

Sustainable Agriculture

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Research Proposal

For my project I looked at our food system today and explained the negative effect it has on us, people in developing countries and the environment. There are many suggestions as to how we can go about changing this. One that comes up is only getting food from places that are close by, while this would be ideal it is not likely. My goal was to give feasible suggestions as to how we can go about changing this problem and to show how people are already changing things all over America.

Outline

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Chapter 1

Why should we care about our food?

We are what we eat quite literally. If you eat from cans that have the cancer causing chemical B.P.A. it can show up in your D.N.A. (Evans 2011). More and more people are realizing we need to pay attention to our food source across America. My project is going to cover why we should start to pay attention to where our food is coming from, why we should be trying to change our world food system, and give suggestions as to how we can go about doing this. I'm going to cover how we can vote with our dollar when it comes to buying food.

I grew up in Woodland Hills in Los Angeles, California where local, organic/sustainable food was not anywhere in sight if you were not looking really hard for it. All we have in this area are chain restaurants and suburban houses. There are no farms in sight for miles. I remember when I was younger going to McDonalds was the biggest gift my mom could give me. Michael Pollan makes that gift sound more like a sin in his book *The Omnivore's Dilemma*, "The meal at the end of the industrial food chain that begins in an Iowa cornfield is prepared by McDonald's and eaten in a moving car" (Pollan 2006, 109). He explains how industrial meals make up the food chain that most Americans eat from today (Pollan 2006). His quote is so ironic because any type of food in reality takes so long to make and this generally is not something the general public thinks about when grabbing a sandwich. If you are eating beef it took about two years for the cow to become aged enough and ready to be killed for the meat to be consumed. I do not

think most of us think about that when we are eating a hamburger in ten minutes. Or when eating lettuce, a head of lettuce naturally takes months to grow! I know because I have experienced this working at the Cal Poly Organic Farm and a lot of the time it is eaten by a deer before we are even able to sell it.

Now I see good food a little differently than I did as a kid. This can also be explained with a quote of Michael Pollans from *In Defense of Food*, “Eat food. Not too much. Mostly Plants” (Pollan 2008, 1). Food coming from the ground, what a concept! We should appreciate the food we eat and make sure to not eat too much of it because it takes a long time to grow and uses resources that we should be taking care of in order for food to keep growing in the future. The fast system our food is prepared with cannot sustain itself forever or the mass amounts of resources it uses. Now seeing live bugs on my food is a good sign to me because it shows me pesticides were not used on the food I am eating. I now categorize food as “good” when it is whole, organic/sustainably raised, local, coming from a locally owned restaurant and/or if the food product has been fairly traded.

In this project I would like to explain how the trend of eating/growing sustainably is catching on all around America. I am going to explain how these farmers are successfully farming more sustainably and how restaurants are successfully sourcing locally. There is a big debate between conventional agriculture farmers and organic farmers. They don't seem to like each other. This has definitely been my experience working out on the Cal Poly Organic Farm. But the goal of Sustainable Farming in the first place is to change the way the food system is. So eventually we are all going to have to find a happy medium and start getting along to have a brighter future for the generations to come. One day hopefully we won't need the words Organic or Sustainable to differentiate between food being sold at the supermarket. One day hopefully it

will just be the way things are. The regulations on everything will be required to be up to organic standards and hopefully beyond.

Chapter 2

What is Organic Food?

The organic food movement started in Europe, and spread to the United States in the early 1900s. In the 1950s the U.S. public started to become more concerned about the potential environmental and public health effects of agricultural chemicals and such things as “factory farming” methods. Some private research organizations began to conduct studies into non-chemical and non-intensive farming techniques. After this a small but increasing number of farmers began to adopt organic farming practices (Johnson 2008).

A large reason for the organic movement is the effects pesticides have on our health and the environment. There are many negative effects of pesticides, such as the effect it has on our intelligence. It has been shown that children who are exposed to pesticides at a young age have lower I.Q.’s than those who are not exposed to pesticides (Pope 2012). There are pesticides called organophosphates which are commonly sprayed on food crops they are also often used to control cockroaches and other insects that may be considered pests inside a city apartment (Pope 2012). There was a study done by Mount Siana School of Medicine and Columbia University that began ten years ago they tested babies’ blood for the amount of pesticides that was in them. In some cases they even tested umbilical cords. Overall the study showed that women who had more exposure to pesticides during pregnancy gave birth to children who had lower I.Q. scores. For example in one study children who had the highest levels of prenatal pesticide exposure scored 7 points less on intelligence tests compared to children who had the lowest level of

exposure (Pope 2012). Every 10-fold increase in organophosphate exposure corresponded to a 5.5 point drop in overall I.Q. scores (Pope 2012).

