

Lessons from a network of new agrarians in Central Arkansas

- Abstract-

From remarkable Biodiversity in the north to monoculture in the south, Arkansas food system converges in Little Rock offering opportunities and obstacles. Through interviews with key members of the community we see that Little Rock is developing its local food system through multiple factors in ecologically resilient systems. Modular connectivity, local organizing, conservative flexibility, and building assets are present throughout the city. The focus of this case study is a burgeoning movement of Millennials connecting with Baby Boomers to build redundancy into the system. Transformation is happening at multiple scales. Residents are helping balance low levels of ecological integration by planting ecologically diverse gardens. Many of these efforts are cross-promoted and are integrated together illustrating high levels of complementary diversity. We see also that not all diversity in the system is complimentary through our inspection of the impact of Whole Foods on the local food system. The effects of climate change are also evidenced within and beyond the city through illustrating how it is effecting Little Rock's marketplace.

-Arkansas: The Natural State-

Little Rock, Arkansas is located in the River Basin just below the mountainous Ozarks and Ouachitas and just above the low lying Delta. The breadth of the city is bordered by the Arkansas River whose bluffs tower above, creating a backdrop for the many parks along the expansive River Walk. The city, with a population of 197,357, is a cultural hub for Arkansans. From the elaborate Clinton Library, to the 1830's log cabin that remains standing as a historical monument in the heart of downtown's high rises and shopping centers. As Little Rock continues to bring Arkansans together in the spirit of culture and commerce, many within the city are working hard to create the basis for a local food economy.

Arkansas is remarkable and aptly named the Natural State for its biodiversity and contrasting topographies. The land boasts an incredible amount of biodiversity derived mostly from the Ozarks and Ouachitas in the North and West of the state. These lands are filled with hills, valleys, ravines and meadows nestled between high bluffs. Within the plateaus and deep in the woods exists rare species that the Ozarks and Ouachitas are known for. Creeks, streams and caves dot the rocky slopes and are often marked by trail trees that the Ouachita, Osage, or any number of other tribes left to identify water sources¹. History also indicates that the Ozarks and Ouachita hills were only a part time home for tribes to hunt the deer, raccoon, and numerous other wildlife like salamanders and the rare yellow snail

¹ Trail tree info source: http://www.americanforests.org/blog/trail_trees/, <http://www.greatlakestrailtreesociety.org/>

darther. Meanwhile the Delta in the South and East served as a better place to cultivate and settle more permanently by farmers past and present.²

The Ozarks and Ouachitas are very biologically diverse but challenging to cultivate high yields in. This is often due to high mineral content from the rocks, sandy soils, and large clay deposits making up the steep ravines and bluffs that are a trademark of the land. Nonetheless, the Ozarks and Ouachitas are a trove of heirloom plant varieties that are now suited to Arkansas's diverse climates. Mostly cultivated in small valleys, plateaus and rolling prairies from past clear cutting, residents tend to keep cattle in the fields and personal gardens by their homes. Those living in the hills have for generations passed down seeds from their squash, beans, corn, herbs, peppers and numerous other plants. Some of those varieties are vanishing due to lack of new farmers and gardeners.

The hills and ravines of the Ozarks and Ouachitas collide along the border of the Arkansas River Valley. The wide river, now constricted by locks and dams, is lined with massive bluffs that border countless cities and settlements throughout the state. Within the River valley and at the center of the state lies Little Rock, the focus of this study.

From the Southeast side of Little Rock stretches the Delta, a low lying expanse of humidity in the summer and clear bright winters. Occasional rows of trees divide vast stretches of rice, soy, corn, cotton and numerous commodity crops with large tractors extracting yields to suit the demand for higher production. Like the Osage, Ouachitas and innumerable other cultures, farmers and producers see the value in the open fields of the Delta. The soil assets³ are high, with dark humus where the Arkansas River used to flood in times past. In contrast to the rocky, sandy soils and clay deposits of the Ozarks and Ouachitas the Delta is suited to the monoculture farms that our modern day industries requires.

Today though, there is a shift of cultural importance happening in Arkansas between the Ozark, Ouachitas and the Delta. Customers are looking for more locally produced foods and asking themselves questions like "what IS local?" Simultaneously farmers from all corners of the state are looking for new ways to deal with a rapidly changing market and climate. This change is coming from all sides, but as with many things in Arkansas, some new ideas are coming from Little Rock. Progressive entrepreneurs like Bo Bennett are looking for innovative ways to expand market opportunities for small to large scale farmers while making healthy fresh food accessible to everyone. Every year more markets are opening on and offline to respond to market demands. Some are succeeding, where others are failing to understand the needs and abilities of customers.

² Use of Delta by Native Americans: <http://southernspaces.org/2010/bioregional-approach-southern-historyyazoo-mississippi-delta>

³ Soil Assets: High Soil Assets would be indicated by high levels of organic matter, microbial life, earthworms and nutrient content in the form of minerals, sugars and salts.

-One Market, two market, three market, four-

The longest standing institution in our study is the River Market Farmers Market, operating since 1974. Its prime location in downtown along the River Walk has made it a landmark for residents who frequent the regular Saturday market. As you walk into the market there is a long stretch of crafts, soaps, dog treats, sunglasses, and carved wood from Africa. It takes time to make it to the large pavilion that covers many produce stands. In recent years the Arkansas Department of Agriculture has provided a label which states "Arkansas Fresh", implying the food originated in Arkansas. A disturbance arose when farmers, or devious entrepreneurs, began wholesale purchasing out of state vegetables and marking them "Arkansas Fresh". When market manager and city officials were asked about the inconsistency, their responses varied from, "Arkansans needs vegetables and produce from out a state so that we can feed ourselves" to "They wouldn't be bringing watermelons in May if it wasn't selling. It's profitable and something that people want. If you are dipping strawberries and you can get big and beautiful ones from California while buying your winter squash, you should go ahead and get them for your party on Tuesday." This inconsistency in ideals between the farmers around Little Rock and the officials who run the market has created a lot of division within the city. Because of this, some of the River Markets farmers chose to transform their approaches and expand their market opportunities in North Little Rock.

