A Case For Worker-Cooperative Farms
In Small Scale Agriculture

[redacted]

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Introduction

The ideas borne out below initially grew out of my conversations and work, over the last three years, on a small horse-powered organic farm in New England. Being embedded in the day to day problem solving of farming and the attendant planning conversations about the farm's direction, I came to see the challenges and advantages of traditional agriculture from an engineer's perspective, rather than the detached descriptive perspective of an economist, whose simplified models often just serve to make one's own assumptions more explicit.

Many of the concepts shared here were initially hammered out in late night conversations over a few too many beers around the farm's kitchen table, or debated with thoughtful whimsy, watching our breath on the porch and staring up at a wheeling night's sky. It was invaluable for me to be able to suss out ideas with friends who have had more experience with farming than I, and who are thoroughly invested in making small scale organic farming work for them as a way to earn a living. As a result, our debates' antipodes were properly rooted in the economic and agricultural realities of the farm itself, which served as a dialectical keelson, righting any speculative excess with the day to day empirical counterweight of experimentation's successes and failures. This process of reflexively analyzing the problems we were actively working through led me to a very "participatory" approach to what I hesitate to call research, since it began with and continues to be about farming and friendship above all else.

Although organic farming is often talked about in terms of values, such as health, environmental sustainability, and animal well being, I will argue that these values not only serve as a kind of ethics in action, but are also part of a strategy of survival for small farms. Small scale agricultures business model has been increasingly challenged by efficient mass transportation, corporate agribusiness, and uniform commodity pricing. I will show how organic farming and the Community Supported Agriculture business model are not just feel-good ideas, but are strategies to re-define the economic terrain in favor of small farms. I will then look at the plight of the young organic farm worker today, and examine how barriers to capitalization and farm ownership hurt both young farmers and the future of sustainable agriculture. I will then outline a model for worker ownership in organic farming, one which provides for access to land for future generations of young farmers, and one that sets favorable conditions in which communities might build diverse, interdependent, regional agricultural economies that are fair to workers and environmentally sustainable.

Looking Back: The Rise of Agribusiness in the Twentieth Century

Small and medium sized farms in the developed world have faced similar challenges during the twentieth century. The construction of mass transportation networks and the rise of global commodity pricing have reduced the localizing friction that had previously secured small farmers more exclusive access to their nearby markets, which had offered them the opportunity to distinguish their products against their competitors, thereby affording them some agency to set their own prices. The railway, the invention of the refrigerated inter-modal rail car, and the interstate highway system collapsed the time it took to bring produce to market and broke down barriers between markets previously separated by distance, which produced a more uniform market price for agricultural goods.

This uniform price for any one agricultural commodity (such as corn) in turn facilitated the speculative trading of agricultural commodities, since traders could now buy undifferentiated and exchangeable "options" in corn at a standard price per unit, agreeing to buy "n" amount of corn at "x" price per bushel at a future date stipulated by contract. The speculator could then exercise their option to sell corn at "x" price per bushel in a market where the price per bushel was higher than "x," netting a profit for the speculator. This process of speculative commodity arbitrage has in turn accelerated the "flattening" or uniformity of prices across different bioregions, each of which has different local production costs as a function of variable inputs and unique bioregional farming characteristics such as soil content and climate. Speculative trading therefore changed the physics of how agricultural products are priced; instead of a dialogue between producer and consumer informed by the farmer's costs and the consumer's willingness to pay, agricultural goods became a commodity whose price might bear no relation to such forces, instead the fruits of farmers' labors began to be traded as a function of their estimated future market value, as an investment. From the small farmer's perspective, pricing ceased to be a negotiation in which they were a party with agency, and instead became a dominating factor over which they had no control.

This new valuation process then took on a logic all its own, since such a speculative value is also a function of how investors think that value may change as a consequence of their fellow speculators' perceptions of the speculators' perceptions as a group. As a result of this process, the small farmer became what is referred to as a "price taker." This means that their industry has a low barrier to entry, and that their product is undifferentiated from their competitors. Since small farmers do not control an exclusive means of producing and distributing their goods (such as an electric power company, for instance, which sells an undifferentiated product, but enjoys monopolistic control) and since their goods are counted the same as other farmers' goods, they have no choice but to sell their product at whatever price the wholesale market dictates.

Constrained by these conditions, small farmers could not increase their profit margins by differentiating their product on the basis of quality, since their access to the consumer was mediated by wholesale intermediaries who would only purchase produce at the uniform commodity price. Without the freedom to differentiate and price their own product, a farm's success became almost exclusively correlated to scale; larger farms sold their produce at the same uniform price, but could leverage their economies of scale by using their larger revenue streams to make investments in capital equipment and land that smaller farms could not afford. This process began to snowball as larger revenue streams secured by investments in capital equipment and land financed further capital expansions by large farms. In a market where prices are uniform, small farms simply cannot compete.