Certified organic farming operations have to go through a rigorous process to become that way. It can take several years to go through this process. On the CCOF website which stands for California Certified Organic Farming it describes how organic food should be produced. It describes how organic food is produce without the use of most conventional pesticides; fertilizers that are made with synthetic ingredients or sewage sludge. It also says the food should not be produced with bioengineering or ionizing radiation. Organic meat, poultry, eggs and dairy products that come from animals that aren't given any antibiotics or growth hormones (CCOF 2011). At the end of 2011 there were 17,281 certified organic farms in America. While all of this is good news, using less conventional pesticides and fertilizers and giving animals no antibiotics or growth hormones, there are farms out there that go far beyond these requirements and there are farms that do the bare minimum just to have the certification just to make more money.

For example when I see Horizon Organic milk on the shelf at the super market I only ever buy it if there is no other organic option. Horizon Organic milk is a huge company and advertises their milk with the quote, "...they are produced without the use of antibiotics, added growth hormones or dangerous pesticides" (Michael,1). But in reality all milk products are required to have no trace of the antibiotics once it hits the shelf. And there are no pesticides used in dairy production so this is a false claim. So just knowing that they try to advertise their milk in this way aiming towards public that may not be as educated about the food industry makes it obvious they can't be trusted.

There are also some companies that started out small and trying to make a difference with organic food but have started to grow so big that in order to meet the public's demand they source out to far off places to meet the public demand. An example of a company like this is Stony Field. Stony Field produces organic yogurt and on the label there is a cow and green fields that may give the customer the idea that the cows enjoy being outside on a locally owned family farm. But in reality their main facility is actually a state-of-the-art industrial plant where it handles milk from numerous farms (Brady 2012). Also sometime soon a portion of the milk used to make their organic yogurt may be taken from organic cows all the way from New Zealand. So in order to meet the supermarket dairy aisle demand they are going to ship powdered milk from 9,000 miles away. The CEO of this company Gary Hirshberg explains that when you go organic you have to source globally (Brady 2012). I think this depends on who you are though if you want to make more money maybe you have to source globally but there can be other ways to run an organic operation.

There are farms like Quail Springs in Ojai. Quail Springs started out as a program for homeless youth in 1997. The youth in this program spent their days in Cuyama Valley tracking animals, building shelters learning about earth skills and stewarding the land. This program was a great success. Then in 2004 a former cattle ranch in the area that had a dwindling spring became a part of the quail springs project. Since this time they have spent many hours tending to the springs and putting in riparian trees and plants. They create living sponges that revivify the water table. Now they have a yearly average flow of 40 gallons per minute during the day and 60 gallons per minute at night. Because of this wildlife is flourishing. They were able to accomplish these projects using ideas from Permaculture. They describe the use of permaculture on their website using this description; "Permaculture brings effective design to our basic needs for

shelter, food and energy. Its holistic, systems-based principles can be applied to any setting and bring hope for a worldwide sustainability.” For shelter they implement permaculture by using natural building materials they use local, natural and minimally processed materials to build with. For the farm they try to use permaculture designs to grow their food. They use mostly to food that grows on their farm to sustain the community they have out there along with trading with local neighbors for meat and dairy.

At Swanton Pacific Ranch in Davenport, California I did an internship for three months at the Organic Apple Orchard they have there. We irrigated the orchard and pruned the orchard. Pruning requires taking off a third apple that is growing on a node in order for the other apples to have more room to grow bigger in size. We also pruned the tree branches, you do this so the tree grows in the way that you want it to. So you cut the branches at a node that is facing up if you want it to grow up or on a node that is facing to the west if you want it to grow to the west. We drip irrigated the trees and had to turn on the water every day. We also often killed gophers to keep them from eating the roots of the trees. Other than this we did not do anything to the trees. Some of the apples had a few aesthetic diseases, there would be spots on them that looked like scabs but generally this did not bother the public who bought them. We sold the majority of the apples just to people who would stop by every day and pick them themselves or to local supermarkets in town. At the end of the season the apple orchard had made 8,000 dollars.

In reality the word organic is a labeling term that denotes products produced under the authority of the Organic Foods Production Act. In 1973, the CCOF was formed, and the word “organic” became regulated (CCOF 2011). In 1990, a coalition of stakeholders persuaded Congress to pass the Organic Food Production Act in the 1990 Farm Bill. In 1992, the USDA appointed the National Organic Standards Board and established the National Organic Program

to develop a uniform set of organic standards for the U.S., which were then implemented in 2002 (CCOF 2011).

The ideals behind Organic farming are that it is supposed to support the local economy, while supplying healthy, delicious produce, and keeping the soil and water free from harmful synthetic pesticides and fertilizers. It results in a big reduction in pesticide pollution, a lot fewer farm workers getting sick from chemicals, and a great reduction in the contaminants on our plates. But there are still of course many improvements that can be made to the Organic labeling term to truly exemplify these attributes. These improvements are fought for every day.

