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Perspective

Getting to the core of the matter: The rise and fall of the Nova Scotia apple industry, 1862-1980

Anika Roberts-Stahlbrand
anikalrs@gmail.com

Abstract

This article will apply food regime theory to an examination of the rise and fall of the apple industry in Nova Scotia between 1862 and 1980. From the 1860s until World War II, apples were a booming cross-Atlantic export business that continued the colonial bonds to Britain. But after the war, Britain developed its own domestic apple industry, and Nova Scotia apples failed to capture a loyal and secure market based on taste or quality. This led to the decline of the industry by the 1980s. Since that time, a new local apple industry based on taste and craft processing has arisen in Nova Scotia. This article affirms the broad historical analysis of food regime theory, while suggesting an enhancement of its assessment of the role of ecology.

Keywords: Food regime theory; apple industry; Nova Scotia; value-added; ecology

Introduction

In this article I will apply food regime theory to an examination of the rise and fall of the apple industry in Nova Scotia between 1862 and 1980. Due to the apple's prominence in Nova Scotia,

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there have been a number of other studies on this topic (Conrad, 1980; Hatchard, 1980; Hutten, 1981). However, none use the framework of food regime theory, nor do they specifically highlight the relationship between humans and the place-based ecological context of Nova Scotia—a subject I will comment on briefly in relation to the need to enhance food regime theory.

Food regime theory, developed by Friedmann and McMichael (1989), is a framework to understand the deeper and broader economic and political events that underlie historical food periods. The theory examines changes in food systems as connected to structural turning points in the reorganization of capital, state power, and modes of food production. Food regime theory is a way to historicize food by linking "international relations of food production and consumption to forms of accumulation broadly distinguishing periods of capitalist transformation" (Friedmann & McMichael, 1989, p. 96). It illuminates how each transition reframes the politics, scope, and technologies of agricultural development (McMichael, 2009). Food regime theory can provide insight into the apple industry in Nova Scotia. Although a case study of the Nova Scotia apple industry affirms the analytical capability of food regime theory, I argue that it also indicates a need for a greater focus on the integration of ecological and environmental concerns.

The first food regime, occurring between the1870s–1930s, was characterized by colonial exports to Europe which provided cheap food for European industrial workers. Colonies, such as Nova Scotia, had low-cost land to produce inexpensive agricultural commodities, and Britain had the technology and the people to create affordable industrial products, as long as factory workers could survive on cheap food. In this period, mass produced products began replacing regional production.

The post-colonial second food regime, occurring between the 1950s–1970s, was characterised by the rise of durable foods and industrialized agriculture. There was an increase in transnational agro-food sectors, specialization, and intensification. Presently, there is a debate about whether we have emerged into a third food regime (Friedmann, 2009; McMichael, 2009). However, the current situation, starting in the 1980s, is characterized by deepened global exchange, consolidated supply chains, displaced farm and peasant populations to cities, and a heavy reliance on fossil fuels for food production. At the same time, this hyper-globalization and corporatization has produced contrary movements that call for re-localization and food sovereignty (Friedmann & McMichael, 1989; McMichael, 2009). This paper will focus on the Nova Scotia apple industry during the first and second food regimes.

Historical Context (1605–1770)

The first written reference to the apple in Nova Scotia was made in 1605 by French explorer Samuel de Champlain, in a comment about frozen apple cider one cold winter on the frontier (Hutten, 1981). In the following decades, the French Acadians learned to harness the ecological

conditions of the Bay of Fundy in the Minas Basin and Annapolis Valley regions to create fecund agricultural soils. The success of Acadian agriculture in Nova Scotia was part technological prowess and part product of the ecology. The tides of the Bay of Fundy bring eroded particles of rocks and sea cliff into the water, which then attractions of minerals important to plant growth such as magnesium and potassium. As the tide moves into the marsh regions in the bay, it brings these soil-enhancing minerals and nutrient-rich decaying matter onto the land (Bleakney, 2004; Butzer, 2002). The Acadians developed a way to build dykes to protect the land from salt water flooding while taking advantage of this nutrient-rich soil. This created the fertile soil that allowed the French farmers to sustain a successful agricultural community (Bleakney, 2004). In summary, "the Acadian people were as much a product of the Bay of Fundy and Minas Basin intertidal meadows as was their agrarian produce" (Bleakney, 2004, p. 169).

In the 17th and 18th centuries, agriculture played a large role in the struggles over land among the Mi'kmaq, French, and English. The apple was an important agricultural crop. Practically, the fruit provided alcohol in the form of cider on the harsh frontier (Gwyn, 2014). Symbolically, the French and English saw orchards and agriculture as a justification for the appropriation of Mi'kmaq territory, and a representation of their ability to domesticate the wildness of nature and turn it into geometric and productive land (Pollan, 2002). The apple served as an important tool and symbol for settlement in 16th and 17th century Nova Scotia (for more detail, see: Roberts-Stahlbrand, 2014).

The apple as a booming cross-Atlantic business (1862–1933)

The apple brought Nova Scotia onto the world stage in the 19th and early 20th century. This section will examine the rise and golden years of the apple industry in Nova Scotia from its recognition at the Crystal Palace Fruit Show of 1862 until the peak year of production in 1933. The first period of the apple industry shows how the Nova Scotia apple became an important agricultural export for the province. This period roughly aligns with the first food regime, spanning the 1870s to 1930s, and supports its conclusions, while also noting the added richness highlighted by a place-based analysis.

