

# Promoting Food Sovereignty through a Cooperative Model in the Maya Region

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Promoviendo la soberanía alimentaria  
a través del modelo cooperativo en la región maya

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## Abstract

The purpose of this investigation is to demonstrate if working in cooperatives favors an increase in food sovereignty among indigenous Mayan women living in rural communities of the Yucatan Peninsula, located in southeast Mexico. The support networks created within the working relationship are expected to transcend beyond the economic activities and provide a basis for deeper ties which promote food sharing in times of scarcity and foment bartering of fruit and vegetables among the participants. A quantitative methodology was used by means of a questionnaire with a Likert scale to measure the attitudes of the participants. The qualitative methodology of social investigation was also applied through open interviews, semi-structured interviews, participant observations and

## Resumen

El propósito de esta investigación es demostrar si el trabajo en cooperativas favorece e incrementa la soberanía alimentaria de las mujeres mayas que viven en comunidades rurales de la Península de Yucatán, ubicada en el sureste de México. Se espera que las redes de apoyo creadas mediante las relaciones laborales trasciendan más allá de las actividades económicas y sustenten lazos más profundos que promuevan el compartir los alimentos en tiempos de escasez y fomentar el intercambio de frutas y vegetales entre las participantes. Se utilizó la metodología cuantitativa mediante una encuesta con base en la escala de Likert para medir las actitudes de las participantes. De igual manera, fue incorporada la metodología cualitativa de la investigación social a través de en-

ethnography. It was found that cooperative work strengthens support networks among the participants in this study, thereby favoring their food sovereignty; however, this is also related to cultural and family aspects of the Maya people. As a result, this paper explains community strategies implemented by indigenous women to confront poverty and to improve, with their limited resources, their access to food and income through association.

### *Keywords*

Women, cooperatives, food sovereignty, strategies, support.

entrevistas abiertas, semiestructuradas, observación participante y la etnografía. En los resultados se observa que el trabajo en cooperativas fortalece las redes de apoyo entre las participantes de esta investigación, favoreciendo su soberanía alimentaria; sin embargo, esto se relaciona con aspectos culturales y familiares de la población maya. En consecuencia, este artículo explica estrategias comunitarias implementadas por mujeres indígenas para confrontar la pobreza y para mejorar, con sus limitados recursos, su acceso a alimentos e ingreso a través de la asociación.

### *Palabras clave*

Mujeres, cooperativas, soberanía alimentaria, estrategias, apoyo.

## Introduction

Access to food is an inalienable right, as stipulated in the Universal Declaration of Human Rights – article 25: “Everyone has the right to a standard of living adequate for the health and well-being of himself (or herself) and his (or her) family, in particular food...” (United Nations [UN] 1948: 7). This was also ratified in 1976 in the International Covenant on Economic, Social, and Cultural Rights (ICESR) promoted in the General Assembly of the United Nations in which mention is made of article 11, stating that “the States Parties to the present Covenant recognize the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions” (ICESR, 1976: 4); both international documents received the signature of Mexico. On a national level, article 4 mentions: “everyone has the right to sufficient, nutritious food of quality” as established in the Constitution of the United States of Mexico (Diario Oficial de la Federación, 2011: 1)

Despite the legislative advances achieved in the area of food, when we talk of the right to food access in the rural communities of the Mexi-

can Southeast, we find that this is influenced by political, economic, social and cultural aspects, which affect the access to this human right, mainly due to the marginal living conditions of the inhabitants.

Besides the aspect of food security or food sovereignty, the following reflections are presented. The right to food is established according to the organization which is defining it, but this is often done without taking into account the uses and customs of the indigenous people or the agricultural production of the regions in which they live.

Other factors that should be considered include the bad conditions of the roadways in the rural areas furthest away from urban centers, which complicate the transportation of food. Also, the soil erosion resulting from the use of technological packages which have led to impoverishment of the soil, reducing its productivity considerably. Such circumstances may be sufficiently met in any city of the developed world, but could be inadequate or insufficient in the *milpa*<sup>1</sup> of a Mayan farmer in the southeast of Mexico.

Moreover, very often the right to food is not only associated with the level of development and customs but also with gender roles; women are responsible for the preparation of food in the Mayan rural areas of Mexico. In addition to the cooking process, they also participate in agricultural activities and assist in the feeding process of other family members who require help due to their age or infirmity, such as children, relatives with disabilities and the elderly, in both the nuclear and extended family.

The indigenous Maya women participate in the provision of food in regions with low agricultural productivity, where migration of the men to tourist areas of the southeast of Mexico and to the U.S. and Canada appears to be the only alternative source of subsistence viable for families in the rural area, and where the level of education among the

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<sup>1</sup> The *milpa* is the agricultural production system characteristic of the Maya culture. It is an agricultural production system of corn, beans and squash under slash, fell and burn conditions in the tropical Mayan area which is based on the management of the ecological succession and starts with the clearing by slash and burn of fragments, with subsequent years of cultivation and periods of abandonment to induce recovery of the vegetation (Granados, López & Trujillo, 1999).

population is incipient (Instituto Nacional de Estadística y Geografía [INEGI], 2018). It is in this environment that some women begin working together in their free time. Despite the lack of economic resources or effective programs to finance and train them, they invest what little time they have left, after their agricultural labor and the housework, in the establishment of micro-businesses with other women in order to obtain a higher level of income and thus ensure the future of their children through their studies and a balanced diet, which will allow them to be intellectually capable of doing schoolwork.

With this focus in mind therefore, the present study was developed in an attempt to answer the following research question: *Does the participation in cooperatives contribute to food sovereignty among Mayan women in the Yucatan Peninsula?* and, if it does, to what extent and with which specific practices.

Another aim was to establish if the participants in cooperatives help each other with the provision of food through exchange or barter of fruit and vegetables, and to clarify if this occurs because they are members of a cooperative or because they are related to each other or due to a cultural or family aspect of the indigenous Maya population. These are the questions to be addressed in this research paper. In order to provide the contexts that are necessary to position this analysis, we will first introduce these backgrounds.

Section 2 will deal with the social movements relating to food and the emergence of the concept of food sovereignty; section 3 will address the uses and customs of the Mayan people inhabiting the Yucatan Peninsula in the Mexican southeast. Section 4 will explain the theoretical framework on which this research was based. In section 5 both the methodology and the selection of cases will be mentioned. The results will be presented in section 6. In section 7 an analysis and discussion of the data obtained will be carried out and in section 8 the conclusions will be shown.

## Social Movements and the emergence of Food Sovereignty

First, we will address the concepts; what do we understand of cooperatives? The figure of the cooperative is defined as an autonomous association of persons who have been united voluntarily to meet their common economic, social and cultural goals in the figure of a democratically controlled company (International Co-operative Alliance [ICA], 2016). This way of working and producing is related to social economy and is known as the third sector among economies, between the private (business) and public sectors (government). It includes organizations such as cooperatives, nonprofit organizations and charities with an ethical component as a core element (Nicholls, 2008).

Social economy studies the relationship between economy and social behavior. It analyzes how consumer behavior is influenced by social morals, ethics and other humanitarian philosophies (World Heritage Encyclopedia [WHE], 2016). Social economy has developed because of a need for new solutions for issues (social, economic or environmental) and to satisfy needs which have been ignored (or inadequately fulfilled) by the private or public sectors. By using solutions to achieve not-for-profit aims, a social economy has a unique role in creating a strong, sustainable, prosperous and inclusive society (Curl, 2009).