This created the movement for the Argenta Farmers Market, located in the Argenta District of North Little Rock, and eventually a year-round storefront focused on local foods called Argenta Market. The Argenta District is directly across the river from downtown Little Rock and the River Market. Though only a short distance, the focus of the market is significantly different. Whereas the River Market has been noted as a "Global Bazar", the Argenta Farmers Market strives to offer authentically Arkansas grown produce and Arkansas made products like soaps. For some customers of the River Market this came as a relief as many people avidly want to support local Arkansas farmers and producers. By creating a market that the items and farmers are guaranteed to be from Arkansas many shoppers had a great preference for it. Moreover the market was more focused with less extraneous items like sunglasses or African art.

The year-round Argenta Market, on the other hand did not thrive and eventually closed. The downfall of the Argenta Market is poignantly illustrates several themes from the ecological resilience literature. The diversity offered was not complementary. Originally the concept of the store was to provide local foods year-round. However, since local food is not always available and residents wanted other products too, the backers of the project decided to provide a "one stop shop" with a bakery, deli, and preserved items along with fresh Arkansas produce. This proved to be too monumental of a task, between the bakery, deli department and maintaining everyday products the store found itself in the red. More conservative innovation would have aided this store in becoming more resilience. The desire to offer a "one stop shop" caused the store and its investors to provide inventory which larger stores like Wal-Mart and Kroger's are able to offer at a reduced cost. To reduce costs, Argenta Market reduced

the emphasis on local foods and became less unique, less of a destination for foodies and more superfluous. The trend begun by Argenta Farmers Market was more faithfully followed by other markets emerging in and around Little Rock like Bernice Garden Farmers Market⁴.

This case study focuses on a system which embodies the principles of ecological resilience. The diverse markets contributing to the development of a local food system in central Arkansas illustrate the complementary diversity⁵ needed for ecological resilience. One of the more resilient entrepreneurs in the local food system, Bo Bennett, feels that for both the farmers and the customers it's simply better to have multiple markets. Not only does it offer more variety for the customer, it creates more opportunity for the farmers to sell their produce. Not all producers share his open mindedness though, feeling that farmers markets are for local farmers only and should expel produce wholesalers. Bo's opinions are founded in a broad appreciation for the larger Arkansas food system.

Many times when considering local food systems, people envision a small farmer with a few, acres that s/he cultivates themselves, bringing that food to the market on weekends. Bo brings to the table the conservative innovation which also sees the benefits of large scale agriculture, along with its pit falls.

-Bo Bennett: The Networker-

Bo is the 3rd generation of the Bennett's in the Ouachitas of Arkansas and he is proud of his state and specifically his region. While working and living in Little Rock he has made it his goal to bring healthy, local food back to his home. He realizes though that, for now, the market for local food is in Little Rock and he's positioned himself on the forefront. His interest in food systems began with his study as an anthropology major focusing on rural farming and seed saving, helping to form CAAH⁶ at his University. Through CAAH he worked with a vast amount of small scale rural farmers in northern Arkansas to save their seeds in University of Central Arkansas's seed bank. He no longer works with the organization, but holds seed saving and rural farming as a high priority for his future. He says, "I never intended to be in business or an entrepreneur" but he seems to have a knack for it. The end goal is to go back home and farm the Ouachitas to save the best Arkansas specific regional seeds.

While in college Bo began working for Whole Foods, coordinating their local food supply. This position sent him all over Arkansas finding local growers to provide for the new Whole Foods in Little Rock. For four years Bo was creating relationships with farmers and building partnerships within Whole Foods. To this day, no longer working directly for Whole Foods, he still sources for them and uses their system to help farmers when the scale and time is appropriate. Bo has the unique ability to see the value in, and

⁴ Bernice Garden: <http://thebernicegarden.org/?portfolio=farmers-market>

⁵ Complementary Diversity: To lead to resilience, diversity must be complementary. Two enterprises, plants, ideas, etc., that create symbiotic relationships that are marked by their capacity to produce more when joined together than could be accomplished apart.

⁶ CAAH Central Arkansas Agricultural Heritage:

http://www.seedtoday.com/articles/Local_Arkansas_Gardeners_Swap_Heirloom_Seeds_-120319.html

utilize, many different and seemingly opposed systems simultaneously. In this capacity he exhibits conservative flexibility and a high degree of modular connectivity. As he's working with large corporations like Whole Foods and thousand plus acre farms he also finds value in small 1/10 of an acre urban farms within Little Rock. For Bo it's about universal access to fresh food and doing whatever it takes to make that happen, free of pride or prejudice.