Chapter 3

The Effect Conventional Food Production has on the Environment & People

Conventional Food Production as described here is referring to production that is not mindful of the environment and/or the farmers who are producing the food. Here in the U.S. “Apples in Des Moines supermarkets come from China, even though there are apple orchards in Iowa; potatoes in Lima’s supermarkets come from the United States, even though Peru boasts more varieties of potato than any other country” (Halweil 2004, 8). This all has to do with trade and policy and does not take into consideration what would be best for the soil and people. The value of international trade of food has tripled since 1961 (Halweil 2004). To me a system that would be considered conventional are ones such as those I just mentioned. When you buy things such as apples and potatoes that can be grown close by but instead are grown very far away and also with less diversity would fall under the conventional category. But as I mentioned above this

idea seems to have worked its way into organics as well when businesses start to become more about money.

A common example I usually use when trying to explain the negative effect conventionally produced food has on people living in developing countries is coffee that is freely traded. Coffee farmers in many places in Africa live in poverty because of businesses like Starbucks that take advantage of free trade. “After oil, coffee is the most actively traded commodity in the world with \$80 billion dollars in retail sales. But farmers make as little as three cents for every cup of coffee sold in the U.S. or Europe” (Newsreel 2012). This quote comes from a documentary called Black Gold. This documentary was made to show people the reality behind some of the brands of coffee they buy and coffee shops they go to. Most of the other money that is made from our two dollar cups of coffee goes to the middlemen. The middlemen usually know next to nothing about the hard work that goes into growing coffee but somehow they end up with the most money. Even though most of the work is done by the farmer they hardly get any money at all in comparison.

Another huge effect on our food system today is the way that corn is grown and distributed. Corn is grown in the Midwest on huge monoculture farms. Much of the corn is a type we cannot even eat; it has to be mixed with other things and made into corn syrup in order to be consumed. And much of the corn grown is consumed by cattle. Cows raised in America that eat twenty-five pounds of corn a day and reach the weight of twelve hundred pounds will have consumed in its lifetime the equivalent of thirty-five gallons of oil (Pollan 84, 2006). This is because when cows are moved from ranches to feedlots they are fed corn rather than grass. Grass is what their bodies are biologically trained to eat and corn is what we feed them to fatten them up so they taste better to us. Michael Pollan explains that all life on earth can be viewed as a

competition for the energy captured by plants and stored in carbohydrates. There is a limit to how much energy the world's land can produce each year and an industrial meal made of meat and processed food ends up consuming and wasting huge amounts of that energy (Pollan 2006). We waste energy growing corn to feed cows instead of growing vegetables to feed ourselves directly.

An example of this wasted energy in the meat industry is Hawaii. "Each year, Hawaii loads about 42,000 cows on boats, sends them to be fattened in California... then ships the packaged meat back to Hawaii" (Halweil 41, 2004). Hawaii has such a high demand for meat that they have to send cows 3,500 kilometers away to satisfy it. Another example is the rainforests being cut down in Latin America for cattle grazing. Cattle grazing is the leading cause of deforestation in the Brazilian Amazon (Butler 2004). From 1990 to 2001 Europe's demand for beef that was being raised in the Amazon grew from 40-74% (Butler 2004). Now the majority of the cattle raised in the Brazilian Amazon are export driven. This degrades the soil to a point where the rainforest cannot grow back and many native Brazilians are suffering because of this.

This is also true with some production of Bananas for example the company Dole. Dole grows its bananas all over the world in order to meet the demand for Bananas in the developed world. They have even resorted to using an illegal pesticide that has killed many of the workers (Bananas!). There are as many Bananas eaten in the U.S. as apples and oranges combined this is sad because apples and oranges can be grown natively in the U.S. whereas bananas cannot. Another company Chiquita made this process all possible (Koeppel 2008). "They became a staple only after the men who in the late 19th century founded the United Fruit Company (today's Chiquita) figured out how to get bananas to American tables quickly — by clearing rainforest in Latin America, building railroads and communication networks and inventing

refrigeration techniques to control ripening” (Koeppel 2008, 1). They were able to keep the price for bananas low because in Latin American Countries they would use the “Iron Fist” and keep wages low, not offer health care and not allow the workers to congregate (Koeppel 2008). Out of the thousands of varieties of Bananas you only see one from this company the Cavendish this is so the Bananas will ripen at the same time. But there is always danger when there is a lack of diversity when it comes to plants. That plant variety can get a disease and the disease can quickly spread to all the rest of the plants and all of a sudden there will be no more bananas. They tear down rainforests quickly to grow a banana that is the most convenient to ship and get them to costumers as fast as possible. This process will not be able to sustain itself forever.