Having defined a cooperative as an organization related to social economy, we will now discuss which concept should serve as a referential framework for this investigation, in other words, what is the correct term for the objectives of this investigation? Is it food security as defined by the Food and Agricultural Organization of the United Nations (FAO) or food sovereignty, a concept relating to the Latin American social movements headed by the organization *La Vía Campesina*?

We will begin with the declarations emitted by the FAO. At the first United Nations World Food Conference held in 1974 in Rome, it was proclaimed that “every man, woman and child has the inalienable right to be free from hunger and malnutrition in order to develop their physical and mental faculties” (United Nations World Food Conference [UNWFC], 1974: 1). In an attempt to reach these goals by increasing glo-

bal food production, Mexico participated in the green revolution, which was a government strategy to reach the high levels of production required. This meant an increase in the use of pesticides, herbicides and fertilizers, as well as the intensification of high yield monoculture in order to achieve a significant increase in the country's food production. The consequences of these actions are still felt today in Mexican agriculture, as current cultivations do not produce the same yield due to impoverishment of the soil as a consequence of the chemicals used in agricultural activities, in addition to a greater incidence of pesticide resistant organisms and more prolonged droughts (Altieri, 2009).

The term "food security" was defined at the 1996 World Food Summit (also known as the Declaration of Rome) as follows: "food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO, 1996: 1).

Among the main deficiencies presented by the term food security is the fact that it does not take into account the knowledge possessed by the original cultures regarding food subsistence or the role of women as participants in agricultural labor and as food providers for their families (Ehlert & Voßemer, 2015). Similarly, the definition of food security avoided discussing the social control of the food system (Patel, 2009).

It has been argued that food security does not seek to identify where food comes from or the conditions under which it is produced and distributed. The argument is that food security targets are often met with food sources produced in environmentally destructive and exploitative conditions, and supported by subsidies and policies that destroy local food producers (Gross & Feldman, 2015: 438).

Food Security is also supported by the World Bank and the World Trade Organization, two organizations which have historically been known for their economic recipes susceptible to failure in Latin America (Sogge, 2009; Llistar, 2016). "From the global food security perspective, outdated agricultural economies of the global south need to be improved through the adoption of biotechnology developed by scientists and

corporations in the global north” (Hopma & Woods, 2014: 773), which would represent the abandonment of traditional methods of subsistence in a country like Mexico with strong indigenous roots, as well as a high economic and environmental cost for the country.

In contrast, the concept of food sovereignty comes from the International Peasant Movements across the global south and was presented in a document titled “Food Sovereignty: A Future without Hunger” during the “World Summit on Food Security” organized by the FAO in Rome, Italy, in 1996 as a criticism of the focus of food security which was influenced by the prevailing perspectives of international commerce based on neoliberal politics, as well as the credit conditions imposed by the World Bank and the International Monetary Fund on developing countries. This document emitted by the international movement *La Vía Campesina* defines food sovereignty as the “right of each nation to maintain and develop their own capacity to produce foods that are crucial to national and community food security, respecting cultural diversity and diversity of production methods” (La Vía Campesina, 1996). “Food sovereignty pays special attention to the most marginalized, vulnerable, or disadvantaged populations, focusing on the structural forms of marginalization embodied in gender, caste, and ethnic relations” (Walsh-Dilley, Wolford & McCarthy 2016:5). “Food sovereignty is predicated upon the rights of communities to determine culturally meaningful methods of agricultural cultivation in order to ensure the security of their diets and their lifeworld” (Cuevas, Fernandez & Olvida, 2015: 27).

Social rural movements embrace the concept of food sovereignty as an alternative to the neoliberal approach that puts its faith in an inequitable international trade to solve the world’s food problem. Instead, it focuses on local autonomy, local markets, local production-consumption cycles, energy and technological sovereignty, and farmer-to-farmer networks with a bottom-up perspective (Altieri, 2009: 111).

These ideals are opposed to the neoliberal economy policy perspective. In the last 30 years, these policies have prevailed in Mexico and have meant the implementation of a number of measures that have in-

creased inequality and social exclusion, to the detriment of the living conditions of the majority sectors of the population (Espadas, 2015).

This economic model of western development has been a predator of human and cultural resources of the world, while the traditions of indigenous people in counterparty are based on the world-view, spirituality, social organization, and skills in implementing survival strategies in situations of extreme adversity (Dureytere, 2003: 1).

The definition of food sovereignty emphasizes principles of rights and social justice, formed by support networks among farmers, with a particular focus on small-scale family farmers and peasants, with respect for the environment and with a democratic, participative process in agricultural policy decision making. Furthermore, it recognizes the value of the knowledge and abilities of subsistence of the original inhabitants, as well as ethics in the food system which go beyond economic values, while emphasizing the contribution of women for food preparation and caring for their households in terms of producing and attaining food, keeping in mind that, according to the Food and Agricultural Organization of the United Nations, women grow between 60 and 80 percent of the food in developing countries (Patel, Balakrishnan & Narayan, 2007).

This aspect was emphasized in the World Forum on Food Sovereignty in Havana, Cuba in 2001, which states:

Food sovereignty is understood to be the right of the people to define their own policies and sustainable strategies for food production, distribution and consumption which guarantee the right to food access for all the population, based on small and medium-scale production, respecting their own cultures and the diversity of farming, fishing and indigenous modes in agricultural production, commercialization and management of rural areas, in which women play a fundamental role (World Forum on Food Sovereignty, 2001: 5).

Similarly, the social movement *La Via Campesina*, an organization which promotes the concept of food sovereignty, also defends the rights of women and gender equality at all levels and combats any type of violence against women.



In Mexico an estimated 20.1 percent of Mexicans do not meet their nutritional requirements and basic needs (Consejo Nacional de Evaluación de la Política de Desarrollo Social [CONEVAL], 2016), and poverty is most severe and widespread among indigenous peoples, especially women, who constitute more than half of the population living in the conditions described before (CONEVAL, 2016). Among the indigenous Maya population, a lack of educational opportunities, food deficiencies, the violence arising from the frustration generated by marginal living conditions and lack of opportunities have all contributed to maintain women under the control of the father-figure, brother, son or husband. However, when these persons are absent, due to abandonment or neglect for the household, Mayan women often group together to work in cooperatives which provide alternative sources of income as well as a support network from which additional help can be received to sustain their families.

## Customs of the Maya population living in the Yucatan Peninsula

The following section describes relevant aspects of the Maya population in the rural areas of the Yucatan Peninsula in order to understand the context of the participants in this research work.

### Agriculture

Among the Mayan people, the *milpa* is the ancestral agricultural system which unites them with divinity. For the Maya, maize is the material from which they were created, according to the Popol-Vuh, a book which contains stories and sacred legends describing how they originated in this world. They continue to carry out ceremonies directed by a Mayan priest to thank the gods for their protection and to ask for rain and an abundant harvest. It is interesting to note that in most of these ceremonies women do not participate.

The *milpa* is a production system which is characteristic of the Maya economy. Its activities basically depend on the seasons and

the knowledge possessed by these farmers is transmitted from father to son; thus, the practices are sustained by extensive historical experience (Granados, López & Trujillo, 1999: 58).

The *milpa* combines maize variants ranging from white to yellow (*zea mays*) together with beans (*phaseolus vulgaris*), lima beans (*phaseolus lunatus*), cow pea (*vigna unguiculata*), lentil (*cajanus cajan*), squash (*cucurbita moschata*), sweet potato (*ipomoea batatas*), cassava (*manihot esculenta crantz*), habanero chili pepper (*capsicum chinense*), bell pepper (*capsicum annuum*), tomato (*lycopersicon lycopersicum*), jícama (*phachyrhizus erosus*), and cucumber (*cucumis sativus*). It is also possible to find the following among the most representative crops in a *milpa*: water-melón (*citrullus lanatus*), melon (*cucumis melo*), papaya (*carica papaya*) and pitahaya (*hylocereus undatus*).