Since leaving Whole Foods he has developed a number of enterprises that further illustrate complementary diversity. Every enterprise brings him back to the Arkansas food system and each venture always feeds into the other at multiple scales. His livelihood is exemplary of complex adaptive systems theory and value in, and utilize, many different and seemingly opposed systems

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farmers market in Little Rock named the Bernice Gardens Farmers Market located in a newly gentrified district. The market is fairly small but steadily gaining traction, aided by complementary diversity in enterprises like the Root Café across the street specializing in local food and further down, a community bakery in its 62nd year of operation. Bernice Farmers Market only operates on Sundays, so on Saturdays you can often see Bo at the River Market selling produce that he has picked up from individual farmers, or Sue's Garden, which he manages produce sales for. The rest of his time is poured into his new company, Garden Press. He recently joined forces with two other emerging enterprises: Butcher & Public and the restaurant Good Food by Ferneau. He spends most mornings juicing locally produced

⁷ Conservative Flexibility: The capacity to utilize and value knowledge or practices that worked in past time while remaining open to innovation. This component suggests that innovation should be made with consideration for conserved values so as to balance innovation with the maintenance of consistent practices and outputs.

⁸ Modular Connectivity: The capacity to foster connectivity within a given system while maintaining a level of modularity. Modularity in this case enables the individual or organization to maintain in the face of changes or failures of external markets that would otherwise be crippling.

⁸ Complex Adaptive Systems Theory: Complex adaptive systems (CAS) are fluidly changing collections of interacting components that react to both their environments and to one another. Examples of complex adaptive systems include the electric power grid, telecommunications networks, the Internet, biological systems, ecological systems, social groups, and even human society itself. All biological systems can be seen as complex adaptive systems made up of other complex adaptive systems. Complex adaptive systems include the global climate, economies, ant colonies, and immune systems. Ecological resilience is built on the reality of complex adaptive systems.

<http://web.mit.edu/esd.83/www/notebook/Complex%20Adaptive%20Systems.pdf>

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⁹ Panarchy: Refers to the interconnected nature of many scales of hierarchy within a greater system. i.e the relationship between a farming cooperative and a large global distributor. Between these two systems are many individual systems all interacting to creating a panarchy.

kale, apples, dandelion, watermelon, or ginger. During the week he is often known to drive remarkable distances to all parts of Arkansas picking up fresh peaches, watermelons, or greens for any one of his enterprises.

It is no surprise that Bo was asked to join with Butcher & Public and Good Food by Ferneau given his history of networking and creating win/win partnerships. The new restaurant and butcher shop occupies the same space as the old Argenta Market discussed in the previous section. The distinct difference between the two is that Good Food by Ferneau isn't aiming to please everyone or compete with chain supermarkets. Rather, they operate with a certain level of modularity or independence by focusing on niche markets such as their freshly butchered meats and now Bo's fresh pressed juices. By honing in on specific customers they aren't competing in the same way that the Argenta Market was competing with big box stores.

Bo Bennett in many ways exemplifies ecological resilience with his particular ability to work between scales and access all levels of the panarchy within Arkansas food system. This is well illustrated by the contrast between Sue's Garden, which he manages produce sales for, and an elderly farmer whom Bo has bought heirloom peaches from for years.

Sue's Garden has multiple scales of production from a modest 80 acre farm to another spread over 1000 acres near the Louisiana border. The 1000+ acre farm produces enough for 2 semi-truck loads a week and employs 60 people at any time to pick, process and plant. Though their practices lean towards organic their location within the Delta at present demands periodic use of fungicides or pesticides. With many bayous filled with still water surrounding commodity crops, fungi and insects are a relatively constant problem across the vast delta.

Sue's garden provides one truck a week for Whole Foods in Austin, Texas and one truck a week to a Kroger's distribution center. Their produce is primarily heirloom and non-GMO but they do grow seedless watermelons because, "They sell by the semi-trailer load".¹⁰ Bo continues to look for innovative ways to make Sue's Garden more resilient by encouraging intercropping and shade cloth for the increasingly hot summers. Sue, the owner, is interested in Bo's suggestions, but due to infrastructure limitations and increasing demand, she continues to do what Delta

farmers have done for the past five decades: spray and row crop.

In contrast we look at a small farm that's home to a 60 plus year old heirloom peach farmer in northern Arkansas. The site was homesteaded generations ago and today still offers freestone peaches, though the supply is dwindling. This small time farmer used to plant more peach trees every year with cuttings

¹⁰ Bo Bennett – Case Study

from his own orchard. In recent years his age has stopped him from planting more trees. He is challenged with keeping up with the current crop and doesn't want to plant more trees to have to

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manage. Bo has been making the 5 hour drive to pick up these rare peaches for years now, and is concerned about the future of the farm. In times past, the farm was self-sufficient, but in recent years no one has been able to make a living off of it. His family has chosen to move on leaving the farm without any redundancy¹¹ in the form of a next generation to take it on. Bo has considered purchasing it himself, but doesn't have the means of doing it. Bo has considered the idea of getting a loan for the land but he feels that banks won't understand the cultural value in preserving a farm like that and there isn't enough income generated from the farm to manage a mortgage payment. Transversely, if he were to apply for a grant he feels it would be too challenging to explain the potential investment opportunity that the farm presents.

This farm is representative of many other small scale farms that are dropping off the map. As aging farmers become unable to manage the demands and price margins become prohibitive to sales, many farmers are facing similar predicaments. Bo is acting as a catalyst for both new enterprises like Sue's Garden and older farms that are lacking markets to sell to like the peach farmer in Northern Arkansas. Without Bo coming to the peach farm, it is unlikely the peaches would ever make it to market due to lack of regional distribution centers.

Through his strong connection¹² at Whole Foods and the new connection¹² with Kroger's markets he is also able to direct the large scale production of Sue's Garden. Meanwhile he maintains many weak connections¹³ with multiple markets within Little Rock for smaller scale producers, moving easily between farmers markets and wholesale.