Alfred Crosby’s book *Children of the Sun* is about humanities extreme use of energy. “We also must grant that the origin of agriculture was not particularly revolutionary, if by that we mean fast, as we use the word in our time. The most important achievements in domestication took several millennia...” (Crosby 2006, 28). It certainly depends on the way you look at things. The evidence for the first domestication of rice could be in 6,000 b.p. or it could be in 11,000 b.p. which was when the first evidence from groundwater accumulating in plant cells appeared (Crosby 2006, 28). It just wasn’t until 6,000 b.p. that it was seen on a larger scale or a proper system had been figured out. The point is agriculture took a long time to figure out and to rape and pillage the land and along the way treat the native people in that area poorly is a very short term way of thinking.

Chapter 4

How the effects of our food system today launched the local food movement

“The twentieth century brought vast changes in agriculture that severely limited farmers’ power in decision making and their ability to survive on the land in the face of traditional and new agricultural risks” (Alkon 2011, 50). The changes that occurred included an increase in large-scale and technically advanced modes of production. Corporate concentration began to occur in both the supply and sales sector. This all coincided with the increasing presence of multinational and transnational corporations. With this came their efforts to reduce domestic agricultural productions under free trade agreements (Alkon 2011, 51).

In Michael Pollens book in Defense of food he describes ten aborigines that left the bush and since leaving they all developed type 2 diabetes. They decided to undergo a reversal of the western diet in order to fix their health problems (Pollan 2008, 85). The aborigines returned to their homeland and only ate the foods that were available to them by hunting and gathering. After seven weeks of this all of them had lost weight, their triglycerin levels had fallen to a normal range and the proportion of Omega 3 fatty acids in their tissues had increased dramatically (Pollan 2008, 87). This is an extreme way of showing that less carbs and a less sedentary lifestyle is good for your body. Eating more nuts, fruits and animals with less fat is good for you.

There are actually a whole set of diseases that are thought of as western diseases such as obesity, diabetes, cardiovascular disease, hypertension and some diet related cancers. All of

which can be quite quickly reversed if there is a diet change that includes a lot of diversity in fruits, nuts and vegetables (Pollan 2008, 87).

The negative effects of the western diet can be related to the launch of the local food movement. The local food movement as we know it today is said to have its roots in Berkley, California. In the mist of all the changes that were going on in the 60's was Alice Waters, at the time she was going to UC Berkley for her undergraduate degree she saw all the important causes her friends were fighting for but then would see those same friends eating food produced by the companies they were protesting against. So she decided to make her fight about the food we eat and slowly moved towards the goal of opening up a restaurant that sourced their food only from locally produced farmers. The restaurant she eventually opened up is called Chez Panisse forty years ago. She gained an appreciation for food after spending a semester studying in Paris. While she was in Paris she learned about a whole new way of appreciating the food she ate and appreciating the way her food was prepared. She didn't grow up with wholesome meals more of the standard good hearty American diet. Now for her restaurant she only orders from farmers who are taking care of the land or the farmers who are looking to take care of people's nourishment which usually also are taking care of the land (NPR 2011). Her restaurant is now one of the most famous dining spots in America, it is known for changing its menu almost every day to reflect what's in season and to make sure they are able to get most of their ingredients locally. She is also very involved with the slow food movement which will be described in more detail later on.

For me coming into college and learning about the local/slow food movement it all seemed like a totally new concept. But people have been talking about this for a long time. In Orville Freemans book called *World Without Hunger* he describes how the agricultural activity

in the U.S. is growing much faster than the domestic demand. During the 1950s it became apparent that unrestricted agriculture, even when it is priced low, results in far too much surplus, in particular with grains (Freeman 1968). He talks about how the surpluses are hard to maintain and the existence of them works against achieving fair prices for producers (Freeman 1968). In *Food Politics* by Robert Paarlberg he mentions how governments usually start subsidizing farmers during industrial development (Paarlberg 2010). “When farm subsidies were initiated in the United States in 1933, most farmers were relatively poor, with an average income less than half that of non-farmers” (Paarlberg 2010, 97). At this time many farmers left the land to seek higher paying jobs in the cities. This ultimately created a consolidation of farms into much larger and far more prosperous production units. “By 1995, roughly 90 percent of all farm commodities produced in the U.S. were by farmers with at least \$600,000”, in income (Paarlberg 2010, 98). And yet these large commercial farms still receive the largest share of subsidies from the government when they obviously don’t need them. The smaller farms that actually need the subsidies almost never get their hands on them (Paarlberg 2010). Due to these issues small farmers are starting to look another way. Such as selling to local businesses in town and becoming food activists. World Without Hunger was written in 1968 and he already had the idea that the bulk of the world’s food has to be eaten where it is produced (Freeman 2010). Forty-four years later many people/farmers are really starting to wake up and realize that this maybe something we can give a try.