A variety of fruits are cultivated in the backyards of the houses, such as citrics: lemon (*citrus × limón*), sweet orange (*citrus × sinensis*), bitter orange (*citrus × aurantium*), also huaya fruit (*melicoccus bijugatus*), sapote (*manilkara zapota*), star apple (*pouteria caimito*), avocado (*persea americana*), soursop (*annona muricata*), mamey (*mammea americana*), red currant (*phyllanthus acidus*), plum (*spondias purpurea*), red nance (*byrsosima crassifolia*), ciricote (*cordia dodecandra*), among other tropical fruits.

The harvest of the *milpa* is for family subsistence and the production of the land is not sufficient for commercialization on a large scale; however, when there is a surplus, the exchange of fruit and vegetables with the extended family and neighbors is common, or it is sold in local markets; although this last option may depend on the cost of transportation and the bad conditions of the roadways in the rural areas of the Yucatan Peninsula.

Mayan agricultural production is centered on family work, which contributes to the union of interrelated families under a system of mutual help, with the characteristic of communal collaboration in the *milpas* (Flannery, 1982).

## Migration

In the Mayan area, it is common to find communities majorly composed of women, children and elderly people. Low productivity of the land, in addition to low formal education levels make it difficult for people of productive age to find well-paid jobs which would allow them to satisfy the economic needs of their families.

Related to labor and income, there is an internal migration, where young men and women work in hotel resorts located in the Riviera Maya, Playa del Carmen, Cancun, Isla Mujeres and Cozumel, all of which are tourist destinations in the state of Quintana Roo, one of the three federal entities that form the Yucatan Peninsula. It is common to find buses sent by the human resources departments of these luxury hotels, which provide “free” transportation for the employees from their villages, in order to ensure the number of employees needed to keep the hotel chains functioning.

On the other hand, there is also an external or international migration, most often to the United States, which involves mostly men and is usually carried out illegally, although Yucatán, Campeche and Quintana Roo are the states with lower percentage contributions to the total number of migrants in the country, as they represent between 0.7 and 1.0% of the population (INEGI, 2012).

The resultant increased poverty in the countryside has forced the emigration of many rural men to seek low-paid farm work jobs in the United States. Thus, Mexican immigrants are working for U.S. agribusinesses, leaving women and children to fend for themselves at home in Mexico (Ferguson, 2009: 22).

The social consequences of these international, male migrations include disintegration of the families. As the years go by, sometimes the remittances sent to the families begin to diminish considerably until they cease completely, often with no prior communication, leaving the rural families uncertain as to the well-being of their family member/provider.

If the man does return, sometimes with savings, more often without, he may have contracted diseases during his stay abroad, putting

at risk not only his wife's health but also the welfare of his family due to the poor medical services in these rural villages and the social stigma represented by such illnesses.

The economic situation and lack of employment "continues to force these peasant farmers of the Mexican southeast to migrate, thereby damaging the form of organization in these indigenous and rural communities" (González, 2008: 19). In consequence, "displacement strips their indigenous knowledge of relevance and nullifies valuable social capital" (Cuevas, Fernandez, & Olvida, 2015: 37).

### Diet and physical activity

The diet of the inhabitants in the Maya area depends on the production of the *milpa*, which provides them with maize to make *tortillas*; beans and squash, which are basic foods, as well as other garden products, including vegetables and greens. It is common to see poultry and pigs in the backyards of their houses. The meat of these animals is usually consumed on festive days.

The meat of wild animals is also an important source of animal protein although incipient. The meat obtained from hunting is usually consumed by the family, although, in some cases, part of the meat is given to a friend or sold within the community. Many of these animals are caught inside the *milpa*, where they come to feed.

Among the species of mammals often consumed can be found: white-tail deer (*odocoileus virginianus*), brocket deer (*mazama americana*), wild boar (*tayassu tajacu*), badger (*nassua narica*) and paca (*agouti paca*), which are the organisms providing the largest contribution of meat to the family diet. With respect to wild fowl, the most representative are pheasant (*crax rubra*) and chachalaca (*ortalis vetula*) (Granados, López & Trujillo 1999: 66).

In these communities, there is an excessive consumption of sugar-based drinks, pastries and crispy fries made from maize, which have contributed to the high indices of malnutrition and obesity in the population. We are faced with a scenario of malnutrition with two facets: in one we find under-nutrition, and in the other obesity. Nearly 74% of

the population in Yucatan classify as obese (CONEVAL, 2010). At the same time a large percentage of children suffer from chronic malnutrition, which hinders cognitive development, compromises the immune system, and affects their ability to pay attention in school.

According to the World Health Organization (WHO), recent statistics on food consumption are quite conclusive: most importantly, they show a significant increase in caloric intake. This intake of excess nutrients is leading to the startlingly sharp rise of nutrition-related health problems including coronary heart disease, high blood pressure and type-2 diabetes, among others (López, 2015: 45).

Physical activity is almost non-existent among married women or women with partners, except for their agricultural labors or in the home where a significant number of calories is required. It is not the custom for women to practice physical exercise, this in relation to cultural aspects which dictate that women should not be seen on the streets without a socially justified reason, even if she is doing exercise with other people of the same gender. Women, in general, are lagging behind, even in the domestic sphere and their participation in the public sphere is strongly questioned and rejected by the community, both by men and women because of prevailing sexist traditions (Pérez, Vázquez & Zapata, 2008). These attitudes are changing, in part due to the installation of sports domes, football pitches and sports areas financed by the Mexican government, where the people of the communities can gather to talk in the afternoon, while the youngsters play baseball, basketball, football and other sports. Due to this, little by little, groups of women can be seen doing exercise, such as dancing zumba.<sup>2</sup> This activity is being encouraged by local authorities as a way of activating the population given the high indices of obesity in these communities.

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<sup>2</sup> Dance movements combined with a series of aerobic exercise routines.

## Cooperation as part of the culture

The Maya culture integrates ancestral traditions, nature, community and family in a collective vision of goods and production, based on a community economy, which seeks more than the simple satisfaction provided by material needs (Guillen & Phélan, 2012).

The villages are located in remote areas that lack access to basic utilities such as a good electricity system and frequent public transportation; situations which motivate the inhabitants of these areas to work together. The cooperative basis originates in the nuclear family, later including the extended family and subsequently the community. The family unit is of vital importance, serving as a basis for the principles of solidarity in the communities.

Satisfying the basic needs presupposes the construction of a support network. In this sense, insufficient income for the procurement of basic foodstuffs gives impulse to the generation of solidarity strategies at a nuclear family level or in the extended family which will resolve their precarious situation (Soria, Palacio & Trujillo, 2014). These initiatives can include the cooperatives, which are created by the members of these communities. These forms of community organization have been recognized by the Economic Commission for Latin America and the Caribbean (ECLAC) and the Inter-American Development Bank (IDB), encouraging the creation of micro-businesses and supporting projects that integrate participatory community development, which has proven to strengthen cultural identity and promote sustainable socio-economic development (Dureyttere, 2003; Lerner, 1996).