Prescott as father, Annapolis valley as womb

It would be hard to examine the success of the apple industry in Nova Scotia without discussing its father, Charles Ramage Prescott, who lived 1722–1859. He arrived in Nova Scotia in the late 18th century and established Acacia Grove, which would become a hub of horticultural activity. Prescott was a gentleman farmer who used his wealth and privilege to improve fruit cultivation in Nova Scotia (Hatchard, 1980; Hutten, 1981). Most famously, he brought the Gravenstein to

Nova Scotia, which became a popular variety for over a century, and is still sold today (Hatchard, 1980).

According to some apple devotees, there are only a few places in the world that are able to grow the Gravenstein, and only in Nova Scotia can the apples reach their peak quality (Hutten, 1981). The climate proved pivotal to the early popularity of the apple in the province. Nova Scotia, and specifically the Annapolis Valley, has prime apple-growing conditions that have likely given them an advantage in global trade. For apple trees to grow, their roots need to be kept relatively dry, they need access to sun, and they need cold winters to let the trees rest (Wynn, 1975). Historical and current climactic reports show that the Annapolis Valley had especially good climatic conditions that gave growers a competitive advantage in regards to input costs and apple quality (Growing Nova Scotia, 2014; Province of Nova Scotia, 2006). This is an example of how ecology can be a semi-autonomous factor in determining how food regimes play out on a local level.

The climatic advantage led to production rates that were quite astounding. In the 1930s, the peak years of apple production, it is estimated that Nova Scotia produced 40 percent of all the apples produced in Canada. Of these apples, 75 percent of Nova Scotian apples were produced in a 40km radius surrounding Kentville, a key city in the Annapolis Valley region (Conrad, 1980). For the inhabitants of Kings County, where Kentville is located, "it was a source of great pride" that they produced so many of the province's, and indeed the country's, apples (Conrad, 1989, p. 19). The apple was not just something that happened to grow in the Annapolis Valley. It became an important part of the inhabitants' identity and culture. To this day, "the apple is king" in the Annapolis Valley (Mason, 2010). The annual apple blossom festival, which began in 1933, is still held each year.

The birth of the apple industry

In 1862, an international Fruit Show was held in England's *Crystal Palace*, the building made famous by the Great Exhibition of 1851. Nova Scotia had a prominent location in the exhibition, which provided a way "to indicate to the world the very varied, and hitherto almost unknown capabilities of the Province" (Nova Scotia Department, 1862, p. 1). The apples were widely admired. This exhibition put Nova Scotia on the world stage, and positioned it as the premiere apple producer within the British Empire. British buyers immediately realized the benefits of buying fruit from Nova Scotia, which had good growing conditions and available space for agriculture, and Britain provided a large number of consumers. It was a perfect partnership, and "from then on, the Nova Scotia apple industry grew in direct relation to the British Market" (Hutten, 1981, p. 26).

The next year, in 1863, Nova Scotian fruit farmers came together to form the Nova Scotia Fruit Growers' Association (NSFGA). That same year, the first apple barrel was made in the province. Previously, apples had been stored and sold in leftover containers found around the

farm (Meister, 1921). A few years earlier in 1861, a port had opened at Annapolis Royal and interprovincial railways proliferated throughout the 1860s and 1870s (Conrad, 1980; Hutten, 1981; Knight, 1862). Within a few short years, the product, the container, the transportation, and the consumer all came together—and an industry was born.

The ability to transport apples more easily to the British market led to increased apple production. The earliest records available of mass apple export start in 1880, and provide an average annual production of apples over a four year period. Here, all production levels will be reported in terms of barrels for the sake of consistency; although they have been recorded in barrels and bushels throughout history. A conversion rate of one barrel to 3.23 bushels has been assumed, based on an 1899 law stipulating the size of apple barrels (Apple Capital Museum Society, n.d.). Between 1880 and 1884, the average annual apple production was 9,333 barrels, with 32 percent exported and 68 percent consumed fresh in Canada. By 1900-1904, 371,000 barrels were produced on average each year, and almost 80 percent of Nova Scotian apples were exported to England. The year 1920 marked the first time apples were processed by drying in fire-powered evaporator facilities. The numbers kept growing, and by 1924, 1,471,000 barrels of apples were produced in Nova Scotia (Longley, 1932).

Quality concerns

Prior to 1939, apples from the Annapolis Valley sold in England because of their price, not their quality (Conrad, 1980). Sturdy, late-keeping, medium quality cooking apples catered to the desire for cheap apples, and the need for apples that could withstand transport. Complaints about quality led to the 1901 Federal *Fruit Marks Act*, which enforced a grading system for apples (Hutten, 1981).

Quality concerns persisted and even challenged the industry in boom times. As Ralph Eaton, an influential apple grower, said in 1909, “notwithstanding all the laurels we have won...we are annually growing an enormous amount of poor and practically worthless fruit” (Eaton in Gwyn, 2014, p. 71). The *Natural Products Marketing Act* of 1934 was another failed attempt to regulate quality, and British buyers became increasingly frustrated with the unreliable quality of Nova Scotian apples (Conrad, 1980). An official government agricultural marketing board was established in 1935. With a premonition of what was to come, the government attempted to create a local market with the *Buy Home Products* campaign of the early 1930s. According to their own report, it did not prove very successful (NSDA, 1934). Nova Scotians wanted sweeter, good quality apples that were not being grown for Britain, and instead got the apples that were not good enough to ship (Gwyn, 2014, p. 84).