In places all over America things are changing, in some places that are quite unexpected at least from a Californians perspective. In Lincoln, Nebraska there is a new market that opened up a few years ago called Centerville. This was just about the last place I would expect to be catching onto the local food movement so quickly. Most of the farmers selling their produce

here are drop outs from conventional agriculture. Many of who would grow corn and soybeans and the reason for this drop out was, "...neighboring Minnesota found that the vast majority of the profit from corn and soybeans was captured after farmers shipped the crops out of the state- by food companies that sweeten their soda with cheap corn syrup, by meat packers that turn inexpensive soy-beans into prime beef" (Halweil 2004, 3). This is a major problem in the U.S. and around the world; farmers who grow the crop do not make the most profit off of it. For example coffee farmers that I described earlier also do not make fair wages. So the small farmers in Lincoln Nebraska decided to start doing something about it and so far it seems to be working out pretty well for them.

Chapter 5

The Slow Money Movement

The slow money movement suggests that we start looking at money as if it was manure. This is an idea based on an economy built on lasting, healthy relationships (Tasch 2010). "Investing as if food, farms, and fertility mattered" (Tasch 2010, 1). It takes roughly a millennium to build an inch or two of soil and it takes less than forty years, on average, to strip an inch of soil by farming in ways that are more focused on current yield than on sustaining fertility (Tasch 2010). Slow Money proposes spending money that will encourage fertile soil. They suggest that instead of trying to create technologies that can pull carbon out of the atmosphere we should try to prioritize looking for ways to keep our soil fertile (Tasch 2010, 8-9). "The Dow Jones Industrial Average was 150 in 1945; by 2007, it had passed 14,000" (Tasch 2010, 10). The creation of Slow Money is ultimately to avoid such major inequalities as this one.

The Idea of Slow Money can also be applied to restaurants. George Weld owner of King of the Ghosts restaurant in Brooklyn tries to apply the ideas behind Slow money to his own restaurant. He believes restaurants should be places that people want to work for the rest of their lives. Not the dead end jobs that they are. This has to start with the way Managers treat their employees which can stem from how much money managers are making. If everyone is being paid a fair amount they will be more likely to be happy in the work place. Also if the workers feel good about the food they are serving to the customers they may feel more satisfied with their job. "Right now there are ten million people working in restaurants" (Weld 2011). He describes how restaurants can be a life-giving industry. He tries to take on this challenge by having a working model that treats employees well and by buying from only local and organic food producers. He describes how they pack the restaurant everyday with people who care about where their food comes from and appreciate that the people who made it and how they enjoy what they do. He proposes that all restaurants treat their employees well so that there will be no need for an award congratulating restaurants on their treatment of employees. This is from slow money the idea of building an economy on lasting healthy relationships.

Slow money can even be implicated when it comes to web and mobile applications. Anthony Nicalo is the founder of FoodTree which creates applications to help us know more about our food and to eat better (Nicalo 2011). Nicalo expresses the reason why he has a job is because people want to know more about their food there is a great demand for this. He expresses how his grandfather was the only full time farmer that he had ever met. Companies like Lays are figuring out ways to track where the potatoes in the bag came from. You can look up the image of the farmer online. Farmers everywhere are using the tools he has created and he expects his business to keep on growing.

In *Slow Money* Woody Tasch talks about 9/11 at the end of the book. It was the first time that he experienced the feelings that his parents had described because they lived through the 60's. "They want us to die...patriotism, I now believe, isn't some sentimental, old conceit. It's self-preservation. I believe patriotism is central to a nation's survival" (Tasch 2010, 145). This quote really struck me because I feel that a lot of my friends throughout college have been anti-American I have always felt that there is no way people can actually feel this way after all we are products of our country one way or another. We should be patriotic and willing to try and make our country better instead of complaining about it. His suggestions with slow money are helping people to do so.

Chapter 6

A World Without Hunger?

Last year I was walking in the Cal Poly agriculture building and there was a posting on the wall that said something along the lines of, "Do you know in 2012 there will be 7 billion people on the planet". The posting then went on to describe how we need to help feed all of those people with basically the proposal of conventional agriculture. The truth is though since the birth of agriculture there has always been a big divide in society. A divide that allows food to be distributed unevenly amongst the population. And a constant norm is the people who do not grow food are better nourished than those that do. We have enough food to feed the world right now that is not the problem it is how it is distributed amongst the population.

In Jared Diamonds book *Collapse* he describes how societies throughout time choose to succeed or fail. One of the societies he described is the Native Americans in the U.S. Southwest. He describes how the Anasazi collapsed because of environmental impacts and climate change

intersecting, ... “environmental and population problems spilling over into warfare, the strengths but also the dangers of complex non-self-sufficient societies dependent on imports and exports, and societies collapsing swiftly after attaining peak population numbers and power” (Diamond 2011, 137). Agriculture developed in this area from Mexico, corn arrived in 2000 B.C. and squash around 800 B.C. (Diamond 2011). By 1 A.D. some southwestern Native Americans became dependent on agriculture and their population exploded (Diamond 2011). A main concern for large scale agriculture in these areas was obtaining enough water to survive off of. There was various experiments for obtaining water for a thousand years. Most of these experiments eventually failed leading to droughts, floods or starvation.

