1998 crop, arguing that Schmeiser did not earn any additional revenue from using Monsanto's

genetically engineered seeds above the amount he would have earned by growing non-genetically engineered varieties. More importantly (at least for Schmeiser), given the mixed results of the appeal each party was ordered to bear their own costs throughout. If the Schmeiser decision cements the power of Monsanto and other biotech giants to enforce and prosecute their intellectual property rights, the next case reveals the lacunae in current legislation and common law with respect to establishing corresponding duties on these rights holders.

### *Organic Producers v. Monsanto and Bayer CropScience*

Based on the various courts' reinforcement of Monsanto's rights of control over its genetically engineered canola, a logical conclusion would be that with such control comes corresponding duties and responsibilities. Precisely this reasoning informed the attempts made by a group of organic agricultural producers in Saskatchewan to launch class action litigation against Monsanto and Bayer CropScience. In response to the contamination of organic canola by genetically engineered varieties of canola seed, the Saskatchewan Organic Directorate<sup>7</sup> established and mandated a self-sustaining committee known as the Organic Agriculture Protection Fund to pursue the class action civil suit.

The Organic Agriculture Protection Fund, with Larry Hoffman and Dale Beaudoin as the named plaintiffs, attempted to become certified as a class action under the Saskatchewan *Class Actions Act*. In its statement of claims submitted in early 2002 the Organic Agriculture Protection Fund sought compensation for damages caused by the introduction of genetically engineered canola and for costs incurred by organic farmers to remove genetically engineered canola from their fields and seed supplies. The statement of claim further contended that Monsanto and Bayer CropScience were liable in negligence, strict liability, nuisance, and trespass (*Hoffman and Beaudoin v. Monsanto Canada*, Sask. Q.B., No. 67 of 2002, Statement of Claim). The claim of *negligence* was based on the defendants' alleged failure to ensure that their genetically engineered canola would not infiltrate or contaminate farmland, to warn farmers about cross-pollination, and

7 The Saskatchewan Organic Directorate is the umbrella organization that unites the province's producers, processors, buyers, traders, certifiers, and consumers of certified organic food and fiber.

to advise growers of farming practices that would limit the spread of genetically engineered canola. The defendants were argued to be liable on the basis of *strict liability* for engaging in a non-natural use of land and permitting the escape of something likely to do mischief or harm. *Nuisance* was claimed because of the interference genetically engineered canola has caused organic farmers in trying to use and enjoy their land. Liability based on *trespass* was purported to arise from the defendants' introduction and unconfined release of genetically engineered canola in Saskatchewan, which has subsequently trespassed on lands owned by organic farmers.

The initial hearing on class certification occurred in November 2004 before Judge Gene Ann Smith of the Saskatchewan Court of Queen's Bench. In her ruling from May 11, 2005, Justice Smith denied the plaintiffs' claims, stating that they had failed to meet the criteria for class certification as set out in the *Act*, including a failure to demonstrate either an identifiable class or a cause of action in negligence, nuisance, strict liability, and trespass. For purposes of the present paper, one element of Smith's ruling in respect of the nuisance claim is particularly problematic: "No harm can be said to have been caused by the *mere* sale or marketing of GM canola" (*Hoffman and Beaudoin v. Monsanto Canada*, Sask. Q.B., No. 225 of 2005, para. 114; emphasis added). The characterization of Monsanto as a *mere* marketer fails to reflect the high level of control exercised by Monsanto over its Roundup Ready seeds through the use of its Technology Use Agreements, which, as we saw previously, license farmers to utilize the gene technology while explicitly retaining ownership firmly within the control of the company. Overall this judgment, which rejects almost all the causes of action claimed by the plaintiffs, seriously calls into question the capacity for common law to provide a judicial remedy to the current asymmetry between rights and obligations in respect of genetically engineered organisms in Canada.