These farms and those of similar scales represent a much needed aspect of complementary diversity. Whereas the bounty of large scale agriculture in the Delta provides an abundance unlike that of the mountainous Ozarks and Ouachitas, there is benefit to the unique biodiversity that those mountains

¹¹ Redundancy has two aspects: reproduction and multiplicity. Resilient systems are not reliant on one or a few units to maintain functions of the system, e.g., a resilient local food system encourages a multiplicity of farms in its region. Redundancy in local food systems also requires creation of a new generation of farmers to replace the existing generation.

¹² Strong Connection: Is indicated by frequent and consistent interaction. Strong connections between individuals is often more emotional in nature with a developed personal relationship.

¹³ Loose Connection: These connections serve more as backups in a redundant system. The presence of loose connections is integral to ensuring supply chains and market opportunities.

provide. Many plant varieties are suited to the many microclimates, while others are better suited to monoculture row crop farming. Bo, while working with multiple scales of production is seeking to bring the best practices from each and through his conservative flexibility is cooperating and communicating with landowners, extension agents, and market leaders within the region. Though, it isn't only his work that brings him into these social circles. He has woven his day to day life with Arkansas agricultural system, and an educational organization he helped found, CANAS, is one way he's doing it.

-CANAS-

Central Arkansas New Agrarian Society, or CANAS as it is most commonly referred to, is a group largely organized on Facebook with over 400 members. Some of these members are active and participate in the discussions online and also attend monthly meetings and social events like the Farmers Olympics that CANAS recently sponsored. CANAS is a prime example of local organization¹⁴, complementary diversity and asset building¹⁵ where we see people from all age groups working together and organizing themselves to achieve more than they could alone with autonomy from larger organizations. CANAS began as a small group of 5-10 people meeting up regularly to drink beer at a local brewery, Vino's, to talk about their lives as small scale farmers. Some had larger gardens, others were in their first seasons learning how to grow simple crops. Their discussions progressed to helping each other build garden beds and fencing. One such project was the Victory Garden, now run primarily by Ryan Boswell. It has been referred to as going from "Desolate to Prolific" as the group took over an abandoned lot in Little Rock and turned it into a thriving garden plot. This was one effort to address the issue of food scarcity and access. Since then more gardens have been created and the discussion continues for members of CANAS as to how to make fresh food more accessible in food deserts.

Now, the group continues to grow every week with people requesting to join the Facebook page. This continued interest from the larger public is indicative of a growing awareness and desire for an agrarian society. This is an ideal conserved from past agricultural practices of caring for the land and for the farmer with equal regard. Facebook is an innovative way to regain interest in this ideal, allowing people to heighten their connectivity while maintaining modularity--all indicating resilience within the group. Moreover, members come from a variety of backgrounds from farming to economics, joining the group for a variety of reasons. This engenders an accumulation of talents and capacities that have yet to be fully realized. Bo and Ryan as organizers operate the group day to day, not sure what the outcome will be and remaining open to suggestions and growth. As

they continue recommendation to Kiva¹⁶, a regional crowd sourcing site.

Kiva took notice of CANAS and asked Bo Bennett if he and members of CANAS would help them with recommendations for projects within Little Rock. Since that time CANAS has helped direct over \$45,000 worth of funding to local growers and brick and mortar businesses. Their local organizing created the opportunity to channel tens of thousands of dollars to projects that are building real assets for the regions' local food system. It is Bo's hope that he and CANAS co-founder Ryan Boswell can continue to act as advocates for local businesses who are seeking funding through Kiva.

¹⁴ Local Organization: Also referred to as Local Autonomy this component is illustrated by a system that boasts strong self-organization leading to unique enterprises and organizations with heightened sensitivity to local issues and opportunities.

¹⁵ Asset Building: The accumulation of real and tangible assets that add lasting value and build redundancy into the system. Real and tangible assets supersede the sole accumulation of financial assets though building of capitol (both social and financial) is directly tied to building assets. The exact form of assets is strictly contingent on the system which those assets are housed in.

¹⁶ Kiva site link: <http://www.kiva.org/>

Crowd sourcing presents a unique opportunity for building ecologically resilient systems. With many projects and businesses funded by either loans or grants, limitations are created. Many grants come with pages of stipulations and expectations, often requiring the receiver to alter their ideals to conform to the constraints of the grant or loan applied for. This can lead to more structured plans, but that isn't always the case. By conforming to grant application requirements, plans can be stifled, limited, or halted altogether when the grant is denied. In the case of loans it is up to the bank to determine the value of a project which is often a challenge for the applicant. Many innovative ideas for intensive urban gardens, solar arrays or those created by beginning farmers often lack the standard assurances that banks

demand. Crowd sourcing then can become the most viable option with, sometimes, thousands of people donating anywhere from one to a thousand dollars. A unique aspect of crowd funding is that the individuals donations are provided to the receiver as a loan, often at very low or no interest at all. This innovation in funding has seen the creation of multiple businesses that didn't fit particular grant or loan requirements, but met the desires and interests of many individuals. This kind of connectivity, imperative for ecological resilience, is transforming the broader marketplace.

CANAS is doing its part through Kiva to encourage redundancy in the creation of new businesses supported by the public, while also creating redundancy in the broader farming community. Its members are working together to create opportunities for one another and find ways to become a new generation of

agrarians. Through workshops, internships, fundraisers, and simple networking Arkansas' next generation of farmers is, in part, forming within CANAS.