At the same time, small farms were increasingly subjected to the whims of commodity markets when buying inputs such as fertilizer, fuel, seed, and pesticide. Whereas traditional farming methods relied on the land as the primary input, wherein fertilizer came from the farm animals themselves, fuel was not needed since such farms were not mechanized, seeds would be stored for next year from extent crops, and pesticides were not used, "modern" farming methods involved the annual purchase of a variety of commodities from outside the farm. This model worked well for large farms, which could secure wholesale bulk prices for these inputs and whose returns on their use of mechanization was maximized by their economies of scale (in other words, they could make fuller use of their capital equipment, since their size meant that a tractor or harvester would have far less "down time" than on a smaller farm, where such an investment would be relatively underutilized and would constitute a larger proportion of that smaller farm's revenue). As the cost of fuel and nitrogen fertilizer (which is synthesized from natural gas) have risen, larger and larger mono-culture grain farms, backed by federal subsidies favoring their operations, have driven down the commodity price of grain,[1] which in combination has had

[1] In the United States, large mono-culture grain operations are able to leverage their economies of scale, their federal subsidies, and their access to larger markets via mass transportation to realize larger revenues and market hegemony. In addition, the financial "innovation" of the global commodity market makes it possible to sell their product to investors worldwide, without having to actually transport the product to the buyer. Such a buyer would sell their "option" to sell the corporate farms product (at the locked in price set by the option contract) to a wholesaler before actually taking delivery, most likely buying and selling the grain at a profit without ever leaving their desk. This way, large farms can sell grain to a market of speculators who, because of transportation barriers or lack of access to distribution networks, might never have been able to take delivery on the actual physical agricultural product they are buying. During normal market conditions, this larger market of speculative buyers depresses prices, which hurts small farms but is arguable good for the consumer (though one could also argue that lower grain prices contribute to unsustainable population growth and poverty by underwriting a nutrient-deficient poverty diet for people in the global south, while simultaneously undermining their small farms by underselling them at prices that would not be possible without subsidization, uniform pricing across bioregions, and commodity arbitrage, thus robbing farmers in the global south of a means of making a living beyond subsistence farming and creating a global under-caste of precariously fed dependents, who, being dispossessed of their now non-viable farms, are forced to move to major

the effect of shrinking profit margins across the industry.[2] While large farms with substantial revenue have been able to absorb these shrinking margins and still afford capital equipment and annual variable cost (seed, fertilizer, etc) inputs, smaller farms cannot.

Some small and medium sized farms have tried to escape this bind by mortgaging their land to finance fixed costs and variable costs. Since farming in general is a low liquidity business model (i.e., most of the farm's assets are in the land, the equipment, crops, and animals; even large and successful farms have a low proportion of liquid cash capital to illiquid assets), mortgaging the farm is an obvious way to extract liquid capital to purchase capital equipment and afford variable cost inputs. However, as the epidemic of small farm foreclosures in the American Midwest has shown, this path is a trap; re-financing the mortgage on the property saddles the farm with higher principle and interest payments that only serve to shrink their small profit margin further. When this process reaches its logical conclusion, the small farm is often bought by large agribusiness or a housing developer.

Stand Up Fight Back: The Small Farm Insurgency

The introduction of the organic, community supported agricultural (C.SA.) model more or less solved many of these problems for small and medium sized farms with access to relatively affluent markets. Organic farming differentiates the small farm's product, providing the farmer greater latitude to set a higher price on the basis of quality and the positive environmental externalities organic farming entails. The C.S.A. business model insures stable and predictable future revenue, which protects the farm from a rapid drop in the commodity value of their produce. Traditional farming methods minimize the use of commodity inputs, instead relying on the land and the small farm as an autopoietic system-

urban centers to work in factories with unsafe working conditions owned by, or contracted with, the large multinational corporations of the global north). However, when shocks to the world economy reduce investors' returns in other sectors of the economy, speculators who had previously never invested in agricultural commodities will flee a collapsing bubble to invest in "safe" agricultural commodities. This phenomenon can rapidly drive up grain prices, as happened in 2009, when investors trying to escape the collapsing investment banking sector drove up corn prices in their search for an investment of refuge. These costs were passed on to the consumer, and the rapid spike in the price of the staple tortilla in relation to static incomes in Central and South America sparked riots in major urban centers. Even under normal market conditions when these phenomena contribute to the low, uniform, global cost of grain, there are other negative externalities besides bankrupting small and medium sized farms. Cheap grain underwrites the viability of large meat farm operations, whose abusive practices cause animals to suffer,whose hyper-concentration of animals pollutes streams and groundwater with manure run-off, and whose cheap product contributes to the disproportionate consumption of meat in the developed world, a diet that would not be possible without federal subsidies, mechanization, mass transport, mono-culture mega-farms, and access to global commodity markets.

[2]This is not true of corn, whose market price has risen over the past ten years as the proliferation of ethanol distilleries that use corn to create a fuel additive has increased demand for the grain. This phenomenon, which is fundamentally a value-adding strategy for producers of an undifferentiated product, is discussed in more detail in the section "The Existing Model for Agricultural Cooperatives."

for example, by banking the previous year's seeds instead of buying them each spring, using horse power to till and cultivate, and using animal manure in place of synthetic fertilizer- all of which reduce the farms dependence on the price of external variable costs.

> *"Levin was particularly struck by one small point: the old man used the thinnings of the rye as fodder for the horses. Many a time Levin had seen this invaluable fodder wasted." - Konstantin Levin, commenting upon the autopoietic farming methods of a neighboring peasant farmer in Tolstoy's "Anna Karenina."*[3]

However, small organic farms still face significant capitalization barriers to revenue maximization via expansion, and experienced young organic farmers are often locked out of farm ownership roles without access to sources of external capital with which to fund the purchase of land.[4]

Specters of Serfdom: Capital and Work in Farming Today

As a consequence of their under-capitalized business model, wherein most assets are illiquid (land, buildings, crops, etc), farms are often relatively cash poor and face unique barriers to expansion. Unless a farm has surpassed a critical mass past which the acquisition of additional land can be purchased with revenue left over after covering fixed and variable costs, it is often difficult for even a prosperous small farm to finance the acquisition of more arable land. The difficulty of acquiring more land from the profit derived via such land may explain the prevalence of wars for territory up until the advent of the industrial revolution, when national economies became less dependent on agricultural surpluses to expand their wealth and finance their armies. Appropriation and patrilineal inheritance play a disproportionate role in the history of agriculture. During the expansionary periods of the Ottoman and Roman Empires, territory acquired through warfare was granted to military officers in order to secure their political allegiance and facilitate the surveillance, taxation, and governance of the provinces. When not employing outright slavery to work the land, the gentry employed these subject populations as serfs, permitting them to lease small plots on which they worked their family's small subsistence farm, in return for their uncompensated labor on the lord's vast mono-culture grain fields and orchards.[5] Whether they were farmed by slaves or serfs, these large estates were repeatedly subdivided over the course of successive generations in order to distribute the

[3] Leo Tolstoy, *Anna Karenina,* trans. David Magarshack (New York: Signet, 1961), 333.

