DESIGN FOR A STUDENT HOMESTEAD AT A LAND-GRANT UNIVERSITY:
INTEGRATING VERNACULAR PATTERNS, LOCAL SYSTEMS, AND ECOLOGICAL
HERITAGE

BY

SAMANTHA D. CARLSON

THESIS

Submitted in partial fulfillment of the requirements
for the degree of Master of Landscape Architecture in Landscape Architecture
in the Graduate College of the
University of Illinois at Urbana-Champaign, 2012

Urbana, Illinois

Master’s Committee:
Assistant Professor Stephen Sears
Professor Elen Deming
Assistant Professor Sarah Taylor-Lovell
ABSTRACT

The purpose of this thesis is to design a contemporary student homestead at a Land-Grant university. The student homestead is to function as a model system for research, education and demonstration. The history of homesteading, historic settlement patterns and the early mission of land grant institutions inform the design. Inquiry transitions to a focused study on landscape architecture practitioners and academics during the decades of rural reform and beautification, which spanned the progressive era. The investigation sets forth a foundation and allows a dialog between historic and contemporary homestead design. Finally, programming on site is suggested based on successful small agriculture operations witnessed during series of Midwest small farm tours. The value of the proposed plan is that it accommodates a contemporary Land-Grant mission.
ACKNOWLEDGMENTS

This project would not have been possible without the support of many people. Thanks to my adviser, Stephen Sears. Also thanks to my committee members, Elen Deming and Sarah Taylor-Lovell. Thanks to the Environmental Change Institute for allowing me expand on the collaborative effort to create a vision for an Integrated Sustainable Homestead on the campus of University of Illinois. And finally, thanks to my family and friends who endured this long process with me, always offering support.
# TABLE OF CONTENTS

PREFACE ...................................................................................................................................... V

CHAPTER 1: RESEARCH OVERVIEW ........................................................................................1

CHAPTER 2: LITERATURE REVIEW ........................................................................................5

CHAPTER 3: THEORETICAL CONTEXT ....................................................................................21

CHAPTER 4: DESIGN AND SYNTHESIS ................................................................................24

CHAPTER 5: DISCUSSION AND FINDINGS ............................................................................36

REFERENCES ..........................................................................................................................38
PREFACE

I became interested in this site through my involvement with the Integrated Sustainable Homestead project that began as a summer position. A design charrette was held during spring semester of 2010, a diverse group of students, faculty and community members interested in local food and energy systems gathered. The group sought ideas for turning the highly visible but under utilized tract of land into an integrated sustainable homestead. The site is located on the corner of Windsor Road and First Street on the University of Illinois South Farm. From the charrette came the concept of a living-learning center, where a cohort of twenty students might participate in the functions of the homestead.

A portfolio of charrette sketch, illustrations and written documentation, summarizing the charrette results was passed along at the beginning of summer. From the information passed along emerged four integral components on the Student Homestead Site: energy, water, livestock and food crops. The summer work involved developing three different land use scenarios: food scenario, bioenergy scenario and a large-scale hybrid scenario.
CHAPTER 1.
RESEARCH OVERVIEW

The purpose of this thesis is to design a contemporary student homestead at a Land-Grant university. The homestead is to operate as a model system for research, education, and demonstration. Ultimately aligning with crucial ecological, economic and social concerns. The design is informed by historic rural reform and beautification efforts, a series of small farm tours and best practices in sustainable agriculture and agroecology.

One outcome of the thesis is a comprehensive plan for a student homestead that draws on alternative human-scaled production systems. The design is thoroughly influenced by topics listed in the framework diagram (Figure 1). This inquiry positions the project as a landscape architecture thesis. To accomplish a design for student homestead research was conducted through:

1.) Literature review
2.) Inquiry in historic rural reform and beautification efforts
3.) Series of small farm tours visited during the summer of 2010
4.) Synthesis and Design

The Morrill Act of 1862 established a national system of Land-Grant universities federal legislation that emphasized both a liberal and practical education. Research was cultivated with the legacy of the land-grant legislation in mind. The University of Illinois has the opportunity to
embrace its agricultural heritage and also project its future in creating a new vision for the site.

The Site and Situation

The site is fifty-five acres in size and located on the South Farm at the University of Illinois. Originally homesteaded by Barney Kelley in 1893 (Geo. A. Ogle & Co. 1893). The homestead shortly changed ownership and the Cruse family farmed the land until 1966. Currently there are four derelict homestead buildings on site including a barn and a corncrib. The Cruse family built the barn in 1916, thirty-two foot timbers traveled by horse and wagon form Indiana. Although in disrepair the homestead buildings are reminiscent of the Midwest’s agricultural heritage and offer opportunity for reprogramming.

Not only is the site a campus landscape but it is also situated at the eastern edge of Champaign, Illinois. The rural, urban fringe environments have been the topic of study for sometime. A study conducted in 1956 by Donald Bogue’s “The Spread of Cities” sparked an interest in the endurance of agriculture on the urban edge. Where Bouge recognized, “the subject of metropolitan agriculture has not been given the research and attention it deserves” (1956:292). There will likely be continued to be interest in sustaining farms on the urban edge (Condon et al., 2010). This thesis proposes a healthy reciprocation might be fostered in the rural, urban fringe locations. Benefits unique to rural, urban fringe locations include; greater access to seasonal labor, greater off-farm employment, and opportunities for marketing to urban populations like...
restaurants and farmers markets, and agrotourism (Esseks et al. 2009).