The current and next generations of Little Rock and Central Arkansas, though aspiring to older ideals of agrarianism, face a new and unprecedented challenge: Climate Change. During CANAS meetings and gatherings the effects and potential issues of climate change are a common topic amongst members. Ideas, challenges and solutions are shared openly between members confronting sun damage, drought, high winds or any number of issues brought about by climate change. It is this kind of local organizing that inspires innovative solutions to wicked problems¹⁷ like climate change. Moreover, with members representing a variety of scales from large to small, CANAS is cultivating ideas across the panarchy of Arkansas unique local food system centered in Little Rock.

-Little Rock: The Frying Pan-

¹⁷ Wicked problem: Richard J. Lazarus, Cornell Law Review [Vol. 94:1153] <http://www.lawschool.cornell.edu/research/cornell-law-review/upload/Lazarus.pdf>

Often referred to as “the frying pan”, it has always been true that Little Rock is as much as eight degrees hotter than the surrounding land. What has not always been the case is the additional heat caused by climate change. Little Rock would benefit greatly from more Ecological Integration¹⁸ as much of their heat is due to the lack of trees within city limits. Transversely, Little Rock’s many urban gardens do have distinct ecological advantages¹⁹ such as biodiversity. With so many different types of plants species being grown at any given time, it is common that one or more varieties of plant will fare well in the extreme heat. Bo doesn’t see that biodiversity in other parts of the state focusing on monocultural crops. So whereas the city is lacking in tree coverage, lowering its overall Ecological Integration, the diversity created by its residents acts to raise its resilience.

Bo Bennett reflects on not only on observations from his 1/10th acre garden, but also on crops from the all corners of Arkansas. In the past 5 years his own garden has had years that he “could only reliably grow herbs” due to extreme temperatures in the city. Meanwhile on farms through the Delta, Ozarks and Ouachitas Bo has observed whole fields of wheat blown over by high winds and plants with so much direct sun that they wilt in the unaccustomed heat. This is of great concern for Bo and others who make their livelihoods on consistent production. This last year there was massive blossom drop²¹ throughout

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the apple orchards of northern Arkansas directly effecting his seasonal pick up, and income across all scales of the food system.

These kinds of unexpected losses create economic challenges that many farmers across the state are struggling to withstand. Though they may have built their soil assets many farmers aren’t able to counteract late frosts, high winds, or persistent sun that’s wiping out crops. These issues could be mitigated by institutions at higher scales, such as the USDA or Arkansas Department of Agriculture, but to date there is a lack of adequate crop insurance that is affordable for small scale producers like the sixty plus year old peach farmers in northern Arkansas.

To create ecological resilience, building redundancy and complementary diversity into systems is key to mitigating loss due to climate change. Bo’s observation of urban gardens with vast plant diversity is a great illustration. Moreover these urban gardens cumulatively represent a highly redundant system that, through organizations like CANAS, are becoming more plentiful.

¹⁸ Ecological Integration: The integration of ecological systems and processes to lessen the amount of direct management necessary for upkeep of social ecological systems in urban and rural areas.

¹⁹ Ailbhe Gerrard. Urban agriculture diversity in Britain: Building Resilience through international experiences.

June 2010, https://hal.archives-ouvertes.fr/file/index/docid/520451/filename/Gerrard_Urban_agriculture.pdf ²¹ Blossom Drop: The dropping of blossoms from fruiting plants due to early blooming and susceptibility to frost.

These factors of ecological resilience have been harder to achieve in the Delta, a major contributor to our nation's food and fiber supply. Whereas biodiversity and redundancy would be beneficial to Delta growers, there is a severe lack of knowledge and appropriate technology to support the transition from monoculture to intercropping and high species diversity. According to Bo, "many farmers want to grow organic, but they want to do it the same way they have been. From a tractor, with a sprayer" leaving little room for innovation. Extension agents are a major information channels for Delta farmers and agents are often lacking in this information themselves. It is true also that many of today's farmer's grandfathers and great grandfathers were farming with high levels of biodiversity and redundancy. Without the ease of chemical fertilizers, pesticides, herbicides and modern machinery of scale, farmers of the past relied on many pillars of ecological resilience overlooked by today's farmers.

These practices included use of animal waste to produce fertilizers, integrating minerals into the soil through naturally occurring waste products. Moreover farmers found ways to work in tandem with natural predators²⁰ and encouraged beneficial insects²³. This kind of ecological integration is rarely seen in industrial agriculture today where managers prefer the quick application of chemicals and fertilizer. Results are indicating that these practices are degrading soil health and present the potential risk of another dust bowl as was seen in the 1920's²¹. In the meantime, plants grown in these depleted soils are significantly more likely to fall prey to insects or disease than those in rich soils²². As soil vitality decreases causing plant disease and infestation, industrial agriculture's solution is to spray more insecticide and herbicide and apply more chemical fertilizer. Bo Bennett suggests that we shift our perception to that of embracing traditional agriculture of the past, for, often when discussing a return to naturally occurring ecological practices people often call them "alternative" farming. What Bo and others hope to see is a remembrance of traditional farming techniques with broad acceptance as a practical and valuable system, not relegated to a niche like alternative farming.

²⁰ Natural predators in past practices: Not sure if I need this footnote ²³ Beneficial insects in past practices: Also not sure if I need THIS footnote.

