A Beacon of Progress: *Cuba's Transition to Sustainable Agriculture*

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Introduction:

The transformation of Cuba's food and agricultural system after the collapse of the socialist bloc in 1989, and the strengthening of the US trade embargo, is a remarkable story in the struggle for food sovereignty that has been growing throughout the world. Cuba is a nation of unique structure and is rare in the sense that it's people look upon their government with trust, in the wake of a long history of dependence on powerful nations.

Prior to 1959 and the start of Fidel Castro's reign, Cuba was heavily dependent on the United States for imports, and before this the island nation was colonized by Spain. From the 1960s to the 1980s Cuba received heavily subsidized goods from the Soviet Bloc in Europe, such as oil, pesticides, fertilizers and farm equipment replacements. These inputs made it possible for the nation to develop a high-tech industrial agriculture system. The Soviet Bloc also purchased sugar from Cuba at subsidized prices allowing Cuba to become a major player in the world sugar market (Office of Global Analysis, FAS, USDA, 2008).

After the soviet collapse, Cuba fell into an economic crisis and faced a widespread food shortage with limited resources to recover with. They called it "The Special Period in Time of Peace" which placed the economy under a wartime austerity program (Funes, García, Bourque, Pérez, and Rosset, 2002). Cuba had to turn inward for it's survival, not an easy task in a globalizing economy dominated by the US. Cuba, however, was in a relatively good position to do this, due to the long-held philosophy of social equity and investment in human resources by the Cuban state. (Funes *et al.* 2002) To give an example of this preparation, Cuba makes up 2% of the Latin American population, and yet it is the home of 11% of it's scientists (Funes *et al.* 2002), one can only imagine that this came about from the Cuban people's access to free, high-quality education and healthcare. Cuba boasted a 95% literacy rate in 2008, placing it closer in profile to a developed nation than a developing one (USDA *et al*, 2008). According to Rosset and Bourque (2002), "...the well-educated and energetic populace put their dynamism and ingenuity to the task, and the government its commitment to food for all and its support for domestic science and technology." (Funes *et al,* 2002)

I would make the case that this somewhat anomalous transition undertaken by the Cuban people is an excellent example of civic intelligence working at high efficiency. The nation has not only pioneered alternative agroecological methods, but it has done so by utilizing every individual willing to get their hands in the dirt. Cuba has shown that with the proper investment in human capital, and a healthy sense of struggle, an alternative and sustainable agricultural model can indeed feed a nation. (Funes *et al,* 2002)

The remainder of this paper will attempt to break down the social process used to transform the Cuban food system, utilizing the civic intelligence analysis framework of orientation, organization, engagement, intelligence,

products and projects, and resources. My underlying goal is to use this story to demonstrate that with enough freedom and the right amount of state support, human beings are capable of doing just about anything they collectively set their minds to, and that the degradation of the environment to accomplish human goals is an unnecessary evil.

Orientation:

As mentioned in the introduction, Cuba descends from a long history of dependence on powerful countries such as Spain, the United States, and the former Soviet Union. Prior to the revolution headed by Castro in 1959, the Cuban landscape hosted a heavy presence of US capital. This agricultural paradigm created a marginalized peasantry, as the agricultural sector was focused almost exclusively on sugar for export. (Rosset, Machín Sosa, Roque Jaime, and Ávila Lozano, 2011) Although the government attempted to rectify this marginalization in the early years after the revolution by initializing widespread agrarian reform, according to Rosset *et al* (2011) this process came up against some blockades:

> While initial policy was directed at diversifying away from sugar and export dependency, extreme hostility by the US and the opportunity to join the international socialist division of labor (COMECON) on favorable terms of trade ended up strengthening the export monocrop emphasis as well as dependency on imported food, agricultural inputs and implements. (Rosset *et al*. 2011, 165)

The Agrarian Reform Laws of 1959 and 1963 placed 70% of all farm land in the state's hands, while the rest was passed to 200,000 peasant families. These families maintained many traditional agroecological practices passed down through the generations, and went on to form the National Association of Small Farmers (ANAP) that would go on to work diligently to preserve these old methods (Funes *et* al. 2002). Integral to the make-up of this association was the formation of Agricultural Production Cooperatives (CPAs) and Credit and Service Cooperatives (CCSs).