Agricultural lands on the urban edge are under constant development pressure. The student homestead site is no exception. The site is one of the seven proposed sites for the new Champaign Central High School (Heckel 2010). Making it essential to set forth a proposal that is economically, and socially viable.

Features on the site include a detention pond, thirty-two acres of tillable land, six of which can be certified organic and an area that has been managed naturally for recreation purposes. Located on the corner of Windsor Road and First Street, the site will greet the community, as the Windsor road corridor becomes the future gateway to campus (Windsor Road Corridor Design Study: A Design Charrette, 2009).

The University of Illinois has the opportunity to embrace this agricultural heritage while formulating a new vision for a new student homestead. The process began with a design Charrette held during spring semester of 2010 where a diverse group of students, faculty and community members interested in local food and energy systems gathered and sought ideas

Figure 3. Depicted above is an aerial photograph of the student homestead site and its existing structures. Source “Student Homestead Site” 40° 04’ 51.8” N and 88° 14’ 29.05” W Google Earth. October 5. 2010. November 10, 2010.
for turning the highly visible but under utilized tract of land into a student homestead. Form the charrette came concept of a living-learning center, where a cohort of twenty students might participate in the functions of the homestead. The results of this thesis might serve as an additional layer to the Integrated Sustainable Homestead project at the University of Illinois. Giving depth and breadth to the more collaborative effort.

Research Questions

How can historic rural reform and beautification efforts, specifically the works of landscape architects inform the design for a contemporary student homestead? What is a Land-Grant universities role in the future? Can the inclusiveness of agrarianism serve as a foundation to design a contemporary student homestead?

Proposition

The design is a proposition for a new system of production on a campus landscape and aims to encourage a new agrarian ethos on the campus of a land-grant university. A contemporary Student Homestead on the campus of a Land-Grant university might operate as a model system for research, education and demonstration. The design objective is to align crucial ecological, economic and social concerns on a productive campus landscape. Discussion transitions beyond design, suggesting there is sustenance to be found in landscape architectures’ link to agriculture.
CHAPTER 2.
LITERATURE REVIEW

A Brief History of Homesteading and the Need for Agricultural Education

Federal land was privatized through a series of legislative acts beginning with the 1862 Homestead Act. The Homestead Acts contributed greatly to the settlement of the Midwest states. Thousands of settlers moved from 1862 until 1900, as many as 400,000 to 600,000 families obtained new farms and homes (Jackson 2010). The rapid settlement provoked a need for agricultural education and the idea of agricultural colleges grew during the nineteenth century. The interest in agricultural education resulted in the Morrill Act, which was signed by President Abraham Lincoln on July 2, 1862. The Morrill Act created a national system of agricultural land grant colleges. The purpose was to, “without excluding other scientific and classical studies and including military tactic, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life” (The Morrill Act, Statutes 503).

Agriculture has transitioned from subsistence to highly specialized and efficient commercial operation and agricultural colleges have aided in this transition. As agricultural technologies increased, there was pressure for agricultural college’s to specialize. Technically based curriculum gradually came in to favor at land grant-universities with a growing focus on applied research. Departments within colleges soon formed. Each department began to require more subject-specific courses, which often came at the expense of basic math, science and the humanities (Grant et al., 2000). In 1887, the Hatch Act was added to establish state Agricultural Experiment Stations; which awarded federal funds to colleges. Its purpose was to promote “a
sound and prosperous agriculture and rural life indispensable to the maintenance of maximum employment and national prosperity and security” (The Hatch Act, US Statutes 372). The Act further increased specialization departments within agricultural colleges. Grant and colleagues explain, faculty members began to be labeled “practical” and “scientific”, “specialist” and “generalists” (2000:1688).

The importance of “practical” faculty was not lost completely in the rush towards specialization. The Smith-Leaver act in 1914 established the Cooperative Extension Service. The Act explains “…extension work shall consist of the giving of instruction and practical demonstrations in agriculture and home economics to persons not attending or resident in said colleges in the several communities, and imparting to such persons information on said subjects through field demonstration, publication and otherwise” (Smith Leaver Act of 1914, Statues 38). The transfer of innovative scientific knowledge and developing technologies from academia to the rural population was a crucial mission of early land-grant universities. Liberty Hyde Bailey’s ideas of securing local knowledge and interest by “the establishing of demonstration farms and field laboratories” (1915:77) would have coincided strongly with purpose of the Smith-Leaver Act. Today the Student Homestead would serve as a contemporary demonstration site.