²¹ Modern Day Dust Bowl Reference: <http://www.bigpictureagriculture.com/2012/11/pbs-raises-modern-day-dustbowl-questions.html>

²² Plant Health due to Soil Health: <http://www.theatlantic.com/health/archive/2014/10/the-amish-farmerreplacing-pesticides-with-nutrition/380825/>

Conservative innovation requires the conservation of ideas from time tested methods like age old farming techniques while allowing for innovation. Today's farmers are challenged with a need to return to some old ideals while embracing innovative practices and making those practices scale appropriate for the production of our modern demands. There is much technological innovation needed to make biodiversity an accessible tool for the modern Arkansan farmer in conjunction with active conservation of knowledge from past and present agricultural knowledge.

This is an important transition where organizations like University Extension stand to offer valuable assistance. As channels for information on new technology, grant opportunities, and advancements extension agents are often the ones that farmers turn to when planning for improvements. Through broad education through Arkansas land grant universities, extension agents could help to mitigate some of the struggles that large agriculture farmers are up against. Between the realities of soil health depletion and climate change there is a great need for innovation and the creation of new and different standards of farming.

-Creating New Norms-

While it is largely in the hands of Arkansas farmers to change agricultural practice in the field, there remain many scales of the food system to consider. Once a crop is grown and harvested growers encounter distribution challenges in the face of a changing marketplace. Many Arkansas farmers watched their parents and grandparents grow hundreds of acres of tomatoes to ship to distribution centers in Chicago, Illinois. From there, produce was shipped out by the pallet load to the rest of the country and sometimes abroad. Today's farmers are expecting the same results but often pallets of food are left to rot in warehouses because of changes in the market. Local control offers solutions to these issues by encouraging local market outlets and distribution centers. Issues such as that of rotting tomatoes in Chicago warehouses are due to lack of local management at multiple scales. This causes insensitivity to market changes leading to over production. Local processing and marketing systems to manage and absorb over-production are key to changing the paradigm. Though, in creation of more redundant and locally controlled systems, Arkansas must consider complementary diversity within their plans. In Chicago's distribution network we see the results of having little to no complementary diversity. With only one outlet and method to receive and export products it limits the system's capacity to mitigate challenges and changes. Through developing distribution networks based in complementary diversity that are locally managed we begin to see systems that respond quickly to region issues in a variety of ways.

Online farmers markets, such as Conway Locally Grown²³ reported in another case study in this series, is an online solution to the regions distribution and marketing issues. The website offers farmers the opportunity to market their goods from the farm while customers can place orders for a weekly pick up in Conway. For farmers this saves hours of selling their products at a farmers market or farm stand offering more time to spend growing produce. For customers the site enables them to shop at their own pace with the added ease of picking up their items in one location. The issue of farmers having to grow as well as market their goods is becoming more and more of an issue as many small scale producers need to spend as much time on the farm as possible, particularly during harvest. Moreover farmers don't often make enough at farmers markets or farm stands to afford to pay someone to sell for them. For many, the online market has become a multi-tier solution for time and income limitations.

CANAS has also become a key advertising tool for the online farmers markets. Many members are farmers, bakers, soap makers and various artisans who use the page to tell other about specials, new items or when they'll be at various markets. One difference between CANAS and online markets is that CANAS represents a social network as well as a marketing opportunity. Members have been known to barter, create fundraisers, or offer their surpluses to the group, be it vegetables or extra irrigation equipment. In this way CANAS is opening up different forms of income and asset building. There are opportunities within such a group to spur cost sharing on large items (i.e., tractors, bulk seeds, and other equipment) and to trade goods and services without money. This kind of local organizing and partnership building has been the key to members and those funded by Kiva through CANAS. One restaurant in particular epitomizes the resilience of local organizing and other aspects of ecological resilience, The Root Café.

-The Solution is at the Root of the Issue-

The Root Café opened its doors in 2010, but that's not when they began building their business. Jack Sundell runs the restaurant with his wife who he met while developing the business with a previous business partner. Their business model was built off of local organizing, asset building, complementary diversity and modular connectivity. They worked for two years to build local support through classes, fundraisers, and friend raisers hosting events like a hot pepper eating challenge, an event they still host today. One campaign was to sell ten dollar meal vouchers for when the restaurant opened which proved to be highly successful. During this time Jack and his business partner were running a catering business to build more capital. Between fundraising and working the catering business the Root Café was able to

²³ Link to website: <http://conway.locallygrown.net/>

open with only borrowing \$10,000--remarkably low compared to the average amount of debt for a new restaurant of \$225,000²⁴.

They conducted classes on canning and preservation, filling a void once filled by Extension agents. Through their dedication to building a community around the restaurant, since opening they have seen nothing but increases in sales. Their outreach was so effective that shortly before opening day Jack was contacted by a previously unknown church offering their youth as volunteers for whatever Jack needed. This was the only way they were able to landscape the green spaces around the building. Through their connectivity they garnered connections beyond their own specific outreach.

While fundraising and building public support for The Root Café, the couple and the previous business partner worked with local farmers to supply their catering business. As they operated the catering business with local producers they were able to discover what each farmer could and could not provide through the year. These connections and the knowledge they gained helped bolster their connectivity to the community while also creating the basis for developing a supply network that was complementarily diverse including many scales of farming.