In the 1970s the Cuban government began recognizing the inefficiency and dependency of the monocropping system and began investing resources into the study of sustainable agricultural practices. The Ministry of Agriculture (MINAG), the Ministry of Higher Education (MES), and the Ministry of Education (MINED) all were adjusted to carry out agroecological research and had integral roles to play in the development of new practices that built upon the already known traditional methods to envision a system of self-sufficiency (Funes *et al.* 2002).

Despite this emphasis on self-sufficiency, in 1989, right before the onslaught of the crisis, Cuba's people were receiving 57% of their caloric intake and 82% of their pesticides from abroad, while 75% of all export revenues came from sugarcane, monopolizing 30% of all arable land. While this model might have provided temporary food security for Cuba, it was foreseeably unsustainable from an ecological standpoint and dependent solely on positive relations with the Socialist Bloc. (Rosset *et al.* 2011)

Cuba was about to be shocked out of it's dependence, and it would turn out to be as much of a blessing as it would be a curse. As we move forward to discuss the organization of the agricultural sector in Cuba, we can see that the orientation of Cuba is rooted in a long struggle for food sovereignty which has been marked by many challenges and setbacks along the road. But although Cuba has struggled to define itself as an independent nation, the common values that run deep throughout its people and state have created a breeding ground for positive innovation and an autonomous environment for social change.

Organization:

The Cuban agricultural sector has three main components: the state sector, the non-state sector, and the mixed sector. They all carry out their own roles and interact with each other in different ways. In this section I will address each in turn.

The State Sector:

Before the Special Period the state sector farms were the largest and most important component of the nation's agricultural system. In the wake of the Soviet collapse, however, the state farms struggled to produce, due to a lack of imported agricultural inputs. The state farms were set up for high-tech conventional agriculture, and were not compatible with the much more low-input technology they were forced to return to during the crisis (Funes *et al.* 2002). In a conventional system the tasks of managing a farm are broken up amongst many workers. This method decreases the knowledge of a particular piece of land that is vital to the ability to gain high levels of production with low inputs.

In 1993 the Cuban state officially recognized that conventional techniques were not successful within the new model, and issued a decree that ended the existence of a majority of state farms, reorganizing them into Basic Units of Cooperative Production (UBPCs). Essentially this fractured the state lands and released it into the hands of the people, giving it over to them on usufruct terms (free of rent). This action created farmers out of state workers, enabling greater decision-making autonomy for those who would successfully develop knowledge and a sense of belonging to the land (Funes *et al.* 2002). UBPCs are now considered to be part of the non-state sector. The motivation for breaking up these state farms came from evidence that non-state sector farms were outstripping state farms in production levels in the years of the Special Period. Private farmers possessed a more intimate knowledge of their land than did the state workers, and had the ability to make speedy decisions in order to adapt to the changing economic landscape. Many farmers had preserved traditional practices that had low input requirements. This was done most notably through the formation of the ANAP which has worked to preserve traditional practices since 1961 (Rosset *et al.* 2011).