Introduction of synthetic inputs

The spread of apple monoculture throughout Nova Scotia in the late 19th and early 20th centuries led to increasing problems with pests. In the early 20th century, the government began to take a systematic interest in agriculture and the use of pesticides. Under the request of the NSFGA, an agricultural research station was established in Kentville in 1910 by the provincial government (Hutten, 1981). The Nova Scotia Department of Agriculture (NSDA) also produced pest bulletins and hired pest inspectors and entomologists.

One of these pests was the brown-tail moth, which originally came from Europe through cross-Atlantic trade, and had no natural predators in Nova Scotia. The brown-tail moth was such a problem, that in 1913 a special bulletin was put out with "the very best coloured illustrations" so that everyone would be familiar with it (Matheson, 1913, p. 5). The generalized audience for this bulletin shows not only the pervasiveness of the pest, but also the pervasiveness of the apple in Nova Scotia. It stated that, "Everyone should become familiar with the various stages in the life-history of these two insects [the bulletin also contained information about the gypsy moth] and should continually watch for their appearance in his neighbourhood**"** (Matheson, 1913, p. 5). It seems as if the apple was important enough to Nova Scotia that it was every citizen's responsibility to guard against the spread of destructive pests.

The apple maggot was another common apple pest that was first reported in 1913. It later became such a menace that the NSDA established a branch called the maggot control board. Although an agricultural bulletin from 1917 stated that one can control the apple maggot by destroying fallen fruit, experiments "indicate that a cheaper and easier method may be found in the use of arsenical sprays" (Britain, 1917, p. 4). The bulletin went on to suggest a spray cycle that included five sprays throughout the season. This is an early example of accepting pesticides as the only sensible way to remove pests, and of a lack of forethought about the environmental implications.

In the early 1900s, pesticides were made with a range of chemicals mixed with water. Farmers would then apply the spray through a hose powered by a hand pump (Hutten, 1981). However, by practical necessity, the increased use of chemicals was "paralleled by the introduction of machines with which to apply them" (Hutten, 1981, p.103). In 1904 there was a serious case of fungus called black spot, which affected the apple industry. The federal government brought in an experimental power sprayer that ran on gasoline. It was much more efficient than a hand pump, but remained too expensive for most farmers, and was too large to fit in older orchards where trees were planted close together (Hutten, 1981).

This was the beginning of fighting pests with chemicals, but it was not the beginning of the war against nature, which was part of settlement and the early stages of the first food regime. As a report of the Nova Scotia Exhibition of 1854 makes clear, there was a sense of pride in the transition of land from "unbroken wilderness" to productive agriculture (Executive Committee of the Nova Scotia Industrial Exhibition, 1854, p.13). Conquering nature was violent; nature was

something to be broken by hard labour. The report stated that the change towards a productive landscape was not from the "waving of a wand," but required "many a sturdy blow" from axe men "before the wilderness was made to blossom as the rose...Beautiful Farms and neat and comfortable Houses are now seen where formerly naught but the trackless wilderness" existed (Executive Committee of the Nova Scotia Industrial Exhibition, 1854, p. 14).

Pesticides were not the only new agricultural input of the 20th century. Commercial fertilizers also grew in prominence. In the past, fertilizer took the form of fish waste, manure, ash, and other nutrient-rich additives that farmers could gather from their farm, as well as growing nutrient-fixing cover crops such as clover (Hutten, 1981). However, by 1933 the NSDA report spent 28 pages discussing different fertilizers. The report still seemed somewhat suspicious of recommending commercial fertilizers that require large amounts of "cash outlay" when available waste products from the farm did the same job of providing nutrients to the soil (NSDA, 1934).

The 1930s were a turning point for commercial fertilizer, and the NSDA report comments on the changing norms. Although the 1934 report cautions about large amounts of money required for commercial fertilizer, the NSDA notes the incredible capability of commercial fertilizer to provide six times more plant food than homemade fertilizer (NSDA, 1934). This shows the shift from regarding soil nutrients as something a farmer could nurture through the proper recycling of waste materials, towards something that had to be bought.

The first two hundred years of apple growing in Nova Scotia were undertaken with minimal off-farm inputs. It was challenging to make farmers reliant on inputs and capital. Farmers own the farm land, or the means of production, and can create sustainable cycles where they produce all their inputs and upcycle many of their outputs. The use of pesticides and fertilizers is one of the marks of the "penetration of capital into agriculture" (Lewontin, 1998). It meant the farmer could no longer produce everything on the farm, and had to pay money to corporations. Although the use of these inputs was a personal choice, pesticides and fertilizers became increasingly prevalent because they allowed farmers to increase yields and reduce labour costs (Lewontin, 1998). This is what food regime theory describes as the *proletarianization* of the farmer and the extension of capitalist markets to agriculture, a realm that was formerly low in monetary transactions and based on subsistence and barter (Friedmann, 1982).

Depressions and peaks

The Great Depression of the 1930s did not harm Nova Scotian apple growers nor dissuade them from the export-oriented first food regime. In fact, it further deepened this logic. The 1932 British Imperial Economic Conference, held in Ottawa, aimed to stimulate the economy among countries of the Empire during the Depression by improving trade and developing "something like an empire economic system" (Potter, 1932, p. 811). The conference resulted in a bilateral treaty that allowed countries to export raw materials into the British market without tariffs if they

gave preference to British manufactured goods in their local markets. This is commonly known as the *British Preference Tariff* (Rooth, 2010). Here economic dependence on colonial relationships can be seen explicitly in policy, right at the peak of the first food regime (and yet also right before its demise).