Jack is working with small scale producers who send him small quantities of unique crops that he uses to develop specials while also working with larger providers like Arkansas Natural. Most of his farmer/supplies deliver direct to the restaurant, though shipments come in a variety of sizes and consistencies. Currently operating at seventy-five percent local produce, he relies heavily on his most consistent large scale providers. Arkansas Natural provides local greens and seasonal produce to more than thirty restaurants every week, making deliveries in an air conditioned delivery truck. He appreciates that he doesn't have to worry about their supply as much as other smaller producers who have accumulated fewer assets and are less resilient to disturbances such as drought and insect infestation. The consistency of Arkansas Natural is matched by the chickens that the Root Café purchases from Falling Sky Farm, operated by Cody Hopkins and Andrea Todt²⁵. These poultry producers have developed a mid-sized operation outside of Little Rock that fuels The Root as well as multiple families who make purchases through the online web service, Conway Locally Grown. These two markets keep the couple busy up until late fall when they begin to slow down their operation for the winter.

Falling Sky Farms presents an obstacle that many local food markets are working to amend. Most consumers understand that vegetables are seasonal, but poultry is something many consider to be a year-round supply. Jack of The Root Café takes the seasonal shortage as an opportunity to educate his customers about seasonal eating. His approach to supply shortage is unique but is a growing trend around the country in places like Chattanooga where, in another case study²⁹, we see that more

²⁴ <http://smallbusiness.chron.com/average-cost-opening-restaurant-14348.html>

²⁵ Reference Falling Sky Farm Case Study: ²⁹ Reference Chattanooga Case Study:

restaurants are taking the opportunity to educate their customers as well as feed them. This is another way that Jack, through the Root Café, is creating more local control and local organization. His customers are becoming more sensitive to local issues and are finding ways to manage their diets during off seasons.

Meanwhile Jack and many other purchasers are lobbying for extended seasons by their producers. There are items that Jack has to purchase from out of state distributors like onions and potatoes because no one locally can provide them year round. There was one year that a local farm had an extra five hundred pounds of onions that they wanted to sell to the Root Café. Jack expressed that he would be happy to purchase them in fifty pound bags but was unable to store the whole five hundred himself. The farm was flexible enough to store the excess until Jack had purchased the last bag. This has only occurred once since then but serves as an example of a local provider's capacity to extend their season through conservative flexibility.

Working so intimately with his producers costs Jack extra time as he orders from multiple sources, but it also costs him more money for the produce. Jack works to mitigate this by developing assets through multiple value added products from items that, in other kitchens, would be considered waste. The chickens he buys from Falling Sky farms come to him at a price of around thirteen dollars a chicken. He realizes that to sell a chicken breast sandwich would be cost prohibitive for him, so instead he makes chicken salad sandwiches and makes stock from the bones for soup. This is illustrative of conservative flexibility as he realizes that people expect to have a chicken sandwich on the menu and he has found an innovative way to make it cost effective.

The Root Cafe is one of the few restaurants in Little Rock participating in the local food system and supporting local farmers. There are a few health food stores that are either purchasing now, or planning to purchase local food in the future but these offer a limited market. These stores and even the Root Café all have a common competitor in Little Rock vying for produce from local suppliers: Whole Foods.

-The Whole Impact of Whole Foods-

Over the course of this case study, Whole Foods has been a large part of discussion. Some, primarily customers, feel positively about the impact whole foods has made in providing a variety of healthy foods and products to their cities. Farmers' express mixed emotions though primarily appreciate that Whole Foods is willing to pay more than any other wholesale purchaser. The negative impacts begin to crop up when talking with store owners who have been offering these products for years previous to the arrival of whole foods.

As Whole Foods begins making plans to expand into a new city they send market evaluators to look through existing stores and gather information on the local food suppliers in the area. Many times whole foods will simply buy out small health food store owners, one instance was in Chattanooga²⁶. As we spoke with Chattanooga's residents, they expressed that the store owner felt there was no other option and chose to sell out instead of going bankrupt. Subsequently this caused a funneling of customers to Whole Foods as competition was thinned out. Our discussions with Chattanooga residents is evident in Little Rock and other locations when Whole Foods arrives. This does more to effect the food system than inconveniencing customers who live around small health food stores that were bought out. Condensing market opportunities also reduces the diversity of markets in the city. In planning for ecological resilience we must build systems that are diverse and redundant. As Whole Foods expands its markets every year they are simultaneously narrowing the diversity of providers and pooling the resources into one channel. The common analogy of "putting all your eggs in one basket" fits well here as millions of dollars of products that used to be spread out between providers is now channeled into the Whole Foods corporation.

Though Whole Foods has been on a steady pattern of growth since it opened, in recent fiscal reports Whole Foods has been leveling out and is becoming threatened by other grocery outlets taking similar approaches. Though it is unlikely that Whole Foods will close all or any of its stores in the near future, it is troublesome that so many local growers are now reliant on the income they receive from Whole Foods. Without a more diverse marketplace the security of their income is reliant on the continued success of Whole Foods.

This lack of diversity and redundancy of locations through the city also causes food access issues. Often Whole Foods markets are located in more affluent and gentrified neighborhoods that are challenging to access by public transport. Whole Foods has also become known in some circles as the Whole Foods, Whole Paycheck market because of its more costly items. Though there are items within the store that are comparable in price to other markets, it is a challenge for many to find items they can afford among the variety that Whole Foods is known for. The problem of food access is something that Bo Bennett is working to amend through the Bernice Garden Farmers Market.

Bo explains that in his experience many residents of low income neighborhoods are uncomfortable in farmers markets that are primarily frequented by white and more affluent residents. Many, including Bernice Gardens market, have included EBT, or, SNAP card readers to help create more opportunities but the response has been minimal. Though approximately 10 percent of purchases from the Bernice Gardens farmers market are from EBT and SNAP benefits, the majority of those users are young people working for Americorps who issues their workers SNAP benefits. Because of this Bo is working with grocery stores like Kroger's who have locations in low income neighborhoods.