[4] As an example, a friend of mine used to joke with her roommate that in order to realize her dream of becoming a small scale farmer, she needed to "find a man with land." Although the jibe was meant with a morbid sense of irony, since both she and her roommate are both educated young people and politically conscious feminists, the underlying reality facing the young, motivated farmer without capital is not a joke. Despite numerous government programs to give small equipment grants to organic farmers, patrilineal inheritance still governs who has and does not have access to farm land, the essential means of agricultural production.

[5] James C. Scott, *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia* (New Haven: Yale University Press, 2009).

patrimony to the patriarch's expanding network of heirs. Eventually, unless the offspring of the original lord were awarded their own land grants in return for military service, their inherited land holdings would become too small to support their family (or their lifestyle). It is easy to see how this inheritance-based capitalization ultimately necessitates wars of expansion. Without additional territory, the centrifugal dispersion of wealth will impoverish any gentry within a few generations. Prior to the Industrial Revolution, the United States developed an exclusive patrilineal landed gentry largely in the American South, where mono-culture cash crops and slavery funded the accumulation of wealth on the large plantations. However, unlike Europe, the U.S. also developed a somewhat more egalitarian, agriculturally diverse homesteading tradition for poor whites. The great swaths of land appropriated from indigenous peoples in the course of genocidal wars of expansion in the American west were granted to such homesteaders, making land ownership accessible for the common white man who otherwise lacked the capital to finance a farm. Today, of course, the United States government is not giving away land. Young farmers in the developed world who want to start an organic farm utilizing traditional agricultural techniques must bring external capital to the table. Often this capital comes from inheritance after the death of a parent. While the subdivision of vast family estates may be largely a historical relic, the subdivision of modern familial inheritances extracted from the sale of a family home and accumulated over the course of parents' white collar, professional careers is often still the source of start-up capital for young, idealistic farmers pursuing organic, traditional methods of agriculture today. As a result, the demographic make-up of young farm owners today largely reflects existing structures of privilege in society at large. For those farm workers who are shut out, they often face a future of low wages and little opportunity to capitalize on their accumulated agricultural expertise.[6] Compounding this, the white collar inheritances invested in family farms are vulnerable to the same historically self-defeating logic of centrifugal capital dispersion and subdivision to heirs, decimating the founding farm in a few generations. These subdivided farms will lack viable operations and will be unable to train future generations of young organic farmers, even as unpaid interns.

The plight of farm workers is somewhat unique to the agriculture sector. Unlike many other industries, where accumulated skills and expertise generally guarantee some measure of upward mobility, farm workers face a labor market where their prospective employers are operating on small cash margins and enjoy the privilege of access to an excess supply of potential workers. It would be easy to argue that such a large labor pool implies that barriers to enter the farm labor market are low, and hence that farm work is inherently unskilled. However, as any farmer will tell you, the diverse skill set brought to bear in effective agricultural practice takes many years to learn. I believe that the excess labor in the farm labor market can more credibly be explained by barriers to capitalization and land ownership; if less exclusionary routes to farm ownership existed, many

[6] John Steinbeck, *Of Mice and Men* (New York: Penguin Books, 1937).

of the more experienced farm workers in the labor pool would be farm owners and employers; thus decreasing the supply of farm workers and increasing their demand, thereby raising farm wages across the board. This capitalization problem in agriculture, in which land is both indispensable and a disproportionately large investment relative to short term future revenue, explains the specters of slavery and serfdom that have historically haunted agriculture and continue to do so today. One need look no further than the vegetable and fruit farms of California's Central Valley, where legally precarious and vulnerable Central American immigrants have replaced dust-bowl refugees as the ideal exploitable workers. Like most farms, these operations are under-capitalized relative to their substantial illiquid assets, but unlike the relatively mechanized grain farms of the Midwest, their cultivation and harvesting operations are highly labor intensive. This, unfortunately, is a characteristic they share with traditionally farmed organic operations. Although the working conditions are drastically different, the underlying economics that result in very low wages and high barriers to ownership are not dissimilar.

The Existing Model for Agricultural Cooperatives

Traditionally, American agricultural cooperatives are organized by farmers pooling resources to finance a facility that would increase the marginal value of their produce through some transformative process. Examples of this include dairy farmers pooling capital to finance a creamery, corn farmers combining funds to finance an ethanol distillery, or wheat farmers pooling their resources to finance a pasta factory. For farmers who cannot differentiate their produce on the basis of the added value associated with organic food because they lack access to affluent, discriminating markets, adding marginal value by jointly producing a finished (as opposed to wholesale) good is one strategy to escape from remaining a price taker and achieve the ability set prices by marketing a differentiated product directly to consumers. This strategy dates back to some of the earliest periods in American agriculture, when the first wheat and barley farmers settling in the Midwest lacked both a local market for their product and a viable way to transport the grain back over the Appalachian Mountain passes. Their solution was to condense much of that grain into whiskey, which was not only easier to transport by mule, but was a higher margin good as well. Today that same strategy is employed by Midwestern farmers who sell their grain to ethanol distilleries. Essentially gigantic, legal, moonshine operations, these ethanol plants in turn sell their product as a supposedly "sustainable" additive to gasoline.