It must be emphasized that community participation usually begins with a bottom-up approach involving major stakeholder groups (Kay & Alder, 1999). These initiatives of social economy and solidarity are not really a part of the capitalist mentality in which profit is the only goal. Most of the resources mobilized are not in the form of money, but rather in support networks. With the focus on cooperativism, commercial relationships are not restricted to economic aspects alone, but also take into consideration social and cultural values based on mutual trust (Cabañes & Gómez, 2014). Another perspective focuses on the impli-

cations for distributive justice. “Cooperation, by contributing to the economic and moral progress of the socially disadvantaged, contributes to the progress of society as a whole, not just of the social groups concerned” (Mori, 2014: 332).

## Women participating in cooperatives

The discrimination of rural women, together with the lack of an effective application of legislation on equality of gender, is a phenomenon which extends all over the world. Traditionally, women have been responsible for feeding and taking care of the family, consequently they have developed productive tasks which facilitate the combination of productive and reproductive activities in agricultural exploitation (Escurriol, Binimelis & Rivera-Ferre, 2014: 3).

One of these institutional initiatives that allows women to help in agricultural labor, do their housework and bring up their children, is the creation of micro-businesses in the form of cooperatives, which has shown to be a strategy which can reduce the level of poverty in which they live (Osorio *et al.*, 2016). These cooperatives provide a basis to strengthen their access to social capital, defined as the connections among individuals, social networks and the norms of reciprocity and trustworthiness that arise from them. These networks act to engage citizens in trustworthy practices of neighborliness, political participation, or assistance in providing employment opportunities (Putnam, 2000).

It is important to reflect on the fact that, in general, the farmers, both men and women, and the indigenous communities are seen as vulnerable groups, beneficiaries and poor, instead of people living in conditions of poverty or people who have been impoverished as a consequence of the model of economic development. Far from being considered subjects with rights, economic agents and actors of development, these indigenous communities are considered a burden for the State, and as “statistical data” to measure poverty, extreme poverty and economic growth or decline (Sánchez, 2012: 14).

In the cooperatives, indigenous women are recognized as actors of change, with a profile of entrepreneurship which encourages coope-

ration, honest work and the respect of the community and their families. This is achieved thanks to the participation of the women who dared to go outside the domestic environment in search of an alternative income in order to provide a better future for themselves and their dependents.

## Theoretical Framework

The frame of reference used in this article is as follows: the Critical Consciousness Theory of the Brazilian educator Paulo Freire will be presented as a reflection on the recognition of the human being of his or her essential value and the process of becoming responsible for one's own development. This will be complimented by the contribution of the English professor Jonathan Seglow on the concept of self-respect as a way to alleviate the social and economic disadvantages suffered by minorities, in this case Maya women. In addition, a reference will be made to the *Buen Vivir* or *Sumak Kawsay*, an indigenous notion of life related to cooperation as a strategy to confront the consequences of consumerism and poverty as a result of capitalism.

### Critical Consciousness Theory

The Critical Consciousness Theory was created in the Brazilian context of marginalization of rural areas and analphabetism during the decades of 1960 and 1970. It refers to the process by which the human being discovers his (or her) value as a person, through reflection and dialogue. It is during this process that the person recognizes and initiates the process of change with which s/he can give impulse to their own development in different aspects of their lives, social, economic or political. For the purposes of this research work, this theory will be referred to, taking into account the relationship between the cooperative work of indigenous Maya women and the social transformation of women arising from their participation in these micro-businesses, with a special focus on the aspect of food sovereignty and the subsequent formation of support networks which are of great benefit in times of scarcity in the communities.

In the theory of critical consciousness, human beings abandon their role as objects, objects of the state and objects of the family or their



life circumstances and begin to be the subjects or actors of their own destiny. As they become conscious of their value as human beings, a dialogue is developed regarding their poverty, their lack of formal education, the absence of opportunities; this dialogue can be internal or with their peers, the aim being to find alternatives in order to achieve better living conditions. These actions are carried out based on a critical reflection of their own circumstances; in some instances, it is an economic necessity or the oppression of machismo,<sup>3</sup> sexism<sup>4</sup> or racial discrimination<sup>5</sup> which motivates them to interiorize their life situation and encourages the formation of an organization with other women, based on their similar needs.

It is within this dialogue with other indigenous Mayan women that the change begins; paternalism,<sup>6</sup> assistentialism<sup>7</sup> and social control are impediments to this process of self-discovery of their skills. The women themselves must create the circumstances for the change through reflection, self-discovery and action, as strong capable women characterized by a strong desire to provide their children and dependent family members with better living conditions. Within this dialogue of respect and reciprocity, the commitment to equality begins, transforming the participants and, once the individual has changed, propitiating changes in the social structures. In this regard, Freire explains that any poli-

<sup>3</sup> A set of beliefs, conducts, attitudes and social practices which justify and promote discriminatory attitudes towards women. It is associated with the roles and family hierarchies which preserve male privileges. It is considered to be a form of coercion which underestimates the capacity of women based on their supposed weakness. It punishes any autonomous female behavior (Instituto Nacional de las Mujeres [INMUJERES], 2007).

<sup>4</sup> Discrimination based on the sex of a person. It benefits one sex over the other, based only on this criterion. It represents women as inferior beings due to their biological differences compared to men (INMUJERES, 2007).

<sup>5</sup> Racial discrimination is any distinction, exclusion, restriction or preference based on motivations of race, color, lineage or national or ethnic origin, whose aim or effect is to nullify or undermine the recognition, enjoyment or exercise, under conditions of equality, of human rights and of fundamental liberties in the ambits of politics, economy, social, cultural or any other ambit of public life (UN, 1969: 2).

<sup>6</sup> Paternalism is the tendency to apply the rules of authority or protection traditionally assigned to the parent to other areas of social relations such as politics and the work field (Diccionario de la Real Academia Española, 1986).

<sup>7</sup> Political attitude oriented to resolving social problems through assistance programs which produce dependence in the population (Coraggio, 2011).

cy, program or project without a bottom-up perspective has little hope of prospering, as they are imposed on the people and do not originate in the community for the development and well-being of the population.

Assistentialism is a particularly dangerous method in this context, as it treats human beings as passive objects, incapable of participating in the process of their recovery. Moreover, it contradicts the fundamental democratization by imposing the conditions of their development, achieving nothing but the loss of the transformation of their consciousness. The importance of this process resides in helping mankind and the nations of the world to help themselves, by being critical of their own consciousness in order to confront their problems, making them agents of their own recovery. In contrast, assistentialism robs mankind of a fundamental human necessity: responsibility (Freire, 1974).

Taking into consideration that raising awareness is achieved through a critical analysis of the life situations of each human being, integration is the characteristic behavior of democratic regimes, in which people require their maximum capacity for reflection, learning democracy by experience, actively participating with their neighbors, in their churches, in their rural communities and in cooperative work. Democracy is learnt with actions, by getting involved in this type of associations, it cannot be taught or explained with words; it must be experienced (Freire, 1974). These interactions with other human beings must be carried out through dialogue within a horizontal organizational structure, where love, humility, hope, faith, and trust predominate; only then does dialogue truly communicate (Freire, 1974).

Developing deeper ethical concern for and political engagement with food systems in general is another core aspect. Freire argues that through understanding the political and ethical ramifications of the system in which people operate (in our case, food systems), action can be taken (Dávila & Dyball, 2015: 35).