²⁶ Reference Chattanooga Case Study:

He refers to his stops in Kroger's as "food theatre" as he comes in through the front door with a few cases of kale, tomato's, peaches, or whatever is in season that he can find. He appreciates that many of the shoppers at Krogers have either never had a fresh picked tomato or only had them in their youth. Customers of the Krogers simply appreciate the quality of locally grown food in a way that many others don't.

Bo is making important connections between Arkansas growers and alternate markets like Krogers to help create a more diverse and, therefore, resilient local food system. This diversity is also helping make local, fresh food more accessible to a populace that otherwise would struggle to gain access to it. Until there are more growers to supply the demand there will continue to be a struggle between Whole Foods and its competitors. This is of some benefit to growers as markets are competing for their produce helping to keep prices high generating a seller's market that is seldom the case in the food industry.

The Whole Foods model, though presently beneficial to farmers, causes social issues that create rippling effects through the cities they occupy. Through systematic dismantling of diverse supply networks, Whole Foods is negating decades of work to diversify local food systems. It therefore comes as a necessity to ecological resilience that more grocer's such as Kroger's diversify their supply to incorporate more local foods creating more redundancy in the supply chain. Whole Food's has nonetheless created a surge of energy for the local food economy by offering producers an income that was nonexistent before Whole Foods.

-Conclusion-

Little Rock's local food system is revolving around an innovative group of primarily young entrepreneurs who are inventing new models for practically every scale of the system. From production to distribution Little Rock is fast becoming a hub of new ideals and opportunities. The internet and its capacity for networking is proving to be the nexus, facilitating remarkably fast changes. Through services like Kiva Zip and online farmers markets, producers and purchasers alike are activating local organization to build their own distribution, production and marketing capacities. This local organization is paired with a distinct level of modular connectivity with multiple individuals and businesses working together towards common goals.

We see within the consistent growth of CANAS that there is a steady and growing interest in the building of a new agrarian society in central Arkansas, leading to a more redundant system. The biggest obstacle for the region's local food system is the implementation of innovative ideas across scales. From the

Ozarks to the Delta there are opportunities to incorporate new methods to cope with the shifting market and climate. From innovations in the field to the storefront Arkansans seem to be stratified with some sticking to ideas of the last century, while others like Falling Sky Farms and The Root Café are looking for opportunities to change our cultural expectations and habits.

Many of these innovations call for a heightened level of ecological integration within the city and in rural communities. The city would greatly benefit from more green spaces and tree coverage to manage its heat in the summertime. This would help lower the cost of cooling homes and businesses in the city, while also lowering the carbon footprint and subsequent contribution to climate change. In large scale agriculture there are many opportunities to introduce beneficial insects and buffer zones but current income limitations and lack of incentives from government make the transition unappealing or inaccessible to most farmers.

Though there is a strong interest from young people to transform the regional food system, many are wary of the slow pace of change by elected officials and bureaucrats. State and federal agencies and officials can assist in development of alternate systems but are often much slower to react than locally organized systems. This makes CANAS, the growing number of online farmers markets and diversified markets like Good Food by Freneau imperative to building a mature locally organized system that is sensitive to local issues. While many large scale producers are currently reliant on federal and state incentives to grow their crops, smaller producers are looking for local autonomy from governing agencies, utilizing crowd funding and resource sharing instead.

Through consistent, but conservative innovation and willingness to work together on common issues, Little Rock is excelling in areas where other municipalities are failing. Though there is room for improvement on all scales, members of the community are galvanized and actively working to find reasonable solutions. From creating access to fresh food to finding ways to deal with the wicked problem of climate change, citizens of Little Rock are looking to the past and the future for creative solutions.

Bo Bennet represents a much needed archetype to construct local food systems. Acting as advocate, catalyst, distributor, marketer, and entrepreneur, Bo is fueling a considerable amount of growth within Little Rock's local food system. Through his willingness to work with others and innovate he, and others like him, are building open source²⁷, democratically constructed, and responsive systems. By including others in his work he builds redundancy into his enterprises that all feature high levels of complimentary diversity. Moreover through his work he is an advocate for and constructor of ecologically integrated systems that take into account climate change, bio-regions and bio-diversity through many scales of production.

²⁷ Open Source Definition: <http://opensource.org/definition>

It has been stated in community resilience literature that these characters who carry enthusiasm for community projects are often the difference between a successful project and one that peters out over time²⁸. It is clear that strong leadership is imperative to the development of community resilience that is integral to any social ecological system. As we seek to merge the structured systems of society with the vastly chaotic systems within ecology it is imperative to find strong leadership well versed in bridging capitol²⁹. We see this not only in the case study of Little Rock, but also in our study of Chattanooga³⁰, Beat 4 Cooperative and many others.

In tandem with strong leadership for the development of a resilient social ecological system it should be noted that the presence of all 8 components of resilience referenced through this literature are of equal value and must all be engaged. Little Rock rates high on multiple resilience components and low on others. It is by bringing these components to a balance that we create resilience social ecological systems.

²⁸ Amundsen, H. 2012. Illusions of resilience? An analysis of community responses to change in northern Norway. *Ecology and Society* 17(4): 46.

²⁹ Bridging Capitol: Bridging networks are ties that are not strong, but that give people more opportunities. We have bridging networks with people who are different from us; who are members of organizations, occupations or associations that we don't usually engage. [<http://www.extension.umn.edu/community/civicengagement/docs/social-capital-community.pdf>]

³⁰ Chattanooga case study reference for strong leadership (I.e. Bill Keener)