In order to establish a stock holding cooperative, farmers "buy in" by fronting the capital to finance the facility of their choice. Farmers own shares in the business on the basis of their percentage contribution to the cost of the facility. They would be entitled to the full amount of capital gains from the cooperative, and their shares would be both divisible and transferable, meaning that they could sell all or a portion of their shares in the co-op, or transfer those shares to their heirs. Over time, this means that the ownership of the cooperative can slip out of the farmers' control, as shares are sold to outside investors or transferred to heirs who are not employed in farming the land or managing the cooperative facility. Ordinary workers are not members of the cooperative; in order to become a member they would have to buy shares with up-front capital.

Challenges Facing Small-Scale Organic Agriculture Today

So far we have gone over several challenges facing small farms. Now, we can look at each of these systemic problems and examine how re-organizing as a cooperative business changes the calculus that creates these seemingly intractable challenges. We covered how small farms lost the ability to distinguish their products as non-commodity goods, thus losing the ability to set their own prices. We looked at how commodity inputs such as synthetic fertilizer, fuel, purchased seed, and pesticides further deprived the farmer of economic freedom by trapping their profit margin between the market price of commodity inputs and outputs. We then examined how the organic, C.S.A. model has addressed these issues by empowering farmers with access to affluent and discriminating markets to distinguish their goods to the consumer on the basis of quality, the positive environmental externalities associated with organic farming, and by insuring farmers a predictable income by marketing their product through farm shares, rather than as atomized commodities.

Next we looked at problems that still plague the small farm in the developed world. It is difficult for all but the largest farms to purchase more land with the profit they make, since farms are heavily invested in illiquid assets such as land, equipment, buildings, etc, and so run narrow cash margins. While small farms can finance expansions or improvements by leveraging their properties with a mortgage re-finance, this process is extraordinarily risky, since profit margins shrink and revenues must increase rapidly in order to keep up.

"We have to raise agriculture to a much higher level," said Levin. "Yes, if one could afford it! Youre all right, but I have a son at the university to keep, pay for my little sons' education at the secondary school - how do you suppose I can buy Flemish drays?" "Thats what the banks are for," said Levin. "The banks? And finish up by being sold up under the hammer? No, thank you."[7]

This same illiquidity makes it hard for diversified organic farms, which rely on large labor forces (compared to the mechanized, mono-culture grain farms) to pay their workers a fair wage. Since it is difficult for the small farm to finance an expansion through the purchase of land without an external capital injection, it is therefore also difficult for them to offer their best workers a partnership in their business. This means that small organic farms often face a revolving door of unpaid, less experienced farm interns who work in exchange for the farming experience, room, and board. As each of these farmers acquires more skills throughout the course of their farming internship, they begin to see a

[7]Tolstoy, *Anna Karenina*, 341.

diminishing marginal return on each new skill learned, since the opportunity cost of the money they are forgoing by working for free becomes larger as proportion of the diminishing future knowledge they can extract from their internship. For the worker, this often means that they are shut out of farm ownership and resign themselves to being a slightly higher paid "experienced" farm hand on a larger organic farm that can pay them a wage.

"I prefer to work for smaller farms that employ permacultural practices, but often it's only the larger monoculture farms that can pay me, and their operations aren't as sustainable, even if they may technically be organic," says LRAD, who has worked for several organic farms and who is also an activist with Earth First!

For farm owners, this means that they are continually investing in workers' skill sets and then losing almost all of their investment with no viable way to incorporate that worker's abilities into their farm over the long term. In other words, small farms are denied a return on their capital investment in their workforce, and are unable to take advantage of the economies of scale by expanding their operations. In addition to this, small farms that opt to rely on hired labor rather than interns often not only find this costly, but also find that hired laborers are less invested in the success of a farm than a capital partner or worker-owner would be, which of course should be unsurprising and expected.

"But today, gentleman, with the abolition of serfdom we have been deprived of power, and our rural economy, where it had been raised to a high level, must needs sink back to the most savage and primitive condition. That's now I see it."
"But why?" asked Sviazhsky. "If the [agriculture techniques] are rational, you can carry on with hired labor."
"We haven't the power, sir. How am I to do it? Where am I to get the labor?"
"Now we've got to it," thought Levin. "Labor is the chief element in agriculture."
"Hired laborers," replied Sviazksky. "Hired laborers dont want to work well, and they dont want to use good tools ... "[8]

For the Russian landowners depicted in Tolstoys Anna Karenina, the emancipation of the serfs posed an existential problem for their business model. Without access to the ultimate coercion of serfdom, how could they motivate the peasants to work their land while operating on small year-to-year cash margins that made hiring labor unprofitable for them? This problem hasn't gone away for small and medium sized farms today, but incorporating as a worker-owned cooperative could effectively address the problem of losing experienced farm interns, without the unmanageable expense of hired labor.

[8]Tolstoy, *Anna Karenina*, 340.

One of the final challenges facing small scale farming is the difficulty of holding onto a viable plot of land over the long term. Family farms tend to be subdivided over the course of several generations, into smaller and less profitable plots. Inheriting heirs seeking to extract their patrimony from the original asset inevitably undermine the long term viability of the farm. Oftentimes, the farm is either sold to developers or to agribusiness. In either case, future generations of young farmers are denied access to capital ownership and the total stock of available farmland shrinks.