In *Schmeiser* the Federal Court dismissed the defense's claim that the unconfined release into the environment of Roundup Ready canola without control over its dispersion negated Monsanto's claim to enforcement of its rights to exclusive use. Indeed, that Court placed great emphasis on the facts Monsanto introduced to bolster its ownership claims, particularly the company's Technology Use Agreement. Yet when it comes to the question of any corresponding duties that might attach to its ownership rights Monsanto asserted, and the courts

seem to have accepted, the position that the dissemination of genetically engineered canola is so widespread and uncontrollable that the company should not be held liable. Precisely because of this seeming inability of common law to adapt to the new realities posed by biotechnology, countries that have authorized the environmental release of genetically engineered seeds must also develop and implement a *sui generis* legislative framework designed to respond to the challenges posed by these genetic technologies.<sup>8</sup>

Following a failed attempt to appeal Justice Smith's decision at the Saskatchewan Court of Appeal, the Organic Agriculture Protection Fund sought leave to appeal at the Supreme Court of Canada. According to the memorandum of argument submitted to the latter court, "this case seeks to ask whether biotechnology companies incur responsibility when their patented genetically modified seed, pollen and plants infiltrate farmland, causing harm. While *Monsanto Canada Inc. v. Schmeiser* confirmed that these companies have significant exclusive rights to GMO seed and plants, the question remains whether they have any corresponding duties" (Zakreski, 2007, para. 1). Unfortunately, on December 13, 2007 the Supreme Court of Canada dismissed without costs the application for leave to appeal, thus declining to involve itself with a case that promised to set an important national and possibly international precedent on the potential liability of biotechnology companies for harm caused by their genetically engineered crops. On April 16, 2008 Larry Hoffman and Dale Beaudoin announced their intention not to proceed with their individual claims against Monsanto and Bayer, while also noting that they and other organic farmers would continue fighting for the rights to farm free of genetically engineered organisms and to eat nongenetically engineered food. According to Beaudoin: "We are closing a chapter, but not the book.

8 Since 2005 a working group under the Cartagena Protocol on Biosafety has been negotiating an international law on liability and redress for damage caused by genetically engineered organisms. At the fifth meeting of the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety, held in Nagoya, Japan in October 2010, the Parties adopted a new international treaty, the Nagoya Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety. The treaty will be open for signature at United Nations Headquarters in New York from March 7, 2011 until March 6, 2012. It will enter into force 90 days after ratification by at least 40 Parties to the Cartagena Protocol on Biosafety. Though beyond the scope of the present article, the potential implications of this supplemental protocol for the agricultural biotechnology industry and sustainable agriculture beg further research.

We will challenge Monsanto and Bayer for the liberty, freedom and right to grow GMO free crops. We want to be able to save and use our own seed” (n.a., 2008, para. 6).

Taken together these two cases demonstrate an incongruity between rights and any corresponding responsibilities of patent holders in both legislation and at common law. Courts at all levels have upheld patents on discrete genes within genetically engineered plants that, as a minority of Supreme Court Justices point out, provide *de facto* intellectual property protection over entire organisms — something rejected in the Harvard oncomouse case. Yet while courts have been ready to uphold such protection in a manner that effectively extends the rights of patent holders, they simultaneously have been thus far resolutely unwilling to attach a consequent set of obligations to such rights. These results represent a two-fold enclosure of the commons through practices that can be interpreted as contemporary instances of primitive accumulation.

### *Conceptualizing Primitive Accumulation*

Marx provides his most expanded discussion of primitive accumulation in Volume I of *Capital*, where he develops a critique of the “so-called primitive accumulation” articulated by classical political economists. At its most basic, primitive accumulation can be understood as providing the origin of the separation between producers and the means of production (including nature), a separation that represents a historically specific and class-differentiated relationship of control over the necessary means of social production. Most contemporary scholars engaging in a re-invigoration of primitive accumulation as a theory for comprehending contemporary capitalist development tend to agree on three additional basic points about this concept (Bonefeld, 2001, 2002; De Angelis, 2001, 2007; Glassman, 2006; Harvey, 2003, 2006; McCarthy, 2004): First, primitive accumulation should be understood as a continuous process that remains vital for capitalist accumulation. As Marx (1992, 874) informs us, “the capital-relation presupposes a complete separation between the workers and the ownership of the conditions for the realization of their labor. As soon as capitalist production stands on its own feet, it not only maintains this separation, but reproduces it