## The concept of self-respect and its contribution to personal autonomy and self-reliance

Another concept that will be used in this study is that of self-respect (Seglow, 2016). It is based on the importance of recognizing our value as a human being in our relationships with our fellowmen. By recognizing ourselves with an inalienable, intrinsic value emanating from within ourselves, our interactions with others change, leaving no place for humiliations, abuse or denigrating actions. Self-respect is based on moral reasons and is associated with values such as personal autonomy, where a human being understands that he or she has the freedom to pursue different options in life. The exercise of critical reflection helps individuals pursue aims and attachments which they value and endorse (Seglow, 2016: 9). An equally important contribution is the recognition of others, family members, neighbors or members of our community, that we all have the right as human beings to make our own decisions, even though it may represent breaking with certain traditions, as in the case of women in rural Mayan areas.

Pursuing one's aims successfully involves skills such as planning, perseverance, self-reliance, negotiation, and co-ordination as agents to overcome the challenges people inevitably face as they seek to realize their intentions in the world (Seglow, 2016: 9).

## Indigenous perspectives associated with social economy

As a complement to the theoretical contributions presented previously, the *Buen Vivir* is a worldview of life originating from the indigenous populations; *Buen Vivir* is the term used in Ecuador, synonymous with *Vivir Bien* used in Bolivia. In the Aymara language it is known as *Suma Qamaña* among the indigenous populations inhabiting the western region of Bolivia, the south of Peru, the north of Chile and in northern Argentina; it is also known as *Sumak Kawsay* in the Kichwa language spoken by the indigenous populations inhabiting the Sierra and East of Ecuador, the south of Colombia and the lowland forest in the north of Peru.

*Buen Vivir* has important coincidences with ideas from other traditional cultures such as the Maya. They conceive the world for the ser-

vice to others, in an environment of balance and harmony. Maya culture integrates their ancestors' traditions, nature, community and family in a collective vision of goods and production, based on a community economy, which seeks more than the simple satisfaction provided by material needs. As for the social sphere, it is opposed to wasteful consumption, individualism and selfishness, proposing first the collective and community interest before the personal interest (Guillen & Phélan, 2012).

This vision is closely related to that of social economy, which includes the cooperatives, family enterprises, barter networks and other initiatives where the human being is valued more than economic gain and there is a contribution to mutual support among the population in non-competitive terms in order to evolve into more supportive societies (Pavía, 2013; Villegas, Ortubia & Lillo, 2011). Indigenous people understand sustainability with a communitarian approach: economic and production relations are related to the general benefit. In their view, work ethic is related to their traditions and customs. Indigenous rural associations such as cooperatives promote "give to receive", because it is a reason to bring families together and unite rural communities. It is also a way to overcome economic hardship (Viteri, 2002; Guillén & Phélan, 2012; Wallace, 1993).

It is in this sense, therefore, that cooperativism and the practice of barter arise as an alternative to the neoliberal capitalist model governing Mexico which has acted to the detriment of the Mayan population, given that these communities, which are located in areas of difficult access, with low education levels and marginal living conditions, cannot participate in the development on equal terms.

Although there are a number of specialized government programs in place for the promotion of social and economic development, these still provide limited benefits for the population, making it necessary for them to establish their own communal strategies as part of their own economy; for example, exchange or barter of food in which money is not involved (Tocancipá, 2008). The use of barter among the indigenous communities of south Mexico is an alternative to the economic model in which they do not see themselves as participants, as they are not

able to compete in equal conditions in the market, whereas barter can be used as a contribution to the food sovereignty of these communities.

## Methodology and Case Selection

This section will describe the methodology used and the selection of cases for this study carried out in the Mayan communities of the Yucatan Peninsula in southeast Mexico.

### Case selection

Case selection was carried out in two stages, the first corresponds to Group 1, which originated from a database of 90 productive associations generated by the Center for Evaluation and Monitoring Quality Professional Services (CECS), a department of the Maya Intercultural University of Quintana Roo, dedicated to research, promotion and evaluation of business activities in the Maya area to encourage their socio-economic development.

From the list of 90 productive associations, one sample was selected with the following characteristics: (a) the cooperatives should have more than 80% of female participation; (b) they should have received financial support from the Mexican government (c) the participants should have an indigenous background; (e) they should have dependents (either children under 18 years old or elderly family members or relatives with a chronic illness) living in the same household. According to pre-established characteristics, 10 groups were selected to participate in this study. However, one of the groups did not want to participate and in another instance it was noted that in reality there were no women participating in the group. These two groups were eliminated, leaving 8 groups for the realization of this research study. From these 8 groups, only 24 women working in cooperatives were interviewed.

Group 2 also corresponds to 24 women who carry out economic activities independently with no affiliation with a cooperative; these activities include the sale of food in their houses or parks and schools, the sale of various basic products on a small scale and nixtamal mills for the elaboration of tortilla dough. All of these women belong to the Mayan

communities in which the cooperatives under study can be found, thus it was possible to carry out a comparison between both groups to measure the contribution of associative work to the food sovereignty of the participants. The purpose of including this second group was to determine to what extent the answers reported are the result of belonging to the Mayan community and being economically active within it (all interviewees), and also to what extent being economically active in a specific work context (the cooperatives) further contributes.

The sample was selected following the methodology established by Guerrero (2002), with a sample calculated for a study with a 90% confidence level and an expected maximum error of 10%, resulting in two representative samples of 24 women each from a population classified as *economically active female population*, with the following characteristics: women, 12 years old or older who worked in micro-businesses, one group in the work context of cooperatives and one group acting independently.

The women were interviewed as voluntary participants, that is to say, they received an explanation of the objectives of this study and after complying with the characteristics described previously and having received their consent, the survey was applied, usually in the afternoon in their homes or at their point of sale. All the women who participated in this study were adult and also work in agricultural labors in the mornings, as well as doing their housework which includes the collection and preparation of food, looking after the children and other dependents such as members of the family with health problems living in the same house. In addition to all these activities, they have assumed the responsibility for their own business.

### Data gathering and analysis

This research is based on data collected during fieldwork in 2016 using a variety of mixed research methods which included a quantitative methodology based on questionnaires with Likert scale answer categories and a qualitative methodology through open and semi-structured interviews, informal talks, direct observation, ethnography and documental revision (Hernández, Fernández & Baptista, 2007). Living in the Maya

region where the communities that participate in this study are located allowed the first author to gain a deeper understanding of the priorities, internal conflicts and concerns surrounding food and economic needs from the point of view of local people.

The questionnaire was applied to 24 women who work in cooperatives and was also used with 24 women who work alone and are not associated in cooperatives. All of the women belong to Mayan communities located in the Yucatan Peninsula. Overall, 48 interviews and several informal talks were conducted, mainly in the local Maya language and Spanish. The interviews were conducted with the support of a native interpreter and transcribed with the support of a native translator fluent in Spanish and Maya. All interviews were applied to women who are involved in micro businesses, many of them in their homes, or where their business is located during working hours.

The questionnaire was divided into 4 thematic sections. The first section deals with aspects of their diet, their consumption of fruits, vegetables, protein sources and the practices of food barter. The second section addresses economic aspects and advances in the self-reliance of the participants. The third section was used to measure aspects of sustainability and environmental care with respect to their economic activities. The fourth and last section was used to measure non-material aspects such as self-esteem, respect, support and family integration. The aspects chosen were inspired by the issues discussed in the previous sections.

The questionnaire contained 20 questions, with Likert scale answer categories. The participants could choose from the following response options in order to measure their attitudes: (a) Strongly agree, b) Agree, c) Undecided, d) Disagree, e) Strongly disagree, according to the proposal by Hernández *et al.* (2007). Each option was assigned a numerical value, in this way each item obtained a score depending on the answer. Scoring was on a scale of 1 to 5. If the answer was favorable, it received the highest value, which in this case was 5, and so on. While both favorable and unfavorable statements were used, the scores were consciously recoded to make favorable answers score highest. After the application of this part of the questionnaire, the women of Group 1, who work in

cooperatives, were asked an open question regarding the circumstances which strengthen or weaken the improvements that the association has brought about in their lives. Both groups, the women working in cooperatives and those working independently shared their life experiences extensively through informal talks which were registered and will also be presented in the section of results.