An area of the Southwest that has been extensively studied is Chaco Canyon where the Chaco Anasazi society flourished for more than five centuries starting in 600 A.D. (Diamond 2011). “It was a complexly organized, geographically extensive, regionally integrated society that integrated erected the largest buildings in pre-Columbian North America” (Diamond 2011, 143). The Chaco Anasazi were isolated from other Indians in the Southwest and independently invented their own building techniques sourced from stone. Reasoning behind why they created such structures and others is attributed to environmental advantages that Chaco Canyon had and also the isolation (Diamond 2011). “The narrow canyon caught rain runoff from many side channels and a large upland area, which resulted in high alluvial groundwater levels permitting farming independent of local rainfall in some areas, and also high rates of soil renewal from the runoff” (Diamond 2011, 144). The Chaco society ended up turning into a mini-empire, it was divided between a well-fed elite living in luxury and a less well-fed peasantry who did the work and raised the food (Diamond 2011). During A.D. 1150-1200 Chaco Canyon was abandoned (Diamond 2011). The abandonment is attributed to a drought happening, people starving to

death, some people killing each other and others fleeing to other settled areas in the South West (Diamond 2011).

Along with the Anasazi of Chaco Canyon many other populations in the Southwest declined during the time of A.D. 1100-1500 collapsed, were abandoned or reorganized. Many different environmental problems and cultural responses contributed to these collapses (Diamond 2011). The different factors were deforestation, salinization in the soil, unusually cold temperatures all of these affected different tribes in different ways it all depended on where they were living. Even though the societies all declined for different reasons. Jared Diamond attributes the decline ultimately to, "... people living in fragile and difficult environments, adopting solutions that were brilliantly successful and understandable 'in the short run', but that failed or else created fatal problems in the long run..." (Diamond 2011, 155). This is where the comparison to our abuse of the land in less developed countries to supply them for more developed countries. While it may work now, it probably will not work forever. The only society that was sustainable in the long run in the Southwest was the Pueblo economy. Diamond uses the term sustainable in the sense of an economy lasting for at least one thousand years which is much different than how we think of our economies sustaining themselves today. To most people today ten years is a long time.

In the area that is now California the Karuk people once lived and relied on the land directly for survival along with the rivers of the Klamath mountains. There was vast abundance of salmon, sturgeon, steelhead, lamprey, and forest food resources (Alkon 2011, 23). Since the invasion by European Americans in the 1850s, the Karuk's are now amongst the hungriest and poorest people in the state. "Median income for Karuk families is \$13,000, and 90 percent of tribal members live below the poverty line" (Alkon 2011, 23). This has happened because the

people were forced off of the land and eventually their original cultural practices were lost. This is also due to modern development like the four dams on the Klamath River that have been constructed since 1962. With their construction came the blockage of 90 percent of the Spring Chinook salmon spawning habitat and the eventual loss of the Karuk's true culture (Alkon 2011).

This all comes back to the idea of a world without hunger. Really we need not wonder how the world will ever have enough food to feed 7 billion people but will the world ever distribute those resources properly. As I said before we have enough food to feed the world right now, it is just the distribution of that food that falls through. If we distributed all the food evenly amongst all people in the world then we would not have a problem with world hunger. But we don't because that does not make the most money. The real question here is not whether world hunger will ever be solved but will human greed ever be resolved. When the world only had 3.5 billion people Orville Freeman wrote this, "If we, a nation of 200 million people in a world of 3.5 billion, fail now to do our utmost to help extend the benefits of a great society to all people, we can expect increasingly destructive famines, revolutions, and wars. The hungry man will hate; the hungry man will steal. The hungry mob will loot and pillage; the hungry nation will make war" (Freeman 1968, 19). Will we ever be able to distribute food in a way that civilizations will not eventually reach their demise? Will a civilization ever be able to sustain itself forever? Or will it all end in war and famine. Hopefully we can change things before this happens.

Chapter 7

Where is Agriculture Headed Today?

Driven by consumer choice the Organic Industry grew by 9.5% in 2011 and reached 31.5 billion in sales (Haumann 2010). Statistics are coming out that show 94% of the organic industry in 2012 is planning on maintaining or increasing employment in 2012. The organic industry is creating jobs at four times the national average. There is an organic farm in every state. I think we can be pretty certain that things are changing. Numerous books are being written about organic agriculture including *Farm City* which is about an urban dweller trying to feed herself mostly off of her own garden and animals she raises in her backyard (Novella 2009).