on a constantly expanding scale.” That is, the separation between producers and the means of production, which represents a central category of Marx’s critique of political economy, is the constitutive presupposition of accumulation and thus common to both primitive accumulation and accumulation in general. In Marx’s own words (1994, 327; emphasis in original), “the manner in which the capitalist mode of production *expands* (takes possession of a greater segment of the social area) and subjects to itself spheres of production as yet not subject to it . . . entirely reproduces the *manner* in which it arises altogether.” The *Grundrisse* similarly weighs in on the issue: “Once this separation is given, the production process can only produce it anew, reproduce it, and reproduce it on an expanded scale” (Marx, 1993, 462). In Part III of his *Theories of Surplus Value*, Marx (1972, 315) is even more explicit about the continuous nature of primitive accumulation, contending that accumulation “reproduces the separation and the independent existence of material wealth as against labor on an ever increasing scale.” For this reason, accumulation “merely presents as a *continuous process* what in *primitive accumulation* appears as a distinct historical process” (Marx, 1972, 272; emphasis in original). We thus note that Marx’s discussion of primitive accumulation contains a basic ontological connection between primitive accumulation and expanded reproduction, such that accumulation in general represents a form of intensified primitive accumulation (Bonefeld, 2001, 2002; De Angelis, 2001, 2007; Mandel, 1975). As Marx (1993, 459; emphasis removed) tells us in the *Grundrisse*, “once developed historically, capital itself creates the conditions of its existence (not as conditions for its arising, but as results of its being).” That is, once produced, capital must reproduce (and indeed expand) the separation between producers and the means of production.

While similar in principle, these two interlinked forms of accumulation differ in their historical basis and their intensity. Whereas primitive accumulation entails an *ex novo* separation, accumulation proper follows from the expanded reproduction of the separation between producers and the means of production. The *ex novo* separation is produced through extra-economic means that set the context for the opposition between producers and the means of production, and give rise to the particular alien character of social labor under the

capitalist mode of production.<sup>9</sup> Obviously this entails a linear temporal dimension in which primitive accumulation must precede the emergence of the capitalist mode of production as the preponderant system of social reproduction. However, once we recognize that primitive accumulation satisfies a precondition for capital accumulation, the temporal element assumes a secular form that encompasses not only the period in which the capitalist mode of production emerges, but also the reproduction and expansion of the capitalist mode of production (De Angelis, 2007).

A typical historic and enduring mechanism for realizing the *ex novo* separation between producer and the means of production is enclosure. The oft-cited historical example is the enclosure of common lands in England (Thirsk, 1967; Turner, 1984; Yelling, 1977), with more contemporary examples having occurred in the last decade of the 20th century throughout Africa, Latin America, and Southeast Asia as a direct result of the various structural adjustment programs imposed on heavily indebted nations that, among other things, transformed traditional land tenure systems to facilitate the privatization of vast expanses of once common lands (De Marcellus, 2003; Federici, 1992; Midnight Notes Collective, 1992; Routledge, 2004).<sup>10</sup> Other instances range from water privatization to the enclosure of knowledge and natural resources through overly restrictive intellectual property regimes (Boyle, 2003; Walton and Seddon, 1994; Wesselius, 2002). Enclosures might also emerge as a by-product of a particular accumulation process, or what economists refer to as a “negative externality.” Negative externalities are those costs associated with the production of a particular product that are borne by actors external to the producer and any transaction involving that product. In both cases, enclosing the commons augments the disciplinary processes of capital because such practices render greater numbers of people dependent upon

9 It is worth noting that Rosa Luxemburg discussed the historically continuous nature of extra-economic prerequisites to capitalist accumulation, which, she asserted, capital not only must engage continuously but also apply to increasingly larger portions of the globe. That is, extra-economic processes (read primitive accumulation) that separate producers from the means of production are continually required as an integral component of ensuring capitalist production, production that must contend with and attempt to overcome the crisis-ridden nature of capitalist accumulation (Luxemburg, 2004).