The questionnaires were applied in the form of interviews, in which the translator read the question to the participant in the Mayan language and registered the answer for their subsequent interpretation. The interviews were transcribed, systematized and ordered into categories using SPSS Statistics for subsequent analysis. Apart from direct counts, Spearman's correlation coefficient also known as Spearman's Rank Order or Spearman's Rho was used to interpret the data, especially the differences between the two samples.

Like all correlation coefficients, Spearman's correlation coefficient measures the strength of association of two variables expressing the strength of linkage between the variables in a single value between -1 and +1. A positive correlation coefficient indicates a positive relationship between the two variables while a negative correlation coefficient expresses a negative relationship.

The results were related to the contributions of Critical Consciousness Theory, the concept of self-respect and indigenous perspectives associated with social economy. This implies relating the data and their analysis to the theoretical framework selected for this research in order to interpret their practices related to food sovereignty and entrepreneurial activities.

For the background sections presented above, a document review was also carried out on the uses and customs of the Mayan populations in the Yucatan Peninsula, which was compared with the opinions from key informants within these communities in order to confirm the information obtained with the reality in which they live. Ethnography was used to analyze the particularities of the human groups through the observation of their daily activities.



## Empirical Results

The results of data collection are presented by categories. The first section deals with food sovereignty, the second section with economic factors, the third section with environmental practices and the fourth section is related to non-material aspects such as self-esteem.

### Category 1. Food Sovereignty

In this category, the aim was to measure the extent to which the participation of the women in their work, in cooperatives or individually in micro-businesses, contributes to food sovereignty. We used 10 of the 20 statements in the questionnaire for this category. The clarification of additional information from the qualitative conversations will be added separately.

The first statement presented to the women was: “To be part of the community helps me to eat better”. Just two from each group disagreed. The vast majority agreed or agreed strongly. In the group working independently this response seems to be even more representative, in comparison with the other group ( $Rho = -.189, p=.102$ ). Perhaps some women from the cooperatives interpreted the scope of the question as narrower, relating only to their cooperative group.

The next statement referred to the barter of fruits and vegetables. Here there was a clear difference between the two groups. While the women working independently most often disagreed (14 of 24) with the statement that this was common practice, 17 of the 24 women in cooperatives agreed or strongly agreed to it (the correlation between the work context and these answers is  $Rho .234, p=.048$ ).

The statement “because of my work in the community I can eat meat more often” was only agreed by 5 in the cooperatives and 3 among the independent works. Many in both groups were indecisive. In conversations, the women mentioned that beans or *ibes*, from their work in the *milpa*, are habitually eaten. These are preferred by the family as they are not accustomed to consuming much meat, only a little and accompanied by vegetables. The women also commented that they try to have poultry in their yards from which they can obtain meat and eggs, also they

have pigs in the backyards of their houses, the meat of these animals is usually consumed on festive days; another source of protein is the meat of wild animals obtained from hunting.

The statement linking their work to the ability of their children to drink milk showed a similar phenomenon: while the answers are varied in both groups, slightly more of the women working independently gave positive answers. Based on the conversations, the findings proved that drinking milk has a specific background. The women commented that it is only consumed if it is received free from the government. Children in primary generally receive milk through the government agencies responsible for food and social development and it is not usually acquired in any other way. Thus, meat and milk are not proper indicators for the impact of work on food sovereignty in these communities.

The next statement was on the ability to rely on people from the community when they have nothing to eat. While both groups are positive about the help to be expected, the women working in cooperatives are clearly much more confident than the women in the other group. Of the women working independently 9 disagree (2 strongly) and 13 agree. Among the women in cooperatives only 3 disagree and 17 agree (7 even strongly) (Rho = .343, p=.008).

Chart 1  
Get help when nothing to eat

Get help when nothing to eat							
Strongly disagree			Disagree	Undecided	Agree	Strongly Agree	Total
Work context	Working independently	2	7	2	13	0	24
	Working in cooperative	1	2	4	10	7	24
Total		3	9	6	23	7	48

Source: Based on empirical data retrieved during field research.

As this shows, the members of the cooperatives can give support to each other, but in open interviews they mentioned that they can also count on their community and family members for help in situations of food scarcity.

The following statement was “when I am too busy my neighbors will cook for me and my family”. The majority in both groups responded negatively. Just nine of the independently working women and eight of the cooperative women were positive. The main difference being that in this last category, 5 responded by agreeing strongly. In the conversations, the women clarified that cooking is a responsibility that each woman has for her own family; therefore, the companions in the cooperative would not help. However, they also commented that the companions would help by carrying out her part of the work in the cooperative so that she could cook for her family. The women in both groups mentioned that if any problem arose, the female members of the family, daughters, sisters-in-law, sisters, mothers or mothers-in-law would come to their aid in order to feed their children.

Most of the women were in agreement that their work allowed them to spend less of their income on food, although there are some differences between the groups. Of the women working independently 11 agreed, 10 were indecisive and 3 disagreed. Of those working in cooperatives 3 disagreed also, but only 6 were indecisive and 15 agreed. The correlation is not significant however. All the women agreed that a significant amount of their total income is spent on food but added that they also have to spend on education, clothing and other items. One of the interviewees mentioned savings.

A large majority in both groups reported that “sickness caused by deficiencies and imbalances in their diet” have actually occurred (18 of the women working independently and 17 working in cooperatives). However, 4 of the women that work in cooperatives (and none of the others) denied that. With regard to diseases associated with deficiencies and imbalances in their diet, both groups mentioned type 2 diabetes, and they also mentioned an excessive consumption of sugar-based drinks distributed in the communities, where children begin to drink

them at an early stage of life. It is important to mention that it was observed during field work the presence of respiratory diseases caused by the smoke the women inhale when they cook, due to the use of charcoal in the food preparation process.

The practice of “exchanging prepared food with others” showed quite a difference between the two groups. While 9 of the women working independently disagreed (6 strongly), 14 of the women in cooperative agreed (10 strongly). The correlation is  $Rho .244, p=.047$ . The participants also clarified that the exchange of prepared food is common, but usually in association with village festivals, novenas and funeral services, in other words it is related to religious and community causes.

The last statement in this block on food sovereignty was “because I’m part of this community I do not worry about food anymore”. The answers of both groups are quite varied and on average indecisive. The main difference is that the women in the cooperatives agree a little more (11 compared to 9) and strongly agree particularly more often (6 compared to 1).

Despite these varied scores, the participants of cooperatives mentioned that being part of a cooperative has given them the certainty and confidence that this need will be covered and that being part of a cooperative has diminished their concern about food access. On the other hand, the women working independently stated that this concern is always present, and mentioned that last year they had suffered a severe drought. However, in times of food shortage for the family, they always try to have beans from the *milpa* and eggs from the poultry they raise in their yards.

From the responses to the ten statements of this block on food sovereignty we can observe that while two did not seem to be good indicators (on meat and milk), most of the others confirmed the idea that Maya communities provide mutual support; however, they also showed that the women working in cooperatives were often somewhat more positive about these aspects of food sovereignty, even when compared to other economically active women. The most significant differences can be observed in the ability to exchange (fruits and vegetables, prepared food) and relying on others when they have nothing to eat.