Many have contemplated the future responsibilities of land-grant universities and its role in regards to research, public service, and community outreach programs (Kellogg and Knapp 1966, McDowell 2003, Nelson et al., 2006, Fischer 2009). There has been contemporary criticism of the instructions where many have accused Agricultural Colleges’s of loosing sight of the original aspect outlined in the Morrill Act. Even Justin Morrill himself had to defend the act himself once explaining, “it was the liberal education that was proposed. Classical studies were not to be excluded, and, therefore, must be included” (Quoted in Kellogg et al., 1966). Grant
and colleges acknowledge, “the debate over basic vs. applied and educated graduates vs. well-trained workers has continued for over 130 years” (2000:1687). The dispute will likely continue into the future. With the holistic systems approach to the design for the student homestead site one quickly recognizes there is room for both a practical and liberal education, aligning with the original land grant mission.

Literature from the Homesteading Era

Literature from settlement period and homesteading era if observed as a cultural artifact provides perspective about the act of homesteading. The types of agricultural literature with in reach of the rural farmer included regional newspapers, circulars, farmer’s journals and extension publication. Literature was published at rapid rates during the early nineteenth century from 1900 to 1920 circulating farm periodicals increased from 7 million to over 17 million. The literature had subsequent effects on the landscape. Studying these publications permits speculation. It allows one to make inferences about how the press influenced the rural population and how in turn their actions shaped the landscape. A survey taken in 1913 where about forty percent of the farmers polled credited farm papers as their best source of information, nearly two-third of those surveyed subscribed to at least one agricultural publication (Kates 2011).

Rural Reform, Beautification Efforts and Practicing Landscape Architects

A nation alarmed by the rural exodus to the city sparked a nationwide country life movement which flourished between 1900 -1920. The work of country life reformers is often neglected by historians of the progressive era but reform activities were an important part of the early twentieth-century (Bowers 1971). Equally less recognized is landscape architects’
involvement in reform efforts during the progressive era. Landscape architect Frank Waugh captures the sentiment felt among reformers, “Look what has been done for the city! Fine schools, theaters, picture shows, playgrounds, parks, music, boulevards-play beauty and entertainment. The simple fact is that the country must do something to offset these attractions or the exodus of young men and women will go on forever” (Waugh 1914:ix- xi). Waugh published two books at the turn of the century. Perhaps motivated to counter rural depopulation, Waugh saw beautifying the countryside as a means to combat the devastating issue.

Country life reformers dealt with diverse issues including “soil erosion, rural depopulation, country theater, adult education, land settlement, and rural demoralization…” (Danbom 1974). Reform efforts culminated in 1908 with the formation of President Theodore Roosevelt’s Country Life Commission. Roosevelt recognized that “city life was advancing more rapidly”. The commission was tasked with investigating how to make country life more attractive. Roosevelt’s introduction to the Report on Country Life reads:

Not to help farmers raise better crops, but to call his attention to the opportunities for better business and better living on the farm. If the country life is to become what it should be, and what I believe it ultimately will be—one of the most dignified, desirable, and sought-after ways of earning a living—the farmer must take advantage not only of the agricultural knowledge which is at his disposal, but of the methods which have raised and continue to raise the standards of living and of intelligence in other callings (1909:4).
Liberty Hyde Bailey, Dean of the Cornell University College of Agriculture headed the commission. Bailey was advocate for agricultural research and extension work. Suggestions for rural improvement made by the commission would ultimately rely heavily on education reform. The report from the country life commission began by listing a series of country “deficiencies,” including crop price fluctuations, farm credit access, farm labor issues, consolidation of land ownership, environmental degradation, lack of transportation infrastructure, poor communication services, and limited access to health care and education facilities (Kates 2011).

Country life reformers urged farmers to pursue more than a subsistence way of farming. Rural communities were gradually beginning to improve; families could now survive winter and pay the mortgage. As conditions improved for rural families beautification efforts could be considered. Landscape architects were now in a position to be consulted and engage in work throughout rural regions. The typical rural family would have likely been exposed to such work by means of the farm press, circulars, and extension publications. The handful of landscape architects that took an interest in rural beautification efforts unsurprisingly resided in the academic realm at land-grant institutions. Landscape architects along with country life reformers aided in beatification efforts that aimed to communicate prosperity, community, celebrate hard work and patriotism. Reformers saw theses efforts as a way to ensure the continuation of an agrarian ideology that has long been a part of our nations perception.

One value in investigating historic works of landscape architects during the era of rural reform though primary sources is the practicality of the publications. Publications were prescriptive in nature, often having two components; detailed writing and plan graphics (Figure 4). Both were intended to assist the common farmer. The works of Frank A. Waugh and Wilhelm Miller are informative, both were involved in the rural countryside and in academia at land-grant
universities. Wilhelm Miller was involved in landscape horticulture at the University of Illinois. The university for a few short years had an extension service that offered design and planning services to state residents. Miller was appointed the head of the division of Landscape Extension in 1914 and expanded the University of Illinois services (Haswell 1995).

Though the work of landscape architects in the countryside was not as grand or as well documented as the great projects they pursued in the cities, several saw importance of improving the countryside. Waugh and Miller focused on rural improvement issues at various scales including individual farmstead planning, roadside vegetation planting, and community planning.