10 We are now witnessing a resurgence of land enclosures in Africa as foreign countries and transnational corporations seek to buy or lease large tracts of land for agricultural production meant for foreign markets.

the market in order to reproduce their livelihoods; *i.e.*, they enforce the basic element of primitive accumulation.

The second point about primitive accumulation is that it assumes a variety of forms, including the privatization of once public goods, which has the ultimate effect of reorganizing class relations in favor of capital (De Angelis, 2007; Harvey, 2003, 2006). As we saw above, Monsanto has made effective state- and court-sanctioned use of patent protection to obtain control over a natural resource — canola — developed over many years in Saskatchewan that represents a vital part of that province's common agricultural wealth. Indeed, construed at a more general level the contemporary intellectual property system functions as an important mechanism for primitive accumulation by stripping populations of their rights to natural resources and knowledge that have been developed in common over centuries. The third feature of primitive accumulation speaks to its spatial ambition. Though long a feature of capitalist expansion in the global south, primitive accumulation today is assuming an integral role in capitalist accumulation processes in the global north, particularly given the vital importance information and knowledge play in value generation for multinational corporations. Having historically extended the territorial reach of capitalist social relations through colonial expansion and the imposition of private property rights in many countries across the globe, primitive accumulation in the 21st century has become both more extensive and intensive, affecting an enormously broad range of spatio-social activity. In practice primitive accumulation motivates efforts by capital to enclose more and more areas of our social and natural being, as evidenced particularly within the biotechnology sector. Having run up against a number of natural limits to growth in the form of finite territorial resources, biotechnology offers capital a new suite of tools to plumb the depths of biological existence at the genetic level in search of new sources of capital accumulation. Through biotechnology capital is able to shift its practices of primitive accumulation from an expansive and extensive plundering of the world's geography that itself is being increasingly exhausted toward an intensive and interior exploitation of the natural world (De Angelis, 2007; Harvey, 2003, 2006; Katz, 1998).

The Schmeiser and Organic Agriculture Protection Fund cases provide examples of direct and indirect enclosures that can be understood as contemporary instances of primitive accumulation in service

of capital. The former case exhibits a deliberate act of *ex novo* enclosure of the canola genome that has been facilitated by the intellectual property regime. Through patents the natural reproducibility of seeds, a critical agricultural input long considered to be a common resource developed through co-operative social labor across millennia, is being enclosed in a way that enforces artificial scarcity upon a natural resource. This has been made possible because, as we saw above, control over a few patented genes and genetic engineering processes has conferred on Monsanto *de facto* control over the entire plant and thus the complete range of previous labor and knowledge contained therein. In what can only be regarded as blatant acts of biopiracy, a few multinational corporations are appropriating rights of control over and access to such resources and the information and knowledge embodied in these physical artefacts (Shiva, 1997, 2001). Similarly, the Technology Use Agreements to which agricultural producers must adhere provide Monsanto with a substantial level of control over not only its seeds but also over the farming practices of growers. The Organic Agriculture Protection Fund case demonstrates how the accumulation imperatives made possible by the first type of enclosure can exercise knock-on enclosing effects on external parties. Genetically engineered canola varieties have effectively infiltrated the market and environment to such an extent that few, if any, pedigreed canola seed growers or grain farmers can warrant their seed as being GE-free. Because of the contamination caused by genetically engineered canola, conventional and especially organic farmers have lost this crop as an important variety within their rotations. These companies were quite aware of and no doubt banked on the fact that without adequate safeguards conventional and organic farmers would be circumscribed in their ability to use the genetic resources of canola. The net effect of such actions has been the enclosure of canola germplasm by Monsanto and other companies to the detriment of all agricultural producers; GE farmers are disallowed from saving and reusing increasingly expensive seed and non-GE producers are no longer physically able to produce uncontaminated conventional or organic canola crops.