Remaining lands not given over to UBPCs were formed into New Type State Farms, or GENTS, which were created to facilitate the process of becoming a full-fledged farmer for former state employees:

> The GENTS are completely owned by the state, but worker cooperatives are built upon them, and over time they take on more financial and management responsibilities. At a minimum, they enter into profit-sharing schemes with the underlying state structure. Rather than being state employees, the cooperative members enter into a contract with the state and the cooperatives profits are shared among the workers according to their own internal agreements. In the GENTS, both profit and risk are shared between the state farm and the worker cooperative, but minimum salaries are guaranteed, while ultimate responsibility for the farm and key management decisions are taken at the state enterprise level. There is a great deal of flexibility in these experimental arrangements, allowing each division and even particular enterprises and farms to work out their own arrangements within certain parameters. The final destiny of a given GENT might be the creation of a UBPC, or it might not. (Funes *et al.* 2002)

Almost all farms either state or non-state, hold quota requirements with the government, much of which goes though a food-rationing system which provides a basic subsidized diet, or is used for trade purposes. However, even with growth in production since the crisis, in 1994, many Cubans were still having difficulty accessing food. To help remedy this, the state starting allowing the opening of free agricultural markets, where farmers could sell surplus products at supply and demand prices. This created a strong incentive to bring production levels even higher, and in 2000 these markets handled 25 to 30% of all produce consumed by Cubans (USDA *et al.* 2008)

The state sector is now much smaller and less significant than before these reforms, indicating that the Cuban people are the innovators and leaders in this agricultural transformation, and that freeing people to find local solutions is a powerful social mechanism.

The Non-State Sector:

This *Campesino* or non-state sector consists of CPAs, CCSs, individual farmers (both private and usufruct tenure) and UBPCs. The two areas of production in this sector are collective, populated by the CPAs and the UBPCs, and individual, populated by the CCSs and individual family farms. Most individual farmers are members of CCSs, although some remain completely independent, and most CCS and CPA are members of ANAP. The UBPCs are organized by the National Farm and Forestry Workers Union (SNTAF) (Rosset *et al.* 2011). The ANAP has been integral in expanding upon the *Campesino-to-Campesino* or farmer-to-farmer training methodolgy which utilizes the knowledge that already exists amongst farmers, bringing it to light for others to make use of. Below I describe the major production units in Cuban agriculture.

Agricultural Production Cooperatives (CPA): The CPA is the oldest form of collective agriculture in Cuba, the first formation was in 1977 by farmers volunteering to combine their resources to achieve greater production levels, increased marketing, and efficiency (Funes *et al.*2002). Members are compensated according to their contributions. They make collective decisions in General Assemblies which are insured under the Agricultural Cooperative Law. They have been leaders in the cooperative agricultural model and have rapidly grown since the 1990s, having attracting many new members from diverse backgrounds who have collectively reshaped the profile of the peasant farmer.

Basic Units of Agricultural Production (UBPC): As discussed above, UBPCs are former state farms that have been broken up and given over to the people on permanent usufruct terms. Means of production are sold to the cooperatives by the state at reduced prices, and is thus private property. The UBPCs continue to sell to the original distribution chain of the state farm they emerged from, and work under a quota system. Surplus goods are sold in the free market at supply and demand prices (Funes *et al.* 2002).

Credit and Service Cooperatives (CCS): At this level of production farmers are in sole, complete, ownership over their farm and operate it as such. This model simply allows farmers to voluntarily pool resources in order to receive credit and services from the state. They also might share farming equipment and others resources that boost production. The CCS, like the CPA is run by General Assembly (Funes *et al*. 2002).

Individual Farmers: During the fracturing of the state farms in 1993, the state began giving out up to 27 hectares of land in permanent usufruct to families who would cultivate certain crops like coffee, tobacco, and cocoa. By 1996 their were 43, 015 usufruct farmers. Also given over were small plots in urban environments for neighborhood gardens, which has been an important aspect of urban dwellers diets, the ANAP works to incorporate both these types of farmers into their network (Funes *et al.* 2002).

The Mixed Sector:

The mixed sector consists of joint ventures between the state and foreign companies. This sector is heavily regulated by the state and only state enterprises can accept foreign capital. Some early crops that received foreign investment were: citrus, rice, cotton, and tomatoes. (Funes *et al.*2002) In 2008, an Israeli-Cuban venture produced more than one-third of all citrus production in Cuba (USDA *et al.* 2008).