Waugh articulates the role of landscape architects in the countryside outlining responsibilities in the following passage:

The problems, once more, of arranging six or ten or twelve related buildings into the most compact and convenient group possible are essentially the problems of landscape architecture, and best results may be expected when the experienced planner is consulted. Such technically trained planners are available in some states through the college extension services; but the farmer who is improving an old farm or planning a new farmstead may well employ for himself a good professional landscape architects (1924:18).

This passage raises two important issues. First it situates the discipline of landscape architecture to partake in the planning of farmsteads and second it acknowledges the role land grant Extensions Service. Common threads can be seen in Waugh and Miller's publications. Both address issues like efficiency, tidiness, and thrift. Agrarian virtues that have fallen to the wayside as agriculture industrialized.
**Efficiency**

Waugh critiqued the many farmstead layouts he saw in the rural landscape and recognized the consequences of disorder (Figure 5). demonstrates the haphazard scattering of buildings in plan view. He warns that the placement of farm buildings “at one side or extreme corner of the farm is a very common and expensive fault”. A logical site arrangement should ensure it efficiency of the farm operations. Waugh identifies four site scale considerations that should have an influence on the distribution of farm buildings. The four are (1) water supply, (2) drainage, (3) aspect and protection, (4) outlook to the sun, the sky and the landscape (1914:143).

Waugh is careful not to overstep boundaries. Landscape architects are not explicitly educated in farm management. Waugh explains, “Much of this is founded, to be sure, more upon the principles of farm management than upon the principles of landscape architecture; but it is a fact which out to be universally acknowledged that rural improvement cannot travel far unless good farm management and taste pull together” (1914:145). By admitting to ignorance, and also realizing a need for collaboration Waugh frees himself and the discipline of landscape architecture to advise farmers on the layout of the farmsteads.
Miller notes the multifunctional use of windbreaks shelter livestock and crops but also if strategically placed to “screen unsightly objects” he questions, “Can’t you arrange your windbreak so that it will also act as a screen-hiding some barnyard, outbuilding, telephone wires, billboard, or advertisement-covered building?” (1914:5) Tidiness about the farmstead would also improve the value of the home.

Waugh notes that the “well-kept farm shows its prosperity” (Figure 7) and outlines for the reader four components to keep the farm clean and attractive: good farming, well-kept buildings, good livestock and attractive home grounds (Waugh 1924:75). Waugh calls attention to his friend R.J. Pearse, an Iowa landscape architect who, “has designed many good farmsteads, has sometimes provided in his plan for a show lot near the farm buildings and fronting ingratiatingly on the public road where the best cattle on the farm could be exhibited to the admiration of a discriminating public. This is a good idea” (1924:77). The idea of a ‘show lot’ fronting the public road is compelling because it so strongly coincides with the country life.
reformers' mission of rural uplift, prosperity, and pride in the rural way of life. In a conversation with Carol Cruse-Malony (daughter of previous landowner) the student homestead site originally had a five-acre pasture fronting the public road (Figure 8).

**Thrift**

Throughout Millers' publication, *The "Illinois Way" of Beautifying the Farm* there is a recurring proposition of thrifty interventions to improve farmstead grounds. Miller explains even humble renters can afford to screen the outhouse without cost and suggests transplanting native cucumber vine, wild grape or trumpet creeper that maybe harvested along the roadside. Other sections in the publication explain how ground can be improved at various price points beginning with, “what you can get for nothing”, “what you can get for ten dollars”, and “what you get for the price of a hog” the suggestions satisfy a diverse economic range (1914:27-28). The primary sources offer perspective and insight for the design of a contemporary student homestead. Through studying historic rural reform and beautification efforts one
identifies vernacular forms that were intended to function successfully at the human scale. The people who shaped the rural landscape bestow information about a way of life and commitment to the land.

Recalling this history is not a regression or nostalgic but an effort to reconsider an often overlooked history. Unable to resist the industrialization of agriculture, rural reform is often seen as a failure. Bowers explains some historians critique reform efforts for not being radical enough (1971:223). Today we continue to face many of the “deficiencies” listed in the Report on Country Life and also confront equally challenging issues like global climate change, food security and a dwindling fossil fuel reserve that our current agricultural system has become dependent on.

The renewed interest in small-scale sustainable agriculture systems suggests that reform efforts might deserve reconsideration. There is significant potential for new small-scale agricultural systems to be designed and for landscape architects to offer their expertise as Waugh and Miller were doing nearly a century ago. This time in search of new productive systems that might sustain a healthy population. Society in the fury of industrialization might not have been prepared for previous reform efforts. The resurgence of agrarianism has incredible potential because of the integrative nature agriculture, which encompasses diverse issues such as, public health, education, economic, community, ecology and food.

**Resurgence of Agrarianism**

A resurgence of agrarianism can be seen in the efforts like community gardening, food not lawns, increasing number of farmers markets, community supported agriculture ventures, and in the slow food movement. The United States Department of Agriculture reports “Farmers markets are an integral part of the urban/farm linkage and have continued to rise in popularity,
mostly due to the growing consumer interest in obtaining fresh products directly from the farm... As of mid-2010, there were 6,132 farmers markets operating throughout the U.S. This is a sixteen percent increase from 2009” (www.ams.usda.gov/AMSv1.0/FarmersMarkets). These trends are insisting our society restore the human scale component to our food system.