## Category 2. Economic aspects

In this category the participants were asked if their economic situation has improved the ease with which they can commercialize their production, and whether this has increased self-sufficiency. Of course, all the women in the two samples have been active. As such, we are looking at a subset of Maya women that are trying to develop extra (micro) businesses. We will see whether doing this in the work context of a cooperative provides extra benefits.

The women were asked if their economic situation has improved due to their participation in cooperatives or independently in micro-businesses. Among the women working independently, most (15) were indecisive, with 7 agreeing and 2 disagreeing. Among the women in the cooperatives 8 were indecisive and 5 disagreeing. However, there were also 11 agreeing, with 4 strongly agreeing. During the conversations, the women mention that the income from their activities is small. The number of clients that they now have does sustain the business, given that they usually receive orders in advance. They also mentioned that their motivation to continue with the business is that these activities provide the means for their children to continue studying.

The next statement was “because I work in the community I can sell my product more easily”. Many of the women working independently answered indecisive (13x), perhaps not knowing how to interpret the statement. The women working in the cooperatives responded mostly positive (12 agree, 5 agree strongly, only 3 disagree –  $Rho = .210, p = .075$ ).

Referring to the statement on self-sufficiency (“because I am part of this community I am more self-sufficient than before”), nobody disagreed. More of the women working in cooperatives agreed more strongly (11x), compared to the women working independently (5x). Some of the women working in the cooperatives mentioned that their work provided them not only with a sense of self-reliance but also with a distraction which helped them not to worry so much about family issues. Not working alone, but with colleagues might be of help here. As for the economic aspects, the differences between the two groups are not significant. Much of the gain is already captured by the women through their

economic activity, one way or another. The small, extra differences seem to be on the side of the women working in cooperatives.

### Category 3. Environment

In this category the objective was to measure the participants' opinions about whether their economic activities are carried out in a sustainable manner, according to the definition established in the Brundtland Report, in order to ensure the satisfaction of present-day needs without compromising the needs of future generations (Brundtland, 1987). We used two statements for that. The participants were asked if their activities were respectful for the environment and nature and if their products contained chemicals, fertilizers or pesticides in any form.

When the women were asked if their activities are “respectful for the environment and nature”, both groups said almost equally that their activities are mindful of the environment, (taken together) 2 disagreeing, 16 agreeing and 30 strongly agreeing).

In the following question however, when they were asked if their products are chemical free, 7 of the women working in cooperatives and only one woman working independently disagreed (while the majority in both groups still strongly agreed). Some women from the cooperatives declared that they do use chemicals, fertilizers or pesticides in their activities. The interpretation of this is not quite clear: are these women better informed about the reality of the products they work with and are honest about it, or do their responses demonstrate a lack of information about how harmful some of these substances could be to their health and to the environment?

### Category 4. Self-esteem

In this category, the attitudes reflecting the degree of self-esteem in relation to the participants' involvement in productive activities were registered. Self-esteem is understood according to the definition provided by INMUJERES of Mexico. Self-esteem is the assessment that a person has or feels regarding him or herself. It is the inner perception of each person, constructed from thoughts, feelings, sensations and experiences throughout life. In the analysis of gender, self-esteem is considered to

be an indicator of empowerment for women which allows an understanding, at an individual level, of the internal legitimization that women have of themselves, their wishes, needs and projects (INMUJERES, 2007).

In this category, we used five statements. The women were asked if they feel better about themselves because they are working in micro-businesses, if they feel valued by the community, if they perceive greater respect from their husbands or partners now that they are involved in these economic activities, regarding the support they receive from their children and if they feel valued by other family members.

Regarding “feeling better with themselves because they work in micro-businesses” both groups agreed (combined: 1 disagree, 3 indecisive, 11 agree, 33 strongly agree). Though the one disagreeing and 2 of the 3 indecisive were from cooperatives, this is a far from significant difference. The conclusion is that the economic activity as such is a great boost for self-confidence.

When they were asked if they felt “more valued in their community”, again the vast majority of both groups agreed or strongly agreed (39 of the 48). There is some difference between the groups. Of the women working independently 6 disagreed and 16 agreed. Among the women in cooperatives, 1 disagreed and 23 agreed (12 strongly).

Regarding an “increase in the respect of the husband or partner as a result of the woman’s participation in productive activities”, a very similar picture arises. Here in both groups 21 of the 24 are agreeing. The main difference is that the women in the cooperatives are more often *strongly* agreeing: 14 of them against 8 of the independently working women. Some women mentioned that they have the option to let their husband replace them when they are not able to fulfill their work in the cooperative.

Again, a very similar picture arises when asked “since I started working, my children encourage me and support me in my labor”. In both groups an overwhelming 22 of the 24 are agreeing. The difference is just how strongly they agree. Among the women in the cooperatives 18 agree strongly and 4 just agree. Among the others that is 12 and 10.

When participants were asked if they felt “appreciated by other family members”, the two groups differ strongly. It is the biggest difference we encountered in this survey. Among the women working independently, the number of women who have to face the disapproval of their relatives is practically the same as those who receive support, while for the women working in cooperatives there is (strong) appreciation.

Chart 2  
Appreciation of relatives

Appreciation of relatives							
Strongly disagree							
		Disagree	Undecided	Agree	Strongly Agree	Total	
Work context	Working independently	5	6	2	10	1	24
	Working in cooperative	0	0	1	7	16	24
Total		5	6	3	17	17	48

Source: Based on empirical data retrieved during field research.

The correlation between work context and this factor is strong ( $Rho = .713, p=.000$ ). This demonstrates a higher level of family support to women working in cooperatives. Among family members the work of women in the context of a cooperative is clearly much more widely accepted than working independently.

Taking the self-esteem items together, we were able to observe that, while many aspects are already favorably influenced by the economic activity of all women in the samples, there are additional small benefits (and in case of family support even a significant difference) in favor of the women working in cooperatives.

After the application of the questionnaire, the women working in cooperatives were asked an open question regarding the circumstances that strengthen or weaken the improvements that the cooperative has provided in their lives. Among the circumstances which have propitiated improvement in their lives, due to their participation in coopera-



tives, the women mention teamwork, mutual cooperation, increased sales and flexibility (on occasions when the woman cannot work, she can send her husband to do her part of the work and her companions accept that). They also appreciate the mutual respect among the women regarding political and religious aspects, the fact that they now have clients due to participations in diverse fairs, punctuality, the fact that their participation promotes family unity and they mention the support from their partners and children.

They feel that with their work they can help their partners to cover family expenditure. The women manifested that, thanks to their work, they now have more than before. These activities promote responsibility as a human being and emphasize that it is important not to fear or be ashamed. If you do not leave your home, you will learn nothing and if you do not work, you do not really learn. The desire to see the business grow has improved their lives. They have always enjoyed the work carried out in the cooperative, and now they can count on the support of all their companions.

Among the circumstances that weaken the improvements provided by their cooperative work, the women mentioned that sometimes they do not receive economic support from the Mexican government and that they are not always able to sell their production. They are also concerned about the rising cost of raw materials and the fact that sometimes they do not have enough time to do their housework, agricultural work and attend their businesses. They also feel that they could improve aspects of their organization. Similar remarks were found among women working independently.

It is important to mention that in 5 of the 48 interviews, the husband was present and listening to the application of the survey and questioning why his wife was being interviewed. The interview could not be carried out until they gave their permission; however, none of the women were ever prohibited from participating in this study.