There are companies out there that are trying to do good and make improvements as I talked about before there are the smaller scale things like a local restaurant supporting local farmers but there are also relatively bigger name companies that are trying to make a difference. Such as the company Guayaki. Guayaki sells yerba mate. It is a plant native to South America and has stimulants similar to coffee but the health benefits of drinking yerba mate are much greater. This as a result has made a huge demand for it in America and other western countries. This company advertises their product by using the slogan, “The more Mate you drink the more forest you protect” (BBC 2012). The rainforest is being destroyed in Paraguay in order to grow soybeans and maize. The native people there have seen their world literally shrink before their eyes in less than four decades (BBC 2012). Guayaki is a market driven restoration of Latin America. Yerba Mate trees require the shade of the canopies of the rainforest to be grown so it therefore encourages reforestation of the rainforest. They are also hiring the local hunting/gathering tribes who had previously lost their land to those who are cutting down the

forest, to do the work of cutting the Yerba Mate plants. It takes 12 years for a yerba mate plant to grow to full height and can be harvested for another 85 years. They hire the native people in order to use their knowledge about harvesting the plant. They also help them sustain their communities by doing so. Guayaki now makes 50 million dollars a year and they say a large amount of the profit goes into reinvesting in the native community in Paraguay (BBC 2012).

My manager at the Cal Poly Organic Farm Jerry Mahoney has taught me a lot about organic agriculture and how it can always be integrated into life. He grew up on a conventional farm in Santa Maria, a farm that his brothers still run. Somewhere along the way he decided to break away from the conventional farm and start his own Organic C.S.A. which stands for community supported agriculture. The way CSA's work is members in the community buy a share of vegetables for several months. The CSA program that used to exist at the Cal Poly Organic Farm had the shares for three months at a time they would cost around \$130.00 and you could cancel at the end of the three months. Every farm does this differently, it could be a yearlong required commitment or you may be able to cancel anytime. With Jerry's CSA you can cancel anytime. Most of the food Jerry sells just grows around his yard which is a certified organic farm. He also is in charge of running the Cal Poly Organic farm four days a week. Working on the farm over the years Jerry has taught me to take things with a grain of salt work hard, and eat well as a result. Always think of new ways that you can keep supporting yourself farming because there are always new regulations and obstacles you have to deal with. There always seems to be somebody trying to ruin your fun.

Although Jerry is now a committed organic farmer he has many friends that are conventional farmers. Jerry has told me he thinks the future of farming can be in large farms rather than in small. He thinks if some of his friends switched from growing huge amounts of

conventional broccoli and selling it across the country and changed their production to organic they could do really well. He thinks they could create a huge CSA program and feed 10,000 local people a week with a box of diverse veggies per family. I never thought of this idea but it seems like one solution that I had never really heard of before. Of course they all think he is crazy and that it would never work. I think it could. The lesson I mostly take from working out at the organic farm with students who are from conventional backgrounds is no farmer actually wants the land they live on and work on to be destroyed. Many farmers are still farming today because they love it they don't want to leave their farm or destroy it, many conventional farmers just don't see how organic can work or they don't want change. There is a difference between the huge corporations that go across the world to bring us bananas and a conventional farmer who has been farming his whole life on the same plot of land. They should all keep doing what they are doing just implement more sustainable practices.

There will always be people who doubt new ideas. "Organic farmers say they can ultimately exceed the yields of conventional rivals through smarter soil management. But some believe organic farming, if it is to stay true to its principles, would require vastly more land and resources than is currently being used" (Brady 2012, 1). The response at the end of the article was a quote "How much more Bambi habitat do you want to plow down?" (Brady 2012, 1). But the truth is we don't have to plow down any more habitats. What organic farmers mean by managing soil better is managing the soil that is already being used for conventional farming. We need to convert conventional farms to organic and while this is a farfetched dream it is was needs to happen, it is all one earth and everything is connected to everything else. All farms need to start following the ideals behind organic/sustainable agriculture or we will not have any more land to work with.

It would be ideal if we stopped shipping food around the world but I'm pretty sure that will not happen unless we run out of oil. It seems to be the general pattern in the history of humanity to use resources until they run out. But of course I refuse to lose hope as I hope many people won't. Figuring out alternatives like Guayaki yerba mate and fairly traded coffee are good alternatives and we can all vote with our dollar by buying products like these. It would be ideal if all organic farms in America only produced for local people but a good alternative is having all farms in the U.S. go organic. People are not perfect but we can all try and do the best we can to improve the world food system.

Work Cited

Alkon, Alison Hope. 2011 "Cultivating Food Justice: Race, Class, and Sustainability. Cambridge, Mass: MIT".

National Public Radio (NPR). "Alice Waters: 40 Years of Sustainable Food." Npr.org. NPR, 11 Aug. 2011. Web. 05 Mar. 2012. <<http://www.npr.org/2011/08/22/139707078/alice-waters-40-years-of-sustainable-food>>.