Problems with the industrial agriculture system are easily identified in the landscape. The system maximizes production at all costs relying on cheap energy to do so. Industrial agriculture has negative externalities with detrimental effects on culture, economy and the environment. Cheap processed calories at low prices can be connected to the countries health crisis. Industrial agriculture puts a strain on the energy supply using chemical fertilizers made from natural gas and pesticides made from petroleum, this then links to dead zones in the Gulf of Mexico and contaminated drinking water. Tilled fields that remain unvegetated are a direct link to soil erosion. In fact, “the United States loses 2 billion tons of topsoil a year to erosion. The Cost of that in pollution of waterways, silting of reservoirs and lost productivity – is $40 billion according the U.S. Department of Agriculture” (Sanders 2001:10). The Millennium Ecosystem Assessment concluded that agriculture is the “largest threat to biodiversity and ecosystem function of any single human activity” (Jackson 2010:186).

Several see the potential in turning to agrarianism Norman Wirzba explains, “Agrarianism is a compelling and coherent alternative to the modern industrial/technological/economic paradigm. It is not a throwback to a never-realized pastoral arcadia, or is it a caricatured, Luddite-inspired refusal to face the future. It is, rather, a deliberate and intentional way of living and thinking that takes seriously the failures and successes of the past as they have been realized in our engagement with the earth and with each other” (2003:3).

David Orr writes, “If agrarian values and practices are to play a meaningful role in
our future, the agrarian mind will need to be rediscovered, dusted off, and adapted to new circumstances…this rediscovery of agrarianism will not be a matter merely of reform or tinkering at the margins. It calls for a fundamental re-visioning of how we perceive our place in nature and how we provision ourselves with food, energy and materials” (2001:94). There is an opportunity for producers and consumers to find common ground and address important ethical, environmental and health issues related to production, distribution and consumption of food (Torjusen et al. 2001).

Reconciling Ties Between Landscape Architecture and Agriculture

Landscape architecture is embedded in agricultural education and the establishment of land-grant colleges in the United States. Two-thirds of the existing accredited landscape architecture programs including the University of Illinois began as agricultural colleges. Today less than half continue the agriculture association (Dawson 1983). It is no surprise that landscape architects have not aspired to be in the company of agriculture for quite some time. The divergence of the disciplines likely occurred as agriculture industrialized and Land-Grant universities partnering with agribusiness developed research agendas focused on efficiency. In pursuit of efficiency these institutions divorced agriculture of the human component. David Orr points out,

Our major educational institutions long ago joined the effort to industrialize, technologize and commercialize the world, the modern farm included. They provided the analytical tools and knowledge base for extractive economy and they are now complicit in the effort to build a global economy in which market forces enjoy nearly free rein. Can such institutions be transformed so as to create the intellectual and practical foundations for a better world, one that blends the best of agrarianism with the best of the industrial market system?(2001:99)
There is sustenance to be found in landscape architecture’s link to agriculture. Especially given pressing social, economic, political and environmental issues today like, food security, climate change, and post fossil fuel scenarios. Landscape architects could make incredible contribution in the agrarian arena once again and influence urban, peri-urban and the rural countryside. In the article *Agricultural Education and Landscape Architecture* the authors ask a similar question and contemplate the future discourse of the landscape architecture discipline, the authors state “Many of the problems of food, land, energy, water, and the management of these and other resources will be the focal point for many of the country’s land-grant universities. It is important for landscape architectural programs to develop a visible, vital, and vigorous partnership with those institutions” (Steiner and Brooks 1986:30).

It is evident that others see value the reconciling the severance between the agriculture and landscape architecture disciplines. This research suggests the landscape architecture discipline has something to gain if it reconsiders the company of agriculture. David Orr explains, “we will need instructive models of stainability, small enough to get our minds around but big enough to give us leverage at a larger scale”(2006). Orr is adamant and says higher education must play a role. This aligns with the vision for the Student Homestead; which will serve as an instructive model for the University of Illinois students and the community.
Agrarian Philosophers and the Aspiration for a Permanent Agriculture

There are significant ties between agrarian philosophers Liberty Hyde Bailey, Aldo Leopold, Wendell Berry and Wes Jackson. A shared aspiration that unites these agrarian thinkers is their hope for a permanent agriculture (Figure 9). The scholars also have a shared understanding that the care of the land is fundamental to ecological stewardship.

Both Bailey and Leopold have offered useful philosophies rooted in agrarianism that have transcended their time. Bailey ability to work within the institution and also be a critic was one of his strengths as an academic. Well ahead of his time, Bailey foresaw disheartening issues we face today like, enormous population growth, exploitation of soil, and increasing demand for healthy food. Bailey also acknowledged the need for self-sustaining methods of production.

…the population of the earth will tremendously increase in the century’s to come when the new lands have all been open to cultivation, and when thousands of millions of human beings occupy the earth, the demand for food will constitute a problem which we scarcely apprehend to-day. We shall then be obliged to develop self-sustaining methods of maintaining the producing-power of land. We think we have developed intensive and perfected systems of agriculture; but as a matter of fact, and speaking broadly, a permanent organized agriculture is yet unknown. (1911:194-195)
The passage implies there is research yet to be done in an attempt to secure a more permanent agricultural system.