Each of the structural problems described above; including the difficulty small farmers face in trying to expand or make capital improvements, the loss of the skills that they invest in transient workers, and the subdivision or sale of their original farm to family heirs; each can be addressed by re-organizing the small, organic, C.S.A. farm as a worker cooperative.

The Worker Cooperative

Let's turn now to how a worker owned cooperative could be structured and how it would address these problems. In Massachusetts,[9] a for-profit business may incorporate as a worker owned cooperative.[10] A worker cooperative is "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically- controlled enterprise."[11] Unlike stock co-ops, in a worker cooperative, workers do not need up-front capital to "buy in" to the co-op; instead, workers earn capital ownership in the business, as a portion of their wages that is paid into their capital ownership account. This account can then be drawn upon by worker owners for their private use, but a given percentage of the combined accounts can be used to run the business. Shares in the business are non-transferable, and all workers are entitled to participate in the management of the business on a one-person, one-vote democratic basis.

Financing a Worker Cooperative Farm

A farmer or a partnership of farmers looking to start a small farm usually face two basic hurdles to land ownership; they must acquire up front capital, and they must secure a loan with an affordable interest rate. However, farmers looking to start a worker cooperative farm have more options in terms of start up financing strategies, due to the unique structure of their business. Worker cooperatives are private, for profit businesses, but their assets are dedicated to the purpose of organic farming beyond the lifespan of any one member, and their ownership structure and semi-open membership guarantee that future

[9] David Ellerman and Peter Pitegoff, "The Democratic Corporation: The New Worker Cooperative Statute in Massachusetts," NYU Review of Law and Social Change 11 (1982): 445-446

[10] MGL 157a, the Massachusetts Statute for Employee Cooperative Corporations, https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXXII/Chapter157a

[11] International Cooperative Alliance, http://ica.co-op/en/what-co-op/co-operative-identity-values-principles

generations of organic farmers will be able to practice sustainable agriculture. In these respects, a worker cooperative farm would resemble both a private enterprise and a public trust, since its operations would provide a public benefit by training young farmers, offering them ownership, and retaining agricultural land for farming. This means that prospective farmers seeking to found a worker cooperative farm can turn to the public for financing, and forgo a reliance on a mortgage by operating as a bank themselves.

How would this work in practice? Lets say that the would-be cooperative farmers want to acquire a 50 acre plot, priced at \$100,000. The farmers would solicit one hundred \$1,000 investments and buy the land. Once the farmers acquired the land, they would then take out a \$20,000 loan, with the land as collateral, in order to have a fund from which to pay back any investors who want to withdraw their money. Those investors would be entitled to the amount of their initial investment at any time, plus .05 annual percentage yield interest, compounding annually. This is the same interest rate that anyone would get from their normal savings account. This way, the farmers could explain to potential investors that keeping their money with the farm and keeping it with the bank would be essentially the same, except that the farm provides a social good that the investors may want to support. While the investors money would not be protected against loss by FDIC insurance, because the farm is not a bank, if the farmers did not use the land to capitalize their business, then the investors would only be exposed to loss if the land lost value or if they all decided to withdraw their funds simultaneously (a run on the "bank"). This way, investors are investing in the farm land, not the farm as a business. If the farm were to fail, the investors would be entitled to re-payment from the sale of the farm. Investors and farmers could agree that the farm land would not be leveraged as a business asset by taking out another loan, and this agreement could conceivably be enforced by a legally binding contract. Farmers employing this strategy should be careful to accept many smaller investments, rather than larger "deposits," since this model is only effective if each investors contribution is a small part of the whole land asset. A large investor who wished to withdraw their funds might force the farm to sell all or part of its land in order to pay back such an investor's disproportionate contribution. Avoiding this outcome is easy, as long as there are many small investors and no large benefactors.

This strategy saves the farmers the expense of the capital down payment and interest required by a bank loan. By acting like a bank, the farmers have saved the difference between what a normal bank would pay to its depositors and what it would charge to its mortgagors (debtors), plus the now unnecessary up front capital. Thirty years after the initial arrangement described above, the farmers would only owe \$1,511.27 in interest on the total \$100,000 loan. If the farmers used some of their annual revenue to pay off investors over time, then this amount would be even less. Conceivably, over the course of a generation, the worker cooperative farmers could pay back investors, and use their land as collateral to buy more farm land, whether by bank loan or by a similar public funding arrangement.

Democratic Worker Control

The management and governance of a worker cooperative is different from the familiar structural divisions of capital-owner, manager, and wage laborer common to most firms. Each worker member is entitled to vote on the affairs of the cooperative as a whole. Investors do not have voting privileges, and workers who also invest are not entitled to additional voting privileges or accorded special weight in decision-making. All workers, even seasonal interns, are a part of the planning and decision making process. However, it is natural that more experienced farmers should be accorded some additional weight in discussions by farmers with less experience. This natural social dynamic need not be formalized; a healthy synthesis between respecting experience and challenging the status quo methods should develop, since all members have an interest in the success of the cooperative.

Here is what management might look like for a network of three small farms incorporated as a cooperative: on each small farm, the work roster for the following day is planned at dinner through a free discussion among the workers. Each week, these same small farms would meet as separate groups for a strategic planning session to discuss and plan seasonal projects that transcend the day-to-day work roster. Once a month, all the workers on all three farms would meet for a cooperative-wide meeting to discuss affairs that affect the cooperative as a whole, such as constructing a barn, recruiting new customers, etc.