Engagement:

There are multiple ways in which the new agricultural paradigm in Cuba has worked to engage its citizens in civicly intelligent ways. The state itself has been intelligent in the way that it involves its people and takes cues from their successes. It has created a participatory process by which the people can be active forces for change in their country.

Cuba's original agrarian reform laws made the requirement that property rights would not just include the land itself, but the means to make it productive for themselves and their families, as well as ownership of the harvest. All legislation after this must be in accordance with it.

The main vehicle for participation in the governmental process for private farmers is the grassroots organization ANAP, which works to represent the farmer's voice to the government, and represents the majority of CPA and CCS members. One tool they use to do this is the annual Technical and Financial Plan which they use to request state assistance. The plan details the real and potential assets, both human and material of every cooperative member. (Funes *et al.* 2002)

Another way the people create a voice for themselves is by taking part in the creation of the National Economic and Social Development Plan, which gives food producers in-depth knowledge of the collective goals of their region and can thus make decisions based upon a desire to improve the lives of their fellow citizens (Funes *et al.* 2002).

One of the most important activities undertaken by ANAP is the furthering of the *Campesino*-to-*Campesino* or farmer-to-farmer teaching and training methodology in the late 1990s. ANAP learned of this methodology called CAC (*Campesino*-to-*Campesino)* from the successful experience of Nicaragua in the mid-1990s. In 1996 ANAP hosted a meeting with CAC delegates from around Latin America, and in 1997 they launched a trial program (Rosset *et al.* 2011). Their support for this process has uncovered a goldmine of valuable ecological knowledge within the Cuban peasantry.

This methodology is based on the idea that rural farmers are more likely to accept new knowledge and new practices when they are taught by their peers and have concrete evidence that the practice is sound and workable within their local reality. This grassroots movement's central activity is to coordinate and facilitate the transfer of agroecological information from those who have successfully innovated a technique, or have remembered a traditional one, to those who are struggling with a similar problem on their farm. The experienced farmer's land can thus act as a classroom for those who would benefit from utilizing a given practice. This methodology, one that has become popular throughout the world, has been especially successful in Cuba because of the friendly nature of the Cuban state to this type of socially equitable process, and has become an international example for other nations working to achieve similar goals.

ANAP has been active in reaching out to, and engaging with other nations in agroecological efforts. They are a member of La Via Campesina (LVC), an international agrarian movement that ANAP has partnered with in order to research and understand Cuban successes so that they might be shared around the world. This project was undertaken by members of the International Working Group on Sustainable Peasant Agriculture that LVC formed for the purpose of such agroecological exchange:

> Among other tasks, this Working Group (with a male and female representative from each of the nine regions in which LVC divides the globe), under the leadership of the National Small Farmers Association of Cuba (ANAP) and the National Union of Peasant Associations of Mozambique (UNAC), is charged with strengthening and thickening internal social networks for the exchange of experiences and support for the agroecology work of member organizations. This includes identifying the most advanced positive experiences of agroecology, and studying, analyzing and documenting them (*sistematización* in Spanish) so that lessons drawn can be shared with organizations in other countries. (Rosset *et al.* 2011)

The 2011 study undertaken by Rosset, Machín Sosa, Roque Jaime, and Ávila Lozano was one of the first tasks that the group was charged with, and was a self-analysis of Cuban progress and the CAC methodology used to date. As we can see, Cuba has been progressive in engaging it's own people in social development and agricultural transformation, and has not been shy about sharing their story with those outside the country who share their passion and drive for change.