As the first food regime peaked, so did the apple. In 1933, Nova Scotia produced 2,862,658 barrels of apples. Of the apples produced, 280, 874 barrels were used in evaporator plants to make dried apples, 15,370 were canned, and 127,994 were made into cider (NSDA, 1934). Despite recent downturns with international trade and the creation and rise of a competitive British apple market, Nova Scotia apples were still almost entirely an export crop with 2,267,592 barrels exported, or 79 percent of total production. Even with the growing British domestic apple industry, Britain was still by far the largest importer of Nova Scotia apples, taking 1,886,347 barrels of the export crop (NSDA, 1934). During this period of 1862 to 1933, apples put Nova Scotia on the world stage. The apple industry became increasingly export-oriented and input-intensive. The apple industry also gave Nova Scotia a place in the world market, and gave the citizens a sense of pride and identity rooted in apple production.

A Rotten Apple: The Decline of an Industry (1939–1980)

The second food regime, from the 1950s to the 1980s, aligns with the second phase of the Nova Scotia apple industry, which is characterized by the protectionist, intra-national re-organization of food production that led to more localized manufacturing, the rise of the durable food complex, and a focus on intensification and high production agriculture (Friedmann & McMichael, 1989). Food regime theory helps illuminate how this movement in the early years of the second regime led to the rise of corporate-controlled food chains, and the increased importance of capital, necessitated by high-input agriculture (McMichael, 2009).

Apple production and sales remained high throughout the 1930s, with an average annual crop of about 1.7 million barrels over the decade (NSDA, 1939). However, Nova Scotians also started purposefully cultivating a local market for their agricultural products. The NSDA marketing board created the *Buy Home Products* campaign in the early 1930s to encourage the apple market at home. They also formed the league of loyal Nova Scotians, where a member pledged to give preference to Nova Scotia products (NSDA, 1934).

The war years

With the declaration of World War II (WWII) in 1939 came the NSDAs commitment to enlist the farmers of Nova Scotia “in a greater production effort” (NSDA, 1940, p. 10). In order to increase production for the war effort, the provincial government instated many new policies and subsidies. For example, a “substantial government cash subvention” kept limestone, a soil

additive, at $1.50 per ton; fertilizer companies agreed not to increase their prices by more than $1 per ton; mechanized tractors and plows were rented to farmers who did not have the capital to purchase the machines, cutting down on labour costs and increasing yield (NSDA, 1940). The war-inspired policies to increase production continued, and the latter half of the 20th century became fixated on yield. In the apple industry this meant that between 1931 and 1961, yield per apple tree went from 1.8 to 5.2 bushels (Hatchard, 1980). This is an outcome of the intensification efforts of the second food regime, partly facilitated by state-subsidized inputs to improve productivity.

WWII, however, was not a positive influence for the Nova Scotia apple industry. As noted by the NSDA marketing branch, "a vital blow was struck at the apple industry of the province when the war was declared last September, and a severe curtailment of shipments overseas resulted" (NSDA, 1940, p. 107). Since a majority of Nova Scotia apple sales went to England, trade restrictions from the war severely limited the market. To address this problem, the federal government negotiated a trade agreement to sell 1.5 million barrels of apples to Nova Scotia processing plants for 65 percent of their average price.

This trade agreement marked a huge jump in processed apples and contributed to the rise of "durable food" products, a key characteristic of the second food regime. "Durable food" is food that is canned, frozen, or processed to extend its shelf life. As the second food regime identified, the move to increase the processing of agricultural products was connected to the integration of agriculture into agro-food and corporate distribution chains. Corporations became more important for both food production and distribution. With a longer shelf life, foods that were once perishable and had to be consumed locally could be manufactured and marketed elsewhere. This shift towards durable products took off globally in the 1950s, reflecting a "larger trend to mass consumption and mass production of standardized products" (Friedmann & McMichael, 1989, p. 108). Not only did the durable food complex allow perishable foods to be sent around the world with more freedom, it also meant that oligopolistic corporate manufacturers became the main purchasers of raw materials as well as the main marketers of products (Friedmann & McMichael, 1989).

This trend can be seen in the case study of the apple. As the second food regime progressed apples were no longer sold from farmer to consumer, but from farmer to corporation to consumer. In 1938, 240,000 cases of canned apples were produced, and this jumped astoundingly with the war so that 1 million cases were produced in 1939 (NSDA, 1940). The processing plants also began making apple juice, which quickly became popular with the Nova Scotia public. The increased manufacturing of fresh apples decreased the power of farmers, and also opened the door to the power of retailers who stored seasonally grown and processed food all year long. At this point the patterns of power in the supply-chain began to shift in tandem with the new food regime (Winson, 1988).

Despite attempts to shift to processing, 1939 marked the beginning of the end for the apple industry in Nova Scotia. Although WWII trade restrictions may have "dropped the guillotine on the Nova Scotia apple industry," it was arguably doomed to fail before the war even

started (Hutten, 1981, p. 45). 1939 marked the year that the British apple market became self-sufficient. There was an immediate and steep decline in demand for apples from Nova Scotia. Apples were still being produced in the province, but no one wanted to buy them. This illustrates the vulnerability of a colony relying on the Empire to buy its undifferentiated product, rather than developing high-quality specialty products and localized food systems.