Others have noticed the importance of Liberty Hyde Bailey’s work. Morgan and Peters explain “Liberty Hyde Bailey’s writings and life work represent an important attempt in North American agricultural history to articulate the principle of a new world view, and to develop and institutionalize support for an interwoven agricultural, education and political philosophy needed to facilitate a worldview shift (2006:444).

In 1949 Leopold prescribed his canonical Land Ethic, “A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.” (1949:262). Leopold’s Land Ethic continues to be reflected in current criticism of North American agriculture. A host of disciplines have embraced and continue to find inspiration in the Leopold’s work. The lineage of land ethic is embraced in the in works of contemporary agrarian philosophers Wendell Berry and Wes Jackson. Nuisances of permanency and an authentic settlement are expressed in Wendell Berry’s writing.

The overriding impulse of agrarianism is toward local adaptation of economies and cultures… At times and in places we later-day Americans may have come close to accomplishing this goal, and we have a few surviving examples, but it is generally true that we are much further from local adaptation now than we were fifty years ago. We never yet have developed stable, sustainable, locally adapted land-based economies... The possibility of an authentically settle country still lies ahead of us (2001:71).

Wes Jackson, renowned plant geneticist and founder of The Land Institute in Salina Kansas is working in a very real way on establishing a permanent agricultural system.

Researchers at The Land Institute are conducting research on perennial grain crops, breeding wheat with its perennial prairie ancestors. The expectation is to create a new agricultural system
that will function much like the natural ecosystem of a tall grass prairie. The perennial grains
would provide permanent vegetative cover, promote numerous “ecosystem services” and also
provide a harvestable product (Jackson 2010).

The works of these scholars informed the student homestead design in a subtle way. The
agrarian philosophers have articulated a concern for the land. In reading their work one senses
there is both beauty and resilience to be found in a properly cultivated landscape.
CHAPTER 3.
THEORETICAL CONTEXT

The design process began by considering the whole homestead site as a system. The proposed design demonstrates how the site might be programmed to function in a holistic way. Theoretical concepts such as general systems theory and principals form the disciplines of landscape ecology and agroecology provide a foundation for designing a student homestead. Both landscape ecology and agroecology are tied to general systems theory where holism is emphasized over reductionism. General systems theory has been adapted by many disciplines, as a result whole bodies of systems scholarship have developed (Ison, et al., 1997).

Landscape Ecology

Landscape ecology is the study of relationships between spatial patterns and ecological process on a many landscape scales and levels of organization (Wu 2006). Neveh explains, “A holistic theory of landscapes cannot be considered in isolation. It has to be based on a hierarchical systems view of the world, rooted in general systems theory.” (2000:300). The value of landscape ecology is its inclusiveness it often accounts for the socio cultural components. It is therefore in a unique position to inform design “Landscape ecology offers theories and methods for studying the relationships between spatial patterning and biophysical and socioeconomic processes. These relationships will not only help us better understand the interactions between urban form and function, but also can guide design and planning practices” (Wu 2008:45). Landscape architect Joan Nassaur best explains how landscape ecology informed this design thesis “The discipline of landscape ecology suggests how we can approach inventing new landscape that accommodate human need and also embody ecological function” (qtd. in Wiens
Agroecology

Agroecology provides a framework for conceptualizing agricultural systems at the landscape level. One definition specifically mentions design; agroecology is “the application of ecology to the design and management of sustainable agroecosystems. A whole-systems approach to agriculture and food systems development based on traditional knowledge, alternative agriculture and local food systems experience. Linking ecology, culture, economics and society to sustain agricultural production, healthy environments and viable food and farming systems.” (http://www.agroecology.org/). Agroecology has come to mean many things, early on, agroecology focused on the application of ecological concepts to the design and management of agroecosystems. In a more recent publication Francis and colleagues have expanded the term and explain agroecology is “an interdisciplinary field that explicitly addresses social, economic, and ecological factors associated with food systems. —The integrative study of the ecology of the entire food system, encompassing ecological, economic and social dimensions (2003:100). Agroecology has also come to encompass other fields like permaculture, ecoagriculture, agroforestry, biodynamic agriculture and organic agriculture.

A commonality landscape ecology and agroecology share is that they are integrative disciplines and are fitting and serve as a foundation in creating a vision for a student homestead. The success of the homestead site will ultimately rely on collaboration across disciplines on the University of Illinois campus. Collaboration will be pertinent to the maintenance of the student homestead site. It is also likely that the concepts from both disciplines become incorporated into the curriculum for students on the homestead site as the project develops.
Multifunctional Landscapes

In many ways landscape ecology and agroecology are tied to the over arching concept of multifunctional landscapes. While agroecology has been critiqued for its narrow focus on the field and plot scale the term has recently been broadened to consider the complexities of the entire food system (Francis et. al 2003). The discipline of agroecology long recognized that agriculture operates as a complex system and is multifunctional in nature.