## Discussion on the information obtained

From the data obtained in the first category of the questionnaire, it was possible to observe a higher degree of food sovereignty among the women working in cooperatives. This is reflected more particularly with the exchange of fruit and vegetables in the form of barter, alternative sources of food should the family not have enough food, exchange or barter of prepared food and the level of concern regarding food scarcity.

It is interesting to note that meat consumption and milk consumption were not influenced by the women's participation in the cooperatives. This could be explained by the fact that the consumption of milk is not a custom among the Mayan people. Instead, the consumption of *atole* (a hot beverage made with corn flour) and hot chocolate is very common, according to the women participants. The women commented that meat is usually consumed in small portions with abundant vegetables. During the interviews, they also mentioned that their children prefer the taste of beans.

Regarding the exchange of prepared food, both groups of women clarified that the custom of exchanging prepared food is more often associated with the rites of the catholic religion, such as the religious guilds and praying the rosary.

With respect to the preparation of food for the family, the responses of both groups were the same: it is the responsibility of each woman to cook for her own family. However, the women belonging to a cooperative, or other family members, are willing to help by taking the woman's place at work so that she can finish her duties at home, but they will not offer to cook for her.

In category 2, on the economic factors, the collaboration in cooperatives was found to improve the sense of self-reliance of the participants. However, when they were asked if their economic situation had improved due to their business activities, many were undecided. Of the women working independently only 7 agreed. Among the women in cooperatives, 11 agreed, of which 4 strongly agreed. Being part of a cooperative greatly facilitates the commercialization of their products. With respect

to this aspect, the participants commented that they are often invited to state and national fairs to sell their production. Such invitations are generally related to government support schemes which they have received.

Category 3 questions if their economic activities are carried out in a sustainable manner, thereby preserving their natural resources. Although the vast majority of both groups claimed this to be the case, neither of the two groups were able to clarify if the use of chemicals, fertilizers or pesticides was harmful in any way.

The category presenting the most significant data was number 4, corresponding to indicators of self-esteem. For the women working in cooperatives, these intangible benefits showed some small benefits over women working independently, but a great benefit in terms of the support of their relatives. From the additional comments expressed by the women, it was possible to observe that many of these groups are comprised of women united by family ties, neighbors or godmothers of each other's children. Thus, their union in cooperatives is already founded on affective bonds which are stronger than just economic interests.

The social capital existing among the participants can be perceived within the cooperative and within the support networks inside the community. The women mentioned that flexibility is vital for them to be able to participate in these initiatives. This flexibility derives from their companions in the cooperative and from their family members, allowing them to carry out all their duties. While it is not always possible to get together with the work group, they can still do the work in their free time, after completing their duties in the *milpa* and at home.

Their inclusion in these businesses can be related to the Critical Consciousness Theory of Paulo Freire. Although these women are known to live in difficult circumstances, in isolated communities far from urban centers where the family income is not sufficient to cover all their needs, nevertheless through a concerted dialogue with themselves and with other women, they have decided to find alternatives to migration and low productivity in agricultural activities by undertaking a commercial venture in the form of micro-businesses.

This decision to venture into the business world as a Mayan woman is an intrinsic process, as they must confront cultural barriers which dictate that it is not appropriate for a woman to interact with other people outside the family. However, taking the freedom to consider one's alternatives and make decisions has an influence on the concept of self-respect and its contribution to personal autonomy and self-reliance as developed by Professor Seglow, mentioned previously. It is a product of emerging self-respect and also contributes further to such self-respect. This is reflected in the sense of value that is described by the participants. Once they perceive themselves as successful, capable women, even though the financial gain is barely incipient, they can better deal with future challenges.

This context can only be understood within the context of the sense of unity existing among the indigenous Mayan population, where the concept of sharing is fundamental in order to confront difficulties. In addition, support networks and the system of barter are mechanisms which have been used for millennia. Only by understanding the foundations of their indigenous culture can we interpret the results of this study.

## Conclusions

The indigenous Mayan woman, participant in this research, has demonstrated through this investigation that her concept of responsibility goes far beyond just looking after her own welfare and is closely related to providing for her family. The cooperative as a means of entrepreneurship has given them recognition within the community, greater self-esteem, additional income and an increase in food sovereignty among the participants, in relation to the social capital based on support networks. The mutual help strategies that are present in the indigenous communities are strengthened by the cooperatives. Among the benefits measured in this study, the most important were the intangibles relating to strengthening of family ties, the respect of the community and family members and the development of the concept of self-esteem, even though many of these businesses do not represent a large contribution to the family income.

In response to the research question, as to whether the participation of these indigenous Mayan women in cooperatives contributes to their food sovereignty, the answer is positive. Many of the alliances that were already present in their traditions, in particular among family members and in religious festivities, are seen to be further strengthened by working in a cooperative.

In cases of extreme necessity, it is the family members that provide the food. If this is not possible then the companions of the cooperative will help or, in the last instance, the members of the wider community. The family members mentioned included the mother, mother-in-law or sister, which contribute to the establishment of a source of support based on gender.

It is important to mention that the fact that these women participate in such initiatives is very often questioned by fathers, husbands and sons, since it is not common for the women of these communities to participate in business ventures if they do not have the approval of the family. However, once the business has been established and has shown to be sustainable, these same core family members represent the most important source of support, having understood that the women are capable. While we observed support from husbands and children for the work of both groups of women, one can imagine that there must be others that would have liked to be involved in micro-businesses but were not allowed to. A very strong control can be observed within the wider family. In our study, participation in cooperatives is shown to evoke far less resistance from relatives in comparison with the women working independently. Cooperatives could therefore serve as an enabling device for women to become economically active.

Little by little, through critical reflection and an intrinsic decision-making process, the women of the Mayan area that participated in our study were able to decide for themselves to undertake new projects which provide greater food sovereignty and self-respect, allowing them to increase their autonomy.

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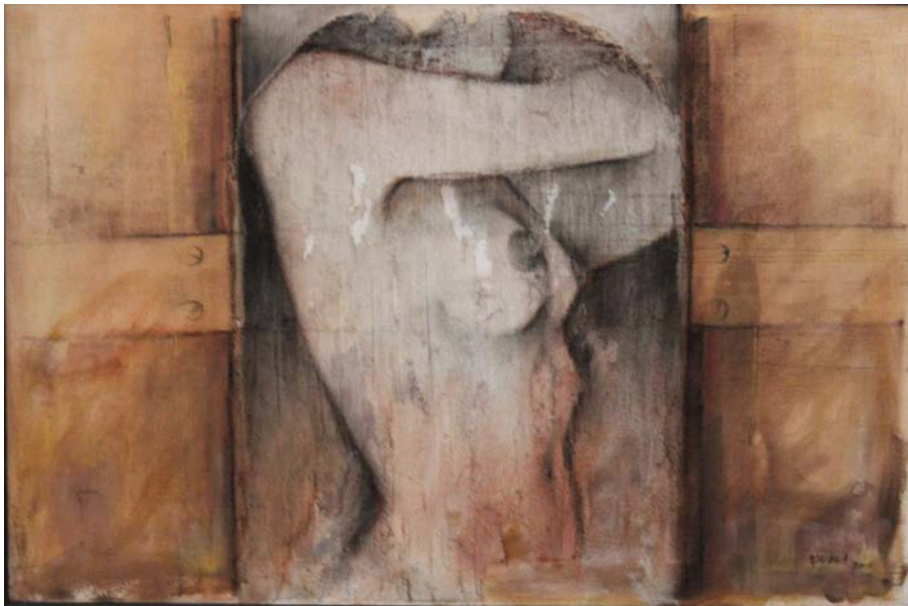


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