The transfer of technologies of war

1945, as noted in the first sentence of the NSDA report "will be most vividly remembered as the year when the war ended" (NSDA, 1946, p. 6). WWII ended officially in September 1945. But, according to Ron Kroese, "World War Two did not so much end…as turn its guns and bombs on the land" (Kroese in Roberts, 2013, p. 35). Wayne Roberts calls the post-WWII food system a *modernist* one—that is, it revels in technology's ability to free humans from nature's rules (Roberts, 2013). The poisonous gases and chemical advances of WWII were applied in the agricultural battle against pests and weeds. The mechanical advances of WWII, combined with a modernist desire to free humans from "scarcity, ignorance and drudgery" spurred on the burgeoning pre-war move to mechanization (Roberts, 2013, p. 36). This shift towards higher levels of mechanization, pesticides, herbicides, and synthetic fertilizers also meant that agriculture became more reliant on energy inputs. This need for energy was provided for by the post-WWII abundance and affordability of fossil fuels (Roberts, 2013).

In the 17th and 18th century in Nova Scotia, the apple orchard acted as proof that humans could domesticate and control the wilderness. Technologies introduced after WWII continued this dream and the human ability to execute it. The move towards high-input, highly mechanized, high-yield warfare agriculture became entrenched after WWII. Spray circles, organizations in each county that gave advice to farmers about spraying, became more active with the end of WWII (NSDA, 1946). In the 1949 NSDA report, there is the first mention of *weedicides* or chemical weed killers, which we now refer to as herbicides. They were found to be effective, but still too expensive for regular use. Synthetic fertilizer is casually mentioned throughout the report, suggesting that by the second food regime it had been completely incorporated into mainstream farming.

These new production techniques had two visible effects on the ecology of Nova Scotia. First, in 1945, it was noticed that "the mortality among bees as the result of the use of arsenical sprays was very high" (NSDA, 1946, p. 130). However, instead of decreasing the use of pesticides, it was thought that the only way to prevent bee loss was "to move the bees to a location where spraying is not being carried on, and then bring them back after the danger of poisoning is over" (NSDA, 1946, p.130). It seems in the agricultural war too, collateral damage was considered an unfortunate necessity. Second, the NSDA noted that after farmers removed the trees and ground cover to create farm land, there was a risk of soil erosion, which was considered an "immense loss" (NSDA, 1940, p. 148). The problem persisted and became "more

extensive" especially the erosion of the "all-important top-soil" that provides nutrients for plant growth (NSDA, 1950, p. 78).

Bottom of the barrel

After years of turbulence, including war-related trade restrictions and a declining British Empire, 1949 still showed "no improvement in the apple market" (NSDA, 1950, p. 139). The agricultural conditions for the year were satisfactory and 1,262,881 barrels of apples were produced, but consumers were limited and international competition was fierce. The 1949 NSDA report finally recognized that the closing of the British market would necessarily usher in long-lasting changes (NSDA, 1950). In 1951 the apple marketing board was disbanded because of its apparent incompetence, and inability to advocate for apple farmers or develop a strong market (Conrad, 1980).

The 1950s marked the formal beginning of the second food regime and the depth of the descent for the Nova Scotia apple industry. The steep decline of the early 1950s stabilized in 1957. By this time, only about half of the apples trees from 1939 were still in existence (Conrad, 1980). For a graphic look at the alarming decline in apple production, please see Figure 1. This graph represents apple production every 10 years from 1929 to1979 (NSDA reports). Note that 1933 is the year with the highest yield of apples in Nova Scotian history.

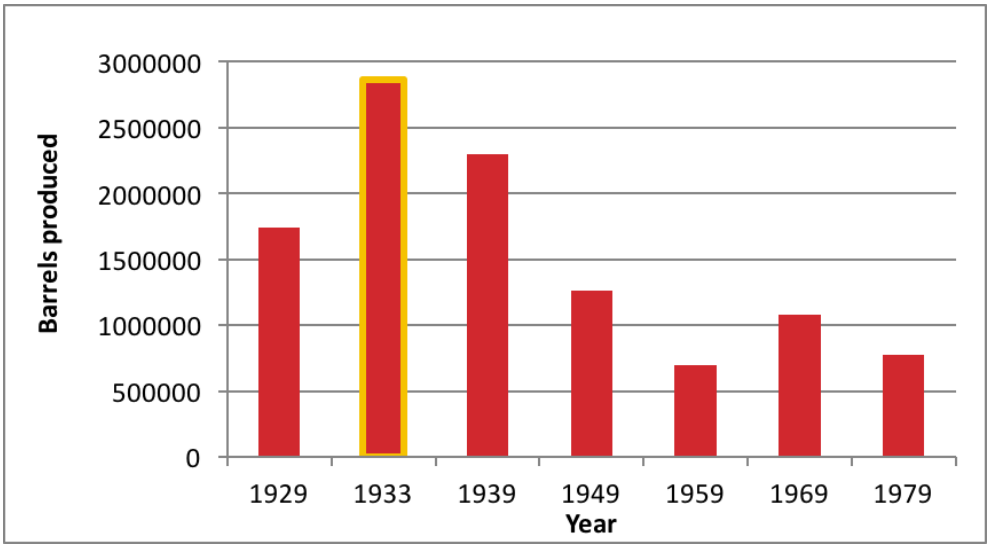

Figure 1: Decline in Nova Scotia apple production (NSDA reports).

Changing markets, changing production

The NSDA report from 1960 is markedly shorter than the previous volumes, and is also the first that does not start with a meteorological report. Although this may seem like a small change, it arguably represents a major shift that took place in agriculture. Agriculture was no longer about a human relationship with the earth; It was more about mining the soil for commodities. The tone is also different. This report has a business-oriented rhetoric, rather than the explanatory narrative of past reports. For the first time, there is an explicit emphasis in the report on production and yield. Rational decisions are defined within the paradigm of high production, not quality or sustainability of the product. Farming becomes something done by experts—scientists figure out soil requirements and spraying regimes, while business people market the product.