"Bananas!*" 2011. BANANAS!*. Web. 10 Apr. 2012. <<http://www.bananasthemovie.com/>>.

Brady, Diane. 2012 "The Organic Myth." Bloomberg Business Week. 06 Oct. 2006. Web. 04 <http://www.businessweek.com/magazine/content/06_42/b4005001.htm>.

Baker, George, and Richard Merrill. 1976 Radical Agriculture. New York: Harper & Row.

BBC. "Jungle Brew." Youtube.com. Web. 20 May 2012.

<http://www.youtube.com/watch?v=AV_pY4bParI&lr=1&feature=mhee>.

Butler, Rhett. 2012 "Deforestation in the Amazon." [Http://www.mongabay.com/brazil.html](http://www.mongabay.com/brazil.html). Web. 5 Mar.

Carpenter, Novella. Farm City: The Education of an Urban Farmer. New York: Penguin, 2009. Print.

California Newsreel. "California Newsreel - BLACK GOLD." Web. 08 Mar. 2012. <<http://newsreel.org/video/BLACK-GOLD>>.

Crosby, Alfred W. 2006 Children of the Sun: A History of Humanity's Unappeasable Appetite for Energy. New York: W.W. Norton.

CCOF: Organic Certification, Trade Association, Organic Education, and Political Advocacy since 1973. 2011 " CCOF: Organic Certification, Trade Association, Organic Education, and Political Advocacy since 1973." CCOF. Web. 30 Nov. <<http://www.ccof.org/>>.

Diamond, Jared M. 2011 *Collapse: How Societies Choose to Fail or Succeed*. New York: Penguin.

Evans, Bud. 2011 "World Food Systems." Political Science 333. Cal Poly, San Luis Obispo. Lecture.

Freeman, Orville L. 1968 *World without Hunger*. New York: F.A. Praeger.

Halweil, Brian. 2004 *Eat Here: Reclaiming Homegrown Pleasures in a Global Supermarket*. New York: W.W. Norton.

Haumann, Barbara. "2012 Press Releases." Organic Trade Association's Organic Newsroom: Consumer- driven U.S. Organic Market Surpasses \$31 Billion in 2011. Organic Trade Association, 23 Apr. 2012. Web. 08 May 2012.
<http://www.organicnewsroom.com/2012/04/us_consumerdriven_organic_mark.html>.

Koeppel, Dan. 2008. "Yes, We Will Have No Bananas." The New York Times. The New York Times, 18 June. Web. 05 Apr. 2012.
<<http://www.nytimes.com/2008/06/18/opinion/18koeppel.html>>.

Nicalo, Anthony. 2011. "National Gathering - Slow Money." National Gathering - Slow Money. 12 Oct. Web. 05 June 2012. <<http://www.slowmoney.org/national-gathering/showcase.php>>.

Pollan, Michael. 2006. *The Omnivore's Dilemma: A Natural History of Four Meals*. New York: Penguin,

Pollan, Michael. 2008. *In Defense of Food: An Eater's Manifesto*. New York: Penguin.

Rayp, Glenn, and Lisbeth Driesen.

Proquest.umi.com. "Do Consumers Care about Ethics? Willingness to Pay for Fair-Trade Coffee." University of Michigan. Web.

<<http://proquest.umi.com.ezproxy.lib.calpoly.edu/pqdweb?index=0&did=921400431&SrchMode=1&sid=1&Fmt=3&VInst=PROD&VType=PQD&RQT=309&VName=PQD&TS=1331246097&clientId=17878>>.

Carpenter, Novella. 2009 *Farm City: The Education of an Urban Farmer*. New York: Penguin,

Michael, Paul. "Horizon Organic Milk: Is It All Just Lies?" Wise Bread. Web. 22 May 2012.

<<http://www.wisebread.com/horizon-organic-milk-is-it-all-just-lies>>.

Paarlberg, Robert L. 2010 *Food Politics: What Everyone Needs to Know*. New York, NY: Oxford UP.

Parker-Pope, Tara. 2012 "Pesticide Exposure in Womb Affects I.Q." Nytimes.com. New York Times. Web. 21 May 2012. <<http://well.blogs.nytimes.com/2011/04/21/pesticide-exposure-in-womb-affects-i-q/>>.

Tasch, Woody. 2010 *Inquiries into the Nature of Slow Money: Investing as If Food, Farms, and Fertility Mattered*. White River Junction, VT: Chelsea Green Pub.

Quailsprings.org. "Quail Springs Permaculture." Web. 22 May 2012.

<<http://www.quailsprings.org/>>.

Weld, George. 2011. "National Gathering - Slow Money." National Gathering - Slow Money. 12 Oct. Web. 05 June 2012. <<http://www.slowmoney.org/national-gathering/showcase.php>>.