Again, the courts have re-affirmed both types of enclosure in a most unsatisfactory and inconsistent manner. In *Schmeiser*, the courts confirmed Monsanto's ownership claims to its patented gene in a way that establishes control over the entire plant, regardless of the

means by which the gene enters a field. But in the case of the Organic Agriculture Protection Fund, ownership and the corresponding tight restrictions on use claimed by Monsanto through the patent itself and its Technology Use Agreements were no longer an issue because the courts construed Monsanto (and Bayer CropScience) as a *mere* marketer. So if a patented, genetically engineered seed disperses into the environment, ownership interests attach in order to prosecute patent rights; but when issues of liability for contamination arise these same companies are absolved of responsibility through claims that they lack control by virtue of being mere marketers. Taken together, these two decisions provide a jurisprudential framework that supports the accumulation imperatives of agricultural biotechnology companies. Moreover, these examples demonstrate how contemporary processes of primitive accumulation are in fact expanding the alienation Marx elaborated to include new strata of producers beyond the orthodox Marxist emphasis on the industrial proletariat and waged labor. These cases are testament to the expanding range of actors caught up in practices of primitive accumulation and capitalist control of social production processes.

### *Conclusion*

Capital has from the start sought to enclose the commons. From colonization to slavery, from the work day to the home, from activity to the deepest thoughts and feelings, the history of capital is its extension into the human commons (Neill, Caffentzis, and Machete, n.d., para. 46).

Corporate control of agricultural biotechnology, through such means as patents and Technology Use Agreements, represents a new modality of capitalist primitive accumulation that strives to circumscribe natural cycles of reproducibility in a manner that forces agricultural producers to purchase from an oligopolistic set of supposed life science companies a vital input that for millennia was freely given by nature. From the perspective of multinational biotechnology corporations, saving, trading, and reusing seeds present substantial obstacles to one of their main business lines. Through this optic we can interpret the intellectual property regime, particularly in its expanded contemporary manifestation, as a state-enforced system designed to expedite the private expropriation of some or all of the value that

is produced in common through the cooperative relationships of biopolitical production (Hardt and Negri, 2004). What were once considered natural elements of common property are now deemed to be products of individual human labor and ingenuity to which attach private property rights of exclusion and enclosure. In point of fact the intellectual property system facilitates the appropriation of knowledge that has been developed in common for centuries, separating labor from its own knowledge, thus serving not only to reduce living knowledge to abstract knowledge, but also to actually devalue the former — which usually occurs along north–south divisions.

Yet might it not be argued credibly that people who develop their ideas and inventions based upon those that have come before them are engaged in personal appropriation of the public domain? Are these creators, similar to Newton, not standing on the shoulders of those giants who came before them? Is the notion of the “autonomous invention” thus a myth employed to construct discursively and legally an uneven system based on individuating alienable “things” that can circulate as exchange values (Haraway, 1997)? Should one not heed the Lockean proviso that removing objects from the commons is permissible only so long as there is “enough and as good left for others”? As one commentator lyrically points out, “the naked hubris that posits genes, biological processes, and whole organisms as alienable privatized inventions is quite evidently a multi-faceted theft and ought rightly to be named as such” (Prudham, 2007, 414). If the provision of property rights is considered to be the optimal means by which to spur intellectual innovation, then consideration must also be given to measures and limits on such rights to protect the common pool, or public domain, so that a net decrease in the production of informational and cultural artefacts does not ensue. Instead, contemporary intellectual property regimes, both nationally and internationally (the latter impinges on the former), function as legal mechanisms or instances of state support of modern enclosures in much the same way that the state facilitated historical terrestrial enclosures. The difference today is that the knowledge enclosures around biotechnology being achieved through the intellectual property regime have very real implications for a number of biological resources that up until about the last three decades remained common resources largely beyond the purview of capitalist commodification.

Capital's expanding exploitation of social labor and nature brings with it a corresponding substitution of value accumulation imperatives for use-value as the driving motivation for production, leading to a situation in which the social conditions that provide the basis for social production come to confront labor as the power of capital:

The forms of socially developed labour . . . appear as *forms of the development of capital*, and therefore the productive powers of labour built up on these forms of social labour — consequently also science and the forces of nature — appear as *productive powers of capital*. In fact, the unity of labour in co-operation, the combination of labour through the division of labour, the use for productive purposes in machine industry of the forces of nature and science alongside the products of labour — all this confronts the individual labourers themselves as something *extraneous* and *objective*, as a mere form of existence of the means of labour that are independent of them and control them. . . . And in fact all these applications of science, natural forces and products of labour on a large scale . . . appear only as *means for exploitation* of labour, as means of appropriating surplus-labour, and hence confront labour as *powers* belonging to capital. (Marx, 1963, 390–92; emphasis in original.)