As food regime theory anticipates, the second food regime was marked by the increased dominance of capital and capital accumulation (Friedmann & McMichael, 1989). The use of synthetic additions in agriculture was entrenched. For the first time, there was a section on the current value of farm capital in Nova Scotia (NSDA, 1960). The NSDA actively encouraged increases in farm size. During the 1960s, Nova Scotia became part of a federal farm consolidation project. With this project, there was a trend "toward fewer and larger farms" (NSDA, 1970, p. 28). In the quest for efficiency, there was a move towards bigger, monoculture apple orchards. This consolidation was consistent with the second food regime's focus on intensification.

Crop insurance for farmers to cover spring-seeded grains, fall-seeded grains, and tree fruits was offered for the first time in 1969 (NSDA, 1970). Farms were so large that crop failure would not only mean the loss of an annual income for one family, but for all the people who worked on the farm. Nova Scotian farmers produced 1,083,591 barrels of apples in 1969. This was a relatively large increase from the depths of 1959, but still only 50 percent of average annual production in the 1920s and 1930s.

In 1979, 774,615 barrels of apples were produced. Of these, 6.4 percent were exported, 55.5 percent were processed, and 38.3 percent were sold fresh within Canada (NSDA, 1980). These numbers represent a marked change in apple distribution. As the large export market in Europe disappeared, Nova Scotia had to reorient its apples to the local and processing markets. The processing market responded much more quickly to the loss of the export market, but the local market for fresh consumption was eventually cultivated as well.

Figure 2 outlines the changing market. The first graph from 1933 shows the apple's dispersion at peak production when most exports were still being shipped to England. The graph from 1939 shows the sudden reliance on processing necessitated by WWII. The graph from 1979 shows the growth of the local market and continued reliance on processing.

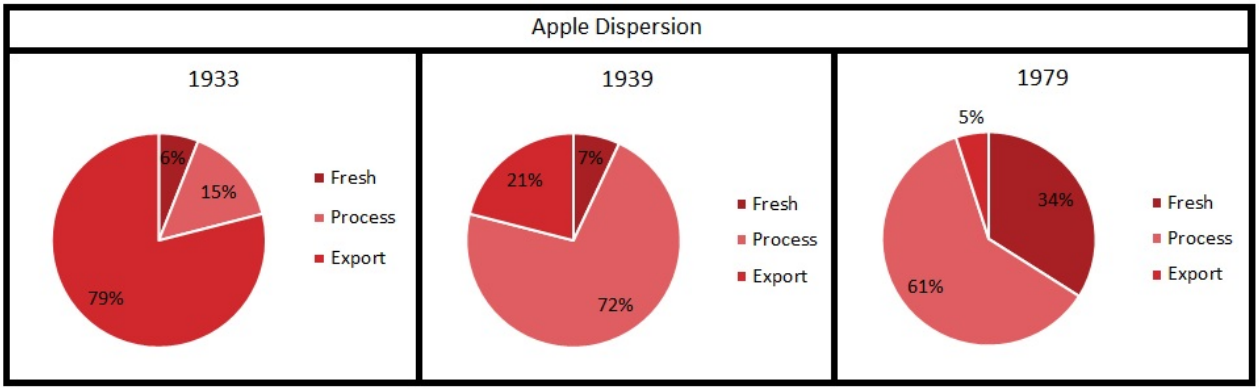

Figure 2: Apple dispersion in three key years: the peak year of production, the first year of WWII, and at the end of period of time studied in this article (NSDA reports).

Core changes

By 1980, where this study ends, fruit products as a whole made up only 7 percent of Nova Scotia's agricultural cash income, while animal products accounted for 75 percent of farm income (NSDA, 1980). The rise of animal production is consistent with an observation of the second food regime (Friedmann & McMichael, 1989).

Since the peak of the apple industry in Nova Scotia, many apple orchards were torn up; apple varieties were streamlined to meet consumer desires; pesticides, synthetic fertilizers, and herbicides were used extensively; machines largely replaced human labour; farm sizes grew; high yield agriculture was emphasized; and agriculture began to have a serious impact on the environment. Increased mechanization in both growing and processing of apples required larger up front capital investment. The move towards larger and more productive farms shows the emphasis on intensification, profit, and capital accumulation. The decline of the apple industry in Nova Scotia coincided with the end of the first food regime and the rise of the second food regime.

Conclusion

This paper has traced the Nova Scotia apple industry from 1862 to 1980 and identified how this case study and the analytical tools of food regime theory support and reinforce each other. There are two main conclusions that can be drawn from the apple case study when examined through the lens of food regime theory.

First, the Nova Scotia apple industry relied too heavily on one distant market. Because 75–80 percent of its sales were to England, the closure of this market gutted the industry, leading it to suffer from putting all its apples in one basket, so to speak.

Second, a problem that plagued the industry from its inception was that of quality control and a lack of differentiation. Nova Scotia grew mostly medium quality, low-priced cooking apples because that is what the British preferred in the late 19th and early 20th centuries. As competition grew and the second food regime took hold, Nova Scotia had no way to differentiate itself in the global apple market. Nova Scotia failed to take advantage of its prime environmental growing conditions to produce a differentiated or value-added product. Overall, this case study of the apple industry in Nova Scotia reveals the weakness of export-led growth, a dominant theme in both food regimes.