As the network of small farms grows over time, the cooperative may opt to organize monthly meetings on a "spokes council" structure, in which each farm would appoint a spokesperson who would speak and debate on behalf of their fellow farmers to the cooperative as a polity. The spokesperson would continually consult with their affinity group of farmers from their small nodal farm, only expressing views that represent the consensus of that small group. Thus, the spokesperson is not an elected representative empowered with an electoral mandate to pursue the good of their constituents as they perceive it, rather they are continually accountable to their affinity group on a direct, ongoing basis by consulting with them as the cooperative wide meeting proceeds. In this way, the spokesperson fulfills a necessary procedural role rather than a political office; by reducing the number of voices engaged in discussion among a large group of people, the spokes council model increases the efficiency of co-op-wide meetings. At the same time, the spokes counsel system preserves consensus decision making by facilitating ongoing internal debates within each small farm affinity group, so that their discussion need not interrupt the cooperative-wide discussion conducted via the spokespersons. Once a small affinity-group farm has come to a consensus on their position, they would then relay that coherent contribution through their spokesperson to the broader discussion. By compartmentalizing the conversation, inchoate concepts reach maturity in the small group before being debated on their merits by the cooperative as a whole, via the spokespersons.[12] In this way, the cooperative is able to come to consensus

[12] Jurgen Habermas, *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society* (Cambridge: MIT Press, 1989).

while retaining a unitary coherence as an organization with a singular strategic business trajectory.

This spokesperson role would then rotate on a monthly basis, so that if one of the small nodal farms within the co-op was worked by twelve farmers, each of them would have held the spokesperson role at the monthly meeting exactly once at the end of a year. Each farm would manage its own internal affairs individually, among themselves. At cooperative wide meetings, facilitators for necessary positions such as Treasurer or Grant Researcher would by elected to one year positions by a co-op-wide vote. These facilitators would spend only a portion of their working day on duties related to their elected position; the rest of their day would be spent farming with their affinity group.

Capital and Labor Worker Cooperatives

The worker-owned cooperative structure doesn't only ensure that all workers share equal responsibility in the administration of the farm; incorporation as a cooperative also offers a road to building capital for farmers without access to external sources of capital (for example from inheritance, savings from a previous non-agricultural career, etc.). Although interns would be accorded equal voting privileges from their first day of work with the co-op, their relative work inexperience, taken into consideration against the small cash margins inherent to traditional farming and the implicit wages they are paid via "free" room and board, would mean that paying them would only be a financially viable option once they had gained more experience on the farm. However, once an unpaid farm intern has gained experience, and if she is committed to small-scale sustainable agriculture as her career of choice, she would be offered the opportunity to buy into the cooperative with her wage labor. These experienced farmers would be paid a monthly sum from the profits of the cooperative. They would then funnel that money back into the cooperative, essentially using the co-op as a bank. Over time, the amount of money the co-op owes them will increase, and they will be entitled to access the full sum of this fund to finance major life expenses. In addition, cooperative members who have ongoing life expenses such as student loans could use part of their monthly salary to pay down those loans, and re-invest the remainder in the cooperative. Day to day living expenses such as buying beer, going to town, etc, would be covered by a weekly fund for each small farm within the co-op. If someone needs to go somewhere or buy something for themselves, they can simply draw out a portion from this weekly fund. These funds would roll over week to week, but cannot be "saved" by individual workers, since the fund is just for covering incidental personal expenses and is not compensation for the workers' labor. Interns would also have access to this weekly petty cash fund. In addition, the cooperative would not have to concern itself with the question of "vacation time." Since absent workers' labor could easily be covered by retaining additional unpaid interns from a structurally favorable labor market, and since all full capital members only receive compensation towards their capital earnings fund for the days that they work, any days they take off are simply not counted; in this way the system is very similar to social security. As a result, all workers in the co-op effectively have unlimited vacation time; provided that enough experienced workers are on the farm at any one time, individual workers will have great latitude to take time off. These sabbatical vacations or gap years are possible because they are effectively paid for out of that members retirement, as a forgone portion of their capital earnings account.

Over time, a farmer who may have joined the cooperative with no capital would accumulate a large personal fund that could be used to educate their children or cover unexpected uninsured medical expenses. Because the farmers have few living expenses outside of incidental expenditures covered by the communal petty cash fund, most all of each farmer's compensation for their labor power is re-invested in the cooperative. Much like a bank, this model is predicated on the assumption that all the "depositors" will not want to remove their capital at the same time, since that would bankrupt the business. Unlike a bank, these depositors are not just receiving a service from an organization holding their savings, they are actively invested in the success of the cooperative, since it is the source of their livelihood. Assuming that only one or two farmers extract their capital for major life expenses at any one time, their collective capital can be used to invest in the buildings, land, and variable costs of the farm, with only a given percentage margin of the total "deposits" held in reserve in anticipation of possible withdrawals. Thus, incorporation as a cooperative finances farm expansion without the drastic increase in risk associated with mortgaging more of the property, it fosters workers' financial, emotional, and intellectual investment in the farm through democratization and access to capital ownership, and circumvents the problem of paying wage laborers with scarce liquid funds by turning them into capital owners in the enterprise. Farmers who sell their land to a cooperative forfeit any future marginal gains in the value of the property, and these farmers cannot sell or transfer their investment in the cooperative onto their heirs (they could withdraw their earnings and pass that capital to their heirs, but they cannot transfer an ownership share in the farm). However, these forfeitures are also investments in the future of sustainable agriculture and in future generations of young organic farmers who lack independent capitalization. Unlike in stock cooperatives, only workers have membership rights; non-worker investors cannot manage or influence the business. Unlike family farms, whose value, if not whose territory, are subdivided over the course of successive generations of inheritance, a cooperative farm maintains unitary control over land and capital equipment as an incorporated entity. This insures that the farms overall economy of scale will not be chipped away over time by rent seeking heirs, since ownership is collectivized via a corporate instrument and since workers, not investors, are the decision makers who govern the farm democratically. In short, incorporated farms grow, whereas family farms fracture. As a democratic, worker owned enterprise, an incorporated cooperative is the best model to build sustainable farm growth across decades, while also ensuring equitable access to partnership and the means of production.