Intelligence:

From my perspective, the most important action by the Cuban state in this process, has been recognizing the voice of the Cuban people. The state has taken important cues from the innovation of private farmers, and has built upon that innovation, working to support and institutionalize their efforts. This can be seen quite clearly in the state's response to the spontaneous growth of neighborhood gardens in urban areas. Hugh Warwick wrote in the "Forum for Applied Research and Public Policy":

> Prior to 1989...urban agriculture was practically unheard of in Havana. Thanks to state provision, there was adequate food for all and little need to grow any privately. The post-Soviet crisis incited a massive popular response, initially in the form of gardening in and around the home by Havana's people. This was soon given a boost by the Cuban Ministry of Agriculture, which created an Urban Agriculture Department, with the aim of putting all the city's open land into production. By 1998, as a direct result of this policy, there were over 8,000 officially recognized gardens in Havana, cultivated by 30,000 people and covering some 30 percent of the available land. And urban agriculture continues to expand, with many urban areas providing up to 50 percent of their caloric needs. The goal is to grow all of the horticultural products consumed within the city in urban gardens. (Warwick, 2001)

The urban garden movement in Havana has done much to cultivate community in neighborhoods, increase self-reliance, and enhance the pride and self-value of its people. It promotes conscious consumerism and social equity. (Warwick, 2001)

We can see that there is a trend in Cuba of people individually and collectively finding solutions to common problems. We can also see that there is an equal trend of the state picking up on these innovations and finding a way to institutionalize them. We saw this at work in the fracturing of the state farms. Smaller farms were adapting more quickly and had more human resources in their model, and the state responded by adapting their own practices so that their sector could evolve to be more similar to the non-state model.

Another sign of intelligence, is that Cuban organizers practice regular meta-cognition. This can be seen very clearly in the *Campesino*-to-*Campesino* teaching and training methodology movement, which has built into it regular debriefing sessions that allow participants to assess progress, successes, and failures so as to modify and adapt plans for the future. There is a direct feedback loop between the experimentation of farmers on their land, and the types of agroecological research that is conducted with these farmers in mind. Any practice researched must be workable within a local reality in Cuba. The methodology itself is also being regularly modified by the exchange of information between participants (Rosset *et al.* 2011). This collective process is one that assumes progress, it cannot become static in nature. The recognition of the evolving, mutable nature of human society is one of the reasons that Cuba's story is so unique.

Products &Projects:

The authors of Rosset *et al* (2011) put forth that the concept of agroecology is markedly different from how most in the North understand organic agriculture. They assert that the conventional understanding of organic farming simply replaces harmful chemical inputs for less harmful organic-certified ones:

> The emphasis is on the adaptation of and application of the principles in accordance with local realities. For example, in one location soil fertility may be enhanced through worm composting while in another location it might be through planting green manures; the choice of practices would depend on various factors including local resources, labor, family conditions, farm size and soil type. This is quite different from the type of *organic farming,* common especially in Northern countries, that is based on recipe-like substitution of toxic inputs with less noxious ones from approved lists, which are also largely purchased off farm. This kind of *input substitution* leaves intact dependency on the external input market and the ecological, social and economic vulnerabilities of moncultures. (Rosset *et al.* 2011)

Since self-sufficiency is of such vital concern for Cuba considering the United States trade embargo, input substitution farming would not be a viable model, nor would it provide the numerous benefits that the Cuban people have reaped from the agroecological model. Some of the practices include: ecological pest management, inter-cropping, green manures, worm composting, animal traction, and soil management among many others. (Funes *et al.* 2002) One of the most prominent outcomes of using highly ecologically integrated methods has been a high increase in resistance to weather events. During a research visit to Cuba in 2008, the Rosset *et al* team observed that 40 days after Hurricane Ike hit, farms that had integrated agroecological practices into their farms had taken a much less severe hit than industrial farms:

> We observed large areas of of industrial monoculture where not five percent of the plants were left standing. We visited numerous agroecological peasant farms with multi-storied agroforestry farming systems where Ike had only knocked down the taller 50 percent of the crop plants (tall plantain varieties and fruit trees), while lower story annual and perennial crops were already noticeably compensating for those losses with exuberant growth, taking advantage of the added sunlight when upper stories were tumbled or lost leaves and branches. (Rosset *et al.*2011)

These observations hold massive implications for the destabilizing nature of industrial moncultures, as well as the feasibility of alternative methods. If taken seriously, evidence like this can inspire major grassroots strides to disrupt the prevailing modern agricultural paradigm, as we have seen in the LVC movement. One of the most important facets of these positive agroecological outcomes is independence from global input markets. In Cuba the incentive to make these changes came from a lack of access to external inputs due to shaky relations with the United States.