I have argued that there is a good fit between food regime theory and the case of the Nova Scotia apple industry. Food regime theory provides a reliable framework for this case study. However, the specifics of the Nova Scotia apple industry suggest the need to revise and amplify food regime theory to give ecological considerations more weight. Friedmann, too, has recently acknowledged the need to include social movements for ecology, and green consumers as important forces in the current global food context (Friedmann, 2015). Beyond social movements, the case of the Nova Scotia apple highlights the role of ecology as a semi-autonomous factor in global food systems.

The apple industry's very location and early success was predicated on quality soil from the Bay of Fundy and the fact that Nova Scotia's climate allowed apples to reach peak quality. This is a distinctive, place-based reality. Today we know that the food system is a major contributor to global carbon emissions, water pollution, and water use (Sage, 2012; Horrigan, Robert & Walker, 2002; Kirschenmann, 2009). By opening food regime theory to accommodate ecology, we are able to see how shifting food regimes entrenched environmentally-degrading agricultural practices, and set the stage for contemporary ecological problems in our food system.

This is not the first critique that food regime theory erases distinctive biological realities, as Friedmann herself explains it. She responds by saying that food regime theory does not include place-specific details, but instead represents "naturalized common sense in urgent need of deconstruction" (Friedmann, 2009, p. 342). Food regime theory is a powerful analytic tool that brings important insight into complex and seemingly disconnected global interactions. The case of the Nova Scotia apple industry forces us to hold two truths together about regime theory: it is effective and illuminating, but the lack of place-based analysis misses a powerful force in historical development (especially of agriculture). Food regime theory does not need to explain everything. But in an era of climate crises, it may be more important than ever to be aware of place-based realities, and to study the past and inform problems with ecological realities in mind. The case study of the apple in Nova Scotia highlights the need for food regime theory to be flexible and accommodate both ecology, and the human attitude towards nature/social movements as two semi-autonomous, powerful forces.

One bad apple don't spoil the whole bunch, girl

Despite the fact that the industry declined steeply after WWII, it has not completely disappeared. In fact, the tale of the apple industry from 1980 onwards embeds two contradictory themes. The first is a notion of gloom as everyone realizes the apple industry might never again be economically viable. The second is a story of hope, as farmers moved to differentiated and value-added products. In this way, the Nova Scotia apple industry follows the current food climate's dual story of entrenched global and corporate food trade, as well as a reclamation of localized food systems and food sovereignty.

Throughout the 1980s and 1990s, government support kept the apple industry alive. By 1992, federal and provincial government support payments accounted for more than 16 percent of apple farm revenue (Gwyn, 2014). Between 1980 and 1990, the 11 biggest apple growers had an average revenue of $116,100, but they still had a net loss of $0.65 per bushel. Subsidies were paying the way and it was thought that if the big, high-input, high-yield farms could not make money, then small scale farms certainly would not be able to break even (Gwynn, 2014).

In the 1980s and 1990s both apple growers and processors suffered and consolidated. Farms had already gotten bigger. The 23 processing plants of 1920 were replaced by a *virtual monopsony* in the processing sector (Winson, 1988, p. 537). The lack of competition among manufacturers eliminated the opportunities for apple growers and drove the price down. Strong government marketing boards in places like Ontario gave farmers more economic power and helped negotiate good contracts, but the marketing board in Nova Scotia was notoriously incompetent (Hutten, 1981; Winson, 1988). The rise of retailers, and their generic label products, took much of the power away from manufactures. Manufacturers tried to respond by increasing advertising and their brand power. With the power of retailers in the 1980s onwards, it seems there was "only room in the market for very small firms with special market niches, or very big firms" (Winson, 1988, p. 540). This suggests a tiny glimmer of hope.

Indeed, the 1990s also brought new life to the Nova Scotia apple industry. Some of the government support was forward-thinking. It funded orchard rehabilitation where farmers tore out undesirable apple tree varieties and replaced them with higher value varieties (Gwyn, 2014). One of the highest value apples is the *honeycrisp*, introduced to Nova Scotia in 1991. Nova Scotia has an ideal climate to produce this sweet and crisp apple (Erith in Mason, 2010). With renewed hope came a need for apple products to differentiate themselves and create a niche in the competitive market (O'Rourke, 1994). Nova Scotia has been developing niche markets through a combination of re-igniting local economies, stimulating entrepreneurship, employing ecological practices, and growing for quality.

In 2007, the theme of the NSFGA annual convention was to focus on local consumers, a far cry from the export-oriented markets of old. As well, in the early 2000s, The Nova Scotian government began encouraging organic apple growing because organic apples fetch a higher

price. The local and organic movements are not merely movements of market expansion; they are also moves towards a more sustainable food system.

Although durable food processing of the second food regime did not bode well for the apple, specialized processing spells hope for the industry. In 1993 Hanspeter Stutz opened up a winery in Grand Pré making fine apple dessert wine. Cider production followed in 2001. In the current globalized market, as Stutz says "it's not enough just to make, say, ten million litres of juice…we can do much more with apples" (Stutz in Mason, 2010).

References

Apple Capital Museum Society. (n.d.). Aug. 30th, 1899. http://www.acmuseum.ednet.ns.ca/aug301899.htm

Bleakney, S. (2004). *Sods, soil, and spades: The Acadians at Grand Pré and their dykeland legacy.* Canada*:* McGill-Queen's University Press.

Brittain, W. (1917). Department of Agriculture, bulletin no.9: The Apple maggot in Nova Scotia. Halifax: King's Printer.

Butzer, K. (2002). French wetland agriculture in Atlantic Canada and it's European roots: Different avenues to historical diffusion. *Annals of the Association of American Geographers, 92* (3), 451-470.

Conrad, M. (1980). Apple blossom time in the Annapolis Valley 1880-1957. *Acadiensis, 9* (2), 14-39.