Agricultural Credit Unions: Organize to Capitalize

While a worker cooperative farm may be able to fund some land purchases through the independent contributions of risk tolerant and idealistic investors, this strategy doesn't work well for capitalizing the construction of buildings or facilities such a barn, a bakery, a dairy co-op, a cheese making building, or some other value-adding operation, since the value of such fixed capital expenditures is more intimately tied to the value of the underlying business than is the case with land, whose value is far more stable. In addition, the "pretend bank" capitalization strategy doesn't work for independent organic farmers who aren't incorporated as a worker cooperative, since they can't make the same claim to trans-generational permanence that underlies the worker cooperative farms profession to offer a public good. One way to approach community financing and provide access to affordable capital that accommodates all of the needs above would be to establish an agricultural credit union to serve the interests of small farmers across a given bioregion.[13] A credit union is a non-profit commercial bank, which offers savings and checking accounts to depositors from the general public. Since a credit union is non-profit by definition, the price of interest on a loan would be the amount of interest paid to depositors, plus the total yearly operating expenses of the credit union (divided by the number of assets, i.e. loans, on the credit unions balance sheet, and amortized across each loans annual payment schedule). By operating as a non-profit, a credit union can offer more affordable loans than their for-profit competitors.

Much in the same way as the worker cooperative would leverage the capital of its own worker-owners while offering them access to their invested funds, an Agricultural Credit Union would leverage the capital of the general public to offer affordable, low-interest loans to small organic farms and farm cooperatives in a particular bioregion. Unlike other commercial banks operating in the region, a farmer-run Agricultural Credit Union would have detailed local intelligence about regional farmers and their businesses. Whereas most banks offer credit on the basis of collateral and credit ratings, an Agricultural Credit Union could offer loans on the basis of demonstrated confidence. For example, if members of a local farm were on the board of such a Credit Union, they might offer one of their community's young farmers an affordable loan to start a farm on the basis of their accurate intelligence about her demonstrated competency. Having worked alongside that young farmer, the members of the board of the Credit Union would be able to discern a good investment in the future that other lending institutions would lack the actionable intelligence to perceive. With this accurate local intelligence, the Agricultural Credit Union would be able to make loans to farmers who lack capital or a credit history, people who would otherwise be denied access to financing. This intentional mission is also a marketing strategy for the credit union, since unlike an ordinary commercial bank,

[13] This is the strategy employed by the highly successful Mondragon Cooperative Network in Spain; by establishing a depositor-owned Credit Union, the Caja Laboral Popular, the founding technical school was able to finance the establishment of numerous worker cooperates founded by its graduates.

an Agricultural Credit Union can convincingly persuade potential customers that depositing their savings with the Union is an investment in local farming. Independent farmers who invest their savings with such a credit union would be indirectly making an investment in their own farms, since they would also be potential beneficiaries of low-interest loans for sustainable agriculture. In order to minimize costs and offer the most affordable loans possible, the non-profit Credit Union could be staffed on a volunteer basis, much like the board of many non-profit hospitals.

Conclusion

In their various guises as peasant kulaks[14] or American homesteaders, small and medium-scale farmers have always co-existed in a defensive and sometimes precarious symbiosis with the state-crafting estates growing staple grains with exploited labor.[15] However, the twentieth century has posed unique challenges

[14] A term for a relatively prosperous Russian peasant engaging in mid-size agriculture.

[15] If one compares the diverse structures of agriculture systems, one can perceive several distinct forms of farming, each one symbiotically intertwined and realized through an emergent system ecology of topography and political economy. The broad alluvial plains are state-spaces, favoring intensive mono-culture grain farming, which, prior to the advent of mechanization, required large labor populations of slaves or near-slaves acquired in raiding wars of expansion. These wars also served to secure new fertile valley territory, whose surplus value would succor the next generation of gentry and preserve the aristocracy's land patrimony against fragmentary patrilineal dissolution. For such warring principalities of the valley-states, expansionary violence was imperative not only to fatten future princes, but also to feed the standing armies that secured such kingdoms against appropriation by rivals; their position on the open plains made them especially vulnerable to military occupation.**(a)** In stark contrast to the large valley-state farms, the hills and their farms are escape spaces. Those fleeing enslavement or political, religious, or economic oppression are able to find cheap land in the hills, where they can farm homesteads with greater freedom and far less fear of persecution. People that farm independently in the hills are generally healthier than their income counterparts in the city, and are able to direct their affairs independently. The frontier farm, a subsistence operation supplemented by hunting, often trading only with the valley through the intermediary of the mountain river-valley hill-town economy, if at all, is often the handiwork of refugees- whether they are economic, political, or spiritual refugees. Those farmers without the means to acquire land in the more fertile valleys often find affordable freedom in the hills.