In 2012, as we see the implosion of the global economy becoming more and more critical, I would predict that the challenges facing Cuba after the Soviet collapse will become increasingly familiar for the the rest of the world. This includes highly developed nations such as the US. Cuba has set a standard of sustainable development that the rest of the world would be wise to emulate (when taking local realities into account). Cuba has been active in mobilizing this message, hosting a World Forum on Food Sovereignty in Havana in 2001 with 400 delegates from around the world. This forum, convened by the ANAP, brought together people from all

around the world who committed themselves to protecting people's right to feed themselves. The forum also served to give recognition for Cuba's profound struggle to feed a nation in the shadow of an inhumane blockade by the United States (Final Declaration of the World Forum on Food Sovereignty, 2001).

Resources:

One of the most intriguing and exciting aspects of Cuba's transformation is the scale of change they achieved with so few external resources. Through my lens, this is where the power lies. In fact, it could be said that the extreme actions taken by the United States in limiting Cuba's external resources, although clearly inhumane, could be viewed much as a cloud with a thick silver lining. It was the necessity of independence which ultimately drove Cuba to innovate so profoundly and holistically. They were faced with the stark reality of evolution: adapt or perish. Their success is a beacon for all who believe in and work for social equality and food sovereignty.

What I take from Cuba's story in considering the resources needed to accomplish these types of goals, is that social equality and the decision-making autonomy of a nation are both key factors in making this type of progress. In order to visualize what I mean, imagine for a moment what the Cuban landscape might look like without the existence of the US trade embargo. In light of the Soviet collapse, Cuba may have been forced to allow the entrance of large amounts of US capital to make it through the transition, once again marginalizing the valuable peasantry and pushing agroecological methods deeper into history. We cannot know if this would have happened, but it seems clear that to a major degree, one of Cuba's most important resources has been a lack of involvement from the United States.

Conclusion:

To conclude, Cuba has shown that it's people are notably resilient in the face of extremely hostile situations. I believe that their ability to be so comes from the presence of a strong, yet flexible national identity. The nation unites at it's heart, not around economic goals or plans, but around a common value system and philosophy that holds at it's center a deep care for human life. Cuba acts as an example to the world, showing that a well-educated, healthy populace, when shown respect by its state, will help to evolve it's nation and, even, it's species.

Cuba has shown civic intelligence in such a variety of ways that it has been difficult choosing what to include here. I have attempted to show what I see as the key ingredients of Cuba's transformation. The most critical ingredient is that the state and the people share a common goal. Without state support, the transformation undertaken by Cuba would have been an even steeper, potentially violent climb. Because of Cuba's struggle, other nations throughout the world who struggle for food sovereignty, now have a well-organized social process blueprint from which to work.

Of course Cuba's own journey towards self-sufficiency is far from complete, the island nation has simply jumped several paces ahead of the rest of the world. As the global situation continues to destabilize, I will have my eyes on Cuba to watch how their story continues to unfold. Several challenges will certainly face them, especially considering that the US has a growing interest in Cuban markets, and has loosened its embargo considerably since the beginning of the 21st century. Cuba has been forced to increase its US imports because of frequent hurricanes hitting the island. (USDA *et al.* 2008) As we know though, Cuba's agroecological system is highly adaptable to extreme weather conditions, so it is not even close to being counted out. The *Campesino*-to-*Campesino* has been strengthening in Cuba, and is being shared around the world thanks to LVC. The food sovereignty movement won't be ending soon.

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