The prescience and sagacity of Marx's thought for our contemporary situation can not be emphasized strongly enough when considering the material presented in this paper, particularly in respect of the way capital makes adept use of the intellectual property regime to bring agricultural biotechnology firmly within its ambit. Writing in the *Grundrisse*, Marx (1993, 527; emphasis in original) long ago broadly anticipated the development of precisely such a scenario under capitalist agriculture: "If agriculture itself rests on scientific activities — if it requires machinery, chemical fertilizer acquired through exchange, seeds from distant countries etc., and if rural, patriarchal manufacture has already vanished — which is already implied in the presupposition — then the machine-making factory, external trade, crafts etc. appear as *needs* for agriculture." The expanding range of biotechnological resources protected by intellectual property rights furnishes capital a vital extra-economic prerequisite to biocapitalist (re)production that not only endures in contemporary society but that also is being extended across the globe. Capitalist controlled agricultural biotechnology threatens a repeat of the failed Green Revolution; today the genetic treadmill is being substituted for the chemical treadmill.

Under the dominance of capitalist social relations we thus witness a further instance of the social separation of the conditions of production from the control of the direct producers in service of capitalist valorization.

Similar to what Marx (1993, 799) outlined in respect of the development of machine industry, through agricultural biotechnology traditional knowledge appears increasingly as alien and external to agricultural producers “in the same proportion as science is incorporated in it as an independent power.” But at an even more basic level, Marx (1992, 348), heavily influenced by the work of the German agricultural chemist Justus von Liebig, recognized that the contradictions inherent in capitalist property relations promoted a “blind desire for profit that . . . exhausted the soil.” The result was that farmers began losing their ability to autonomously reconstitute their own means of production: “agriculture no longer finds the natural conditions of its own production within itself, naturally, arisen, spontaneous, and ready to hand, but these exist as an independent industry separate from it” (Marx, 1993, 527). “The moral of the tale . . . is that the capitalist system runs counter to a rational agriculture, or that a rational agriculture is incompatible with the capitalist system (even if the latter promotes technical development in agriculture) and needs either small farmers working for themselves or the control of the associated producers” (Marx, 1967, 216; cf. Kautsky, 1988). So while there might not be a formal separation of agricultural producers from the most basic means of production (land), agricultural production nonetheless is subsumed increasingly within the capitalist mode of production through which agriculture is transformed from being a handicraft whose knowledge is passed down through generations to a science, or perhaps more accurately a complex of sciences, integrated into capitalist relations of production (Kautsky, 1988). Such prospects are exacerbated by capitalist control over seed technology, which strips farmers of traditional agrarian knowledge and nudges them even further into debt as prices for these critical inputs soar.

What I hope to have demonstrated with the preceding discussion is that the capitalist appropriation of science, specifically agricultural biotechnology, represents a contemporary example of primitive accumulation that touches on all three elements of this process as articulated above. As biotechnology developed from the 1970s onward to a stage sufficient for capitalist valorization, capital began exerting a

stranglehold over this technoscience in what can be interpreted as an instance of another area of social existence now brought under capitalist control, thus reinforcing the idea that primitive accumulation remains a continuous social process. As we saw in this paper, large swaths of the social knowledge in respect of agricultural production increasingly are being appropriated by capital, which represents intensified efforts to privatize once public goods. Finally, efforts by capital to bring agricultural biotechnology profitably within its control involve the same spatial ambitions outlined previously in respect of primitive accumulation. Given the informational characteristics of biotechnology as well as the embodied existence of genetic materials, both the global north and south are confronted by the efforts of capital to bring this technoscience firmly within its ambit. That capital continues to arrogate to itself control over both material and intellectual means of production in our contemporary context is clearly evident in the realm of agricultural biotechnology, which is characterized by increasing attacks on both the biological and knowledge commons as part of broader capitalist accumulation strategies.

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