This political/agricultural/topographic dynamic can be seen around the world, both in contemporary times and historically. Whether these highland farmers are the people of New Hampshire and Vermont who originally fled the constraints of poverty or city life, or were the slaves fleeing the historic rice-paddy valley-states of lowland southeast Asia,**(b)** or Kurds escaping Ottoman estates in Anatolia, or serfs taking refuge from Russian lords in the Caucasus mountains, or the indentured servants of colonial America who ran from Virginian plantations to the hills of Appalachia; all of these people established themselves where the standing armies of organized capital could not go, into the mountainous citadels of resistance where the nation states of today often fight their "small wars" of counterinsurgency.

A third type of farming is situated in a topographic, agricultural, and social intermediary zone. Not reliant on staple grains and the slaves or underpaid immigrant labor needed to farm them, located in the hills on plowable farmland rather than the inaccessible mountains where swiddening predominates, these communities of free farmers trade with each other and with the larger valley-states below them. Their relative remoteness from the valley centers generally protects them from political or economic subjugation, whether that might mean having to deal with a corrupt military junta in Myanmar or being forcibly bought out by Lowes Home to the viability of small or medium-scale farms and the more sustainable agriculture they practice. All weather roads, national highway systems, refrigerated rail cars, and commodity markets have made prices more uniform across local markets and undermined the dialectical synthesis between small farmers' costs and local buyers' willingness to pay that had previously governed pricing. While a diverse basket of agricultural goods had previously been produced locally to meet local needs, different kinds of produce can now be shipped to any market from the region best suited to its most productive cultivation. The logic of neoclassical economics would count this as a success, since by specializing in the crop that grows best in one particular soil and climate, a farm has theoretically minimized its opportunity cost and maximized its productivity. Yet, upon closer examination, the ideological mendacity of this neoliberal argument becomes clear. Uniform wholesale pricing prevents the small farmer from distinguishing their product to the consumer, making them a price taker. As markets expand and prices drop, small farmers cannot react to falling profits by increasing the quality and price of their good, since they lack direct access to the consumer. Narrower profit margins make it harder for family farms to make a living, forcing them to find ways to cut costs. Mechanization and poverty wages are the obvious choice. However, neither of these benefit all farmers equally; mechanization requires substantial fixed capital and complimentary commodity variable inputs (fuel, pesticide, "Round Up Ready" seeds) and since the smaller farms fronting these costs cannot employ heavy equipment at capacity, they cannot realize enough revenue to justify their new, higher variable costs. Only large farms have the economies of scale to realize the gains of mechanization and hire vast numbers of laborers at poverty wages. These same large farms are the only operations positioned to purchase additional land; since farming is a low-margin enterprise, only farms with vast revenue can afford to purchase more land from their narrow profit margins. Everyone else has to take out a loan, which often proves unsustainable for the small farmer who ultimately must face bankruptcy as she refinances her fixed capital to cover rising variable costs in the face of uniform, falling prices for her product. Compounding this problem, speculative markets for both farms' input variables and output product are traded by investors seeking to capitalize on rising or falling prices. These traders create an artificially expanded market of speculative buyers and introduce dangerous instability by increasing price volatility in both the market for commodity produce and the variable factors of production such as synthetic fertilizer, pesticide, and fuel. This instability affects small and corporate farms alike, since if the price of fixed costs plus commoditized variable inputs exceeds the revenue that can be produced with them by selling an agricultural product at a dangerously

Improvement or TransCanda, so that those corporate empires can build a hardware store or a toxic oil pipeline on your farm.**(c)** As internally sustainable, interdependent economies of farms producing small agricultural surpluses of diverse crops, theses people are generally better able to cope with crop failures by extending mutual aid to their neighbors, and are also healthier than other farmers at both higher and lower altitudes; suffering neither the relative poverty of the highland subsistence farmers nor the vast wealth inequality of the lowland valley centers. **(a)** Scott, *The Art of Not Being Governed.* **(b)** *Ibid.* **(c)** *Ibid.*

low commodity price, then the farm is losing money. However, large corporate farms can access capital in the form of loans and can afford insurance, sold by banks to defray the risk of price drops or drought. Corporate farms can even participate in the speculative markets by selling "futures" on their own product at a locked-in price, thereby forgoing any windfall from a future increase in the market price, but also protecting themselves against a future precipitous price drop. Here we can see how the insanity of late capitalism comes full circle, since the only way to protect ones business from the price volatility introduced by the financial instruments invented by speculative traders is to buy those very same financial instruments.

Although C.S.A. funded, organic, traditional agriculture has saved the small farm from some of these depredations by exiting the commodity market and reducing reliance on external variable costs, it has failed to address the difficulty of raising enough liquid capital from small farm revenues to expand operations sustainably, or to address the problem of prohibitive start-up costs for young farmers without an outside source of capital to fund the down payment on a mortgage. This in turn has meant that small farms are unable to take advantage of the knowledge they invest in their workers, since the owner lacks the liquidity to pay them a fair wage and the worker lacks capital to buy into the farm as an equity partner. Capitalization barriers also make it difficult for small farmers to expand or realize their economies of scale by investing in fixed capital facilities such as organic bakeries, organic creameries, organic cheese operations, and other opportunities to increase the marginal value of their agricultural product. Finally, because most small organic farms are family farms, they are vulnerable to subdivision by family members, while corporate farms are not.

The worker cooperative model addresses these challenges by re-investing fixed capital costs and wage labor costs into the capital expansion of the farm, by empowering workers to make decisions about their business and to pursue independent projects that will diversify farm income, and by protecting the farm against subdivision through incorporation. A local agricultural credit union can support both worker cooperative farms and independent organic farms by leveraging local knowledge to make selective, affordable loans to those who would be denied access to capital by multinational banks. Taken together, worker ownership and community financing can create sustainable growth in small agricultural communities.