Executive Committee of the Nova Scotia Industrial Exhibition. (1854). *Official report of the executive committee of the Nova Scotia Industrial Exhibition.* Halifax: James Barns.

Friedmann, H. (1982). The political economy of food: The rise and fall of the postwar international food order. *American Journal of Sociology, 88,* 248-286.

Friedmann, H. (2009). Discussion: Moving food regimes forward: Reflections on symposium essays. *Agriculture and Human Values, 26,* 335-344.

Friedmann, H. (2015). From colonialism to green capitalism: Social movements and emergence of food regimes. *New Directions in the Sociology of Global Development, 11,* 227-264.

Friedmann, H., & McMichael, P. (1989). *Agriculture and the state system: The rise and decline of national agricultures, 1870 to the present. Sociologia Ruralis, 29*(2), 93-117.

Government of Nova Scotia. (n.d.). *Organic agriculture in Nova Scotia*. Retrieved from https://www.novascotia.ca/agri/bde/news/pdfs/OrganicNSDAsm.pdf

Growing Nova Scotia. (2014). *Apple industry: Industry overview*. Retrieved from http://growingnovascotia.ca/opportunity-profiles/apple-industry

Gwyn, J. (2014). *Comfort me with apples.* Berwick: Lupin Press.

Hatchard, K. (1980). *Apples in the Barrel*. Hantsport: Lancelot Press.

Horrigan, L., Robert, L., & Walker, P. (2002). How sustainable agriculture can address the environment and human health harms of industrial agriculture. *Environmental Health Perspectives, 110* (5), 445-456.

Hutten, A. (1981). *Valley gold: The story of the apple industry in Nova Scotia*. Halifax: Petheric Press.

Kirschenmann, F. (2009). Do increased energy costs offer opportunities for a new agriculture? *The Monthly Review, 61*(5), 40-53.

Knight, T. (1862). *Nova Scotia and Her Resources*. A. & W. Mackinlay & London, Halifax. In *Commissioners*, papers relating to the two great exhibitions in London that year.

Lewontin, R. (1998). The maturing of capitalist agriculture: Farmer as proletarian. *Monthly Labour Review, 50* (3), 72-84.

Longley, V. (1932). *Some economic aspects of the apple industry in Nova Scotia.* (Doctoral thesis). University of Minnesota, USA.

MacMechan, A. (Ed.). (1900). A calendar of the two letter-books and one commission- book in the possession of the government of Nova Scotia, 1713-1741. Halifax: Nova Scotia archives. Retrieved from www.novascotia.ca/nsarm/virtual/heartland/archives.asp?Number=Two&Page=1001&Language=English

Mason, T. (2010, May 5). Apples: Taking a bite out of Nova Scotia's iconic fruit. *Oriented.* Retrieved from http://oriented.ca/?p=381

Matheson, R. (1913). *Department of Agriculture, bulletin no.5: The Brown-tail and Gypsy Moths.* Halifax: King's Printer.

McMichael, P. (2009). A food regime genealogy. *The Journal of Peasant Studies, 36* (1), 139-169.

Meister, T. (1921). *The apple barrel industry in Nova Scotia.* The Nova Scotia Museum.

Nova Scotia Commissioners for the International Exhibition. (1864). *Nova Scotia in 1862: Papers relating to the two great exhibitions in London that year.* Halifax: T. Chamerlain.

NSDA (Nova Scotia Department of Agriculture) (1934). *For the year ended September 1933*. Halifax: King's Printer.

NSDA (1940). *For the year ended November 30, 1939.* Halifax: King's Printer.

NSDA (1946). *For the year ended November 30, 1945*. Halifax: King's Printer.

NSDA (1950). *For the year ended November 30, 1949*. Halifax: King's Printer.

NSDA (1960). *For the year ended March 31st 1960*. Halifax: Queen's Printer.

NSDA (1970). *For the year ended March 31st, 1970*. Halifax: Queen's Printer.

NSDA (1980). Agricultural statistics 1980 volume 16 containing information for 1980 and previous years data. Halifax: Department of Agriculture and Marketing.

Nova Scotia Department. (1862). *International Exhibition, 1862: Catalogue of the Nova Scotian Department.* Jas. Bowes and sons: Halifax. In Commissioners, Papers relating to the two great exhibitions in London that year.

O'Rourke, D. (1994). *The world apple market*. New York: Food products Press.

Pollan, M. (2002). *The botany of desire: A plant's eye view of the world.* New York: Random House.

Potter, P. (1932). The British imperial economic conference. *The American Journal of International Law, 26*(4), 811-813.

Province of Nova Scotia. (2006). *Geography and climate*. Retrieved from http://www.novascotia.ca/playground/geography.asp

Roberts-Stahlbrand, Anika. (2014). Getting to the Core of the Matter: A historical materialist study of the apple industry in Nova Scotia, 1605-1980 (undergraduate thesis). Retrieved from http://dalspace.library.dal.ca/

Roberts, W. (2013). *The no-nonsense guide to world food (2nd ed.).* Toronto: Between the Lines.

Rooth, T. (2010). Proceedings of Unpeaceable Exchange: Trade and Conflict in a Global Society. Lisbon: Portugal. Retrieved as an article from http://history.uwo.ca/Conferences/trade-and-conflict/files/rooth.pdf

Sage, C. (2012). *Environment and Food.* New York: Routledge.

Winson, A. (1988). Researching the food processing-farming chain: The case of Nova Scotia. *The Canadian Review of Sociology and Anthropology*, *25*(4), 520-559.