A widely accepted definition of multifunctional agriculture comes from Organisation for Economic Co-operation and Development “Multifunctionality, or multifunctional agriculture are terms used to indicate generally that agriculture can produce various non-commodity outputs in addition to food.” Proponents of Multifunctional agriculture acknowledge that benefits other than food and fiber come from agriculture. The benefits are often not accounted for because it is difficult to determine a value for such services and amenities. Some benefits of multifunctional agriculture include cultural heritage, biological diversity, recreation and tourism, soil and water health, bioenergy, landscape, food quality and animal welfare (Wilson 2007).

Perhaps most compelling is envisioning the site as a multifunctional landscape. Lovell and colleagues have conducted work in Vermont developing a framework for evaluating agroecosystems (Lovell et al. 2007). Lovell explains, “The landscape multifunctionality model provides a structure for designing at the whole-farm scale considering cultural ecological and production functions. The landscape features can be intentionally designed into the landscape into the landscape and arranged to optimize the benefits they provide. The recognition of the value of cultural functions is important, and these might include visual quality, cultural heritage, historic preservation, artistic expression and recreation” (2007:330).
CHAPTER 4.
DESIGN AND SYNTHESIS

Integral Components on the Site

The conceptual diagram identifies four integral components on the homestead site: energy, water, livestock and food crops (Figure 10). The diagram aims to capture the functions and technologies that might take place on the homestead site. The designs endeavors begin by consider the whole homestead site as a system. Using agroecological principals. The design plans begin to demonstrate how the site might be programmed to function and align with important environmental, economic and social concerns.

An Integrated South Campus

It was first important to understand the site’s larger urban context. The map Identifies significant sites with agricultural ties on South campus (Figure 11). The sites might be catalyzed and enhanced by the Student Homestead. Each site might play active role or passive role offering participants a range of agricultural related activities. Mumford House has the strongest ties to northerly portion of campus and should serve as a welcome center, directing visitors to other destinations. The map should be flexible and continually evolving to incorporate newly proposed projects, as they become realities.

Figure 10. Depicted above is a diagram illustrating integral components on the homestead site: energy, water, livestock and food crops.
Figure 11. Depicted above is a map locating significant landmarks with agricultural ties on the University of Illinois campus in relation to the student homestead site. Source University of Illinois Campus Master Plan.

Figure 12. Depicted on left show a student unloading food waste from Ikenberry Commons into a manure spreader. Figure 13. Depicted on right shows student spreading food waste with a manure spreader.
Interrelationships

Interrelations are already beginning to establish. The existing composting collaboration on site between dining services and homestead offers a good example of how the homestead project by catalyze other symbiotic relationships on south campus (Figure 12 & 13). The existing collaboration between dining services and the Student Homestead site is a good example of how the homestead might catalyze various symbiotic relationships on south campus. Figure 14 depicts plausible interrelationships on University of Illinois South Campus.
Generative Historic Studies

Generative historic studies were conducted in order to understand vernacular forms in the landscape. The new scenario began by understanding the sites functionality throughout history by compiling historical aerial photographs. This historic homestead study involved gathering media of the era. A farmers’ bulletin from 1920 was revealing the bulletin addressed the design of a homestead relating to the position of the highway. With dwelling places aligned, the two images were super imposed; compellingly positions of barns and farmstead structures were quite similar (Figure 15). One can speculate as to whether the homesteaders were influenced by the media distributed at the time and the information dissemination from their land-grant neighbor.

Negotiating the Front Door

One design challenge was to negotiate the so-called “front door” of the Student Homestead. The location of the dormitory was a critical design decision. Windsor road is projected to become the future gateway to campus (Windsor Road Corridor Design Study: A Design Charrette, 2009). The initial inclination from the spring 2010 charrette results was to place the homestead in the Northeast corner on Windsor and First Street. However historically as homesteads expanded and added additional barns or building the logic would never have been to locate a building across a pond. This design proposes locating the dormitory on the high ground where the old dwelling place was located. The proposed position of the building might still serve its proposed role welcoming visitors to campus in this case from Neil Street (Figure 17).
Figure 17. Depicted above is an illustration of the student homestead from Neil Street.

Figure 18. Depicted above is proposed programming on site. Mushroom production and vermiculture operations serve as early economic ventures on site.
Program

The position of the dormitory allows the existing buildings to be reprogrammed on site. Decisions for program and repurposing of the existing structures stemmed from summer farm research. Two models surfaced with fitting program. 1.) Mushroom cultivation 2.) Vermiculture operation. These operations add resiliency to the site because they are not limited by seasonal change. Both operations provide marketable products that maybe sourced off campus or kept on campus. Mushroom cultivation would take place in the large barn, and vermiculture operation would take place in the small outbuilding (Figure 18). Other economic opportunities were explored with the intention of adding to the biological diversity and resilience of the agricultural system. In a study done on the feasibility of commercial maple syrup production in Illinois researchers found that maple syrup production might prove to be an economically viable agricultural enterprise (Buchheit et al. 2004). There is significant topographical relief in the north-east portion of the site; sugar maples (Acer saccharum) are located on the south-facing slope to promote sap flow in early spring. This fits with edible forest in the North East corner of the site. Finally the corncrib might be retrofit as a summer kitchen for canning and other processing.

Ecological Heritage

The Osage Orange tree (Maclura pomifera) is evidence of early settlement and the Midwest’s ecological heritage. Settlers planted the species for animal corrals and field hedges. The dense wood was useful to homesteaders for fence posts, wheel hubs and railroad ties because it was decay resistant. The species are often the most prominent species in windbreaks and shelterbelts. The monotype was often cut on a fifteen-year rotation. Fruit species often accompanied the Osage Orange to form a vegetative fence (Smith and Perino 1981).
Small Farm Tours

There are numerous examples and a scattering of sustainable farming practices across the Midwest (Figure 19). The farming operations for several reasons: first, in an effort to understand and return to a ‘human-scaled’ agricultural system and question whether it can be economically, ecologically and social viable. Secondly, because the types identified here have resilience to them. Resilience stems from the farms: operating year round, pursuing a craft, producing brandable products, and attracting a certain culture. These components act as a reinforcing mechanism demonstrating a capacity to be adapted to the homestead site and also economically viable.

A series of small-scale summer farm tours were attended in order to understand possible productive small-scale agricultural systems. A total of 1,500 miles were logged in seeking out human scaled production systems, which included small fruits, floriculture, livestock, dairy, vermiculture and mushroom operations. Many of the tours were organized through University
of Illinois Extension summer small farm tours program, one tour was through the Illinois Farm Beginnings Program and one Tour was independently sought out.

Figure 20. Depicted above is an illustration of a garden on the homestead site where agroecological principles like companion planting and integrated pest management might be explored.

Figure 21. Depicted above is an illustration of a floriculture operation that might generate a source of income.
Crop Rotations

The crop rotations would require two separate rotations of row crops to provide food for both students and livestock. The rotations were selected with the intention of supplying students’ diverse diets while also maintaining ground cover and soil fertility. Adaptability and flexibility should be incorporated into the management system; the selection of crop rotations should ultimately rely on the expertise of a farm manager.

The first five-year rotation on 1 1/4 acre plots would include an open-pollinated corn variety with a late-season seeding to forage turnips and rye, a food grade-soy crop, a hard-red winter wheat (grown for bread products) and finally, an oat/hairy vetch cover crop (grown for ground cover and nitrogen). The second four-year rotation on 1 acre plots would include oats...
with buckwheat (following in the same year), dry beans, soft red winter wheat with red clover (frost seeded), and sunflower with an inter planting of forage turnips. A small fruit patch with dwarf resilient cultivars adapted to Illinois could also be planted.

An intensive grazing system might be practiced with both warm and cool season grasses. The animals that will provide the food for the cohort of twenty students include a Milking Devon cow for milk (offspring providing a source of beef), Icelandic ram plus three sheep for milk and cheese (offspring meat source), and a Kune Kune boar plus two sows bred for pork.

The integration theme gets carried though with the incorporation of energy crops that might be used on site as well as demonstration showing interested visors how these technologies might be scaled to their own site (Figure 22).
Figure 24. Depicted above is the schematic plan for the student homestead site.
The value of the proposed plan is that it accommodates a contemporary Land-Grant mission. Participating students are able to explore the productive capacity of a campus landscape at a new scale. The functionality of the student homestead site contrasts the manicured, collegiate campus aesthetic and the industrial scale, agribusiness driven research on much of the south farm. Put simply it is middle ground. Inhabitants and community members alike are able to participate in a well-cultivated landscape, one that is designed to thrive at the human scale. A contemporary land grant vision is necessary. Enthusiasm for applied research has been part of the University of Illinois academic culture since the universities inception. It is evident in esteemed campus landmarks like the Morrow Plots and Round Barns. The historic campus landmarks celebrate academic achievement and technological advancement. In much the same way the one would hope the student homestead would achieve such significance.

The design proposal offers space for applied research to be conducted in hope of continued advancement in sustainable agriculture techniques. The University of Illinois has the opportunity to be a vanguard of sustainable agriculture research and education. Ideally the site would serve as a regional resource. Demonstration and outreach activities would occur on site, echoing early Land-Grant legislation. Yet making it applicable to a contemporary Land-Grant mission.

Furthermore, the site differs in operation for a typical experiment station on a Land-Grant campus because it has inhabitants. The student homestead is intended to operate as a living-learning laboratory where inhabitants interact with the landscape daily. There would be a strong dependency on community and is designed for function as a cooperative model. The
operation clearly contrasts the family structure of a homestead in the 1800’s. Where the success
vitality depended on the structure of the family. The intensity with which the site is programmed
necessitates a more cooperative approach to agricultural production. This scale of production is
particularly suitable for the rural, urban fringe territory as there is easy access to markets.

Figure 25. Depicted above is an illustration of the multifunctional nature of the student homestead site, the design
offers space for recreation, education, habitat, demonstration and experimentation and more.
REFERENCES


38


The Hatch Act. 1887, U.S. Statutes at Large, 24:440 (1887)

The Morrill Act. of 1862, U.S. Statutes at Large, 12:503 (1862)

The Smith Leaver Act. 1914, U.S. Statutes at Large, 38:79 (1914)


