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Brownfield Cultivation: Converting a Brownfield Site into an Eco-village

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Introduction

Along oneUniversity of Idaho's beautiful highways and river systems lies an extinct sawmill owned by Producer's Lumber Company, casually known as the Barber Mill Town. Once a riparian marvel of nature, this area comprised of forty acres of wetland, desert, and riparian habitat has been completely bulldozed and destroyed throughout the successful operations of the sawmill days of 1910.

Today it is another historic footprint becoming threatened by new residential growth from a population explosion occurring in the young city of Boise, Idaho. With this expansion comes new growth, and with the use of conventional development comes the depletion of more land resources. By cultivating land that has already been disturbed by human populations, existing land resources can be conserved for the use of agriculture and natural systems.

Solution

1,500,000 acres of farmland, riparian zones, and industrial zones such as an abandoned sawmill are being converted each year in the United States. The renewal of the brownfield industrial site would provide residential housing for on-site working farms. The farms would include aquaculture, an orchard, and a tree nursery. The new development would be restricted to the boundaries of the brownfield allowing the native environments and existing conditions on the site to prevail.

While conventional development aims to deplete more land resources this solution aims to conserve our precious land resources for the production of food and open native habitat. The empty voids within and on the edge of our cities must first be filled in before we decide to move on and develop our greenfields.

History of Barberton

The site has experienced two phases of civilization. Shoshoni Native Americans were the first to settle and make this area a permanent campsite. The Shoshoni took advantage of the abundant natural resources of the Boise River and the Hot Springs while living their nomadic lives following rivers and streams hunting and gathering living off nature's interest. The Boise Shoshoni tribe of the "Snakes" utilized this site as a trading post and winter home due to its mild climate. The "Snakes" migrated through most of Central Idaho but spent most of their winters here on this site along the lower Boise River.

Westward destiny arrived in 1850, the second phase of development. Over the next fifty years battles and various conflicts over ownership of land and land values were disputed between the Native Americans and the pioneering settlers of the region.

In 1905 the Barber Lumber Company of Wisconsin purchased 25,000 acres of timber twenty to forty miles upstream from the site and built a mill and a dam. A railroad was built to ease the shipping of the lumber from the forest to the mill in 1909, and in 1910 the town of Barberton was complete. The town included a hotel, town hall, store, post office, and seventy-five identical houses. The post office shortened the name from Barberton to Barber, which became a bustling enterprise and one of Idaho's largest mill towns.

The depression of 1934 hit and Barber changed from a bustling enterprise into an empty memory. The mill was dismantled and sold to Boise Cascade in Emmett, Idaho (sixty miles north of Boise) leaving an empty shell of a few buildings and scrap metal. After the depression, the Harris ranch family bought the site to raise cattle and horses. In 1950 the Harris Ranch re-established a small mill assembly. The larger mills of the region proved to be too much competition for its survival, so in 1919 the Harris Ranch returned all of their efforts to grazing livestock with a few ideas about profiting from Boise's exploding suburbia.

Present

The Harris Ranch is planning to develop the old Barber Mill town site and the surrounding region (1,700 acres) into a town the size of Eagle, Idaho with 3,500 homes, a golf course, and a commercial center the size of Boise Town Square Mall (one million square feet). Two new bridges spanning the Boise River are being proposed for development to ease the congestion of future automobile traffic and most of the existing roads have been planned to be widened. Public interests suggest the opposite

toward new development.

Over 158 articles have been written in the Idaho Statesman, the Boise newspaper, claiming that the general public advocates a different type of development disputing the conventional method. In summary, the public is interested in a development that includes mixed-income housing, pedestrian-friendly streets and pathways, a centralized community center which is clear of main roadways, parks for nature and sport activities, historic preservation (Barber Mill), and most of all open space.

New development due to the expansion of east Boise's city edge is submerging the site. Unseasoned high-income developments are replacing the riparian ecosystems of the Boise River. The abandoned sawmill site is slated to become a golf course erasing all signs of significant history. Plans have already been made to demolish the mill structure. The Boise River Greenbelt, which currently runs parallel to State Highway 21, reflects the worn-out conditions of the site. The Greenbelt has been separated from the river whose name it bears by the existing abandoned sawmill. It is unarguably the most boring portion of the Greenbelt due to its adjacency to the highway and disconnection from the river. The Greenbelt is also taking the back seat of the new development and is planned to be rerouted after most of the development has been completed, lacking any kind of coordination with the Harris Ranch development.

The existing dams, canals and ditches of the Boise River offer the area a rich agricultural potential. Many small businesses in the area rely on the river to support their livelihood. Livestock, alfalfa crops, a tree nursery, a fish farm, and a few orchards in the area would be displaced by this large-scale development. Although the flood irrigation systems are an inefficient method of irrigation many of them currently recharge the ground water supply. Taking the flood irrigation systems out for new development purposes, along with the demand for water by the new development could contribute to the depletion of the aquifer.

Although this is just another historic footprint of East Boise being threatened by human growth, a careful analysis needs to be made to ensure the proper protection of historical and natural entities. Three underlying values were explicitly conveyed in these articles: (1) Boise citizens are interested in preserving the historic remnants and cultural history of Barber Mill, (2) they are committed to preserving the native riparian habitat of the Boise River, and (3) they are concerned about the proposed new business developments (golf courses, strip malls, etc.), encouraging only those businesses that help to heal the environment

(promoting green community businesses in the area).

Concept

To some, the city is a prison without fences. A substantial number of people still dream of living in the wide-open spaces where they can raise their families on farms. The public interests of the environmentally concerned are looking forward to practical steps to preserve the resources of tomorrow. The values of society are evolving from the careless, energy consuming ethics of the Industrial Revolution to the imperative desire to design an energy conscious future that provides food and oxygen instead of waste and pollution. In our post-Industrial world a shared vision of sustainability is emerging, creating a revolutionary architectural research method.

The common goal is visionary, but real, because architecture affects communities and the environment. Memories of a wild and scenic America sweep through the minds of many people causing them to venture in recreating a utopian past of pristine landscapes. In a new development such as the proposed Harris Ranch development, how does one manage to fulfill the needs of human growth while repaying nature with human stewardship?

The first step is to support natural systems. Be fond of nature, leave it alone, and find ruined land to build on while restoring natural habitats. In order to develop and restore a brownfield site with its natural habitat, an architecture that is more suitable to supporting the land needs to be investigated. Ripping raw materials out of the earth is a brutal act, no matter what the end use is. But if we learn to build 500 and 1,000 year structures, changing only their interiors instead of constantly reshaping the land, the brutality, spread out over the ages, may be excusable.

The next step is to support the history of the community. Both farming and ranching have been the backbone of the region's community since the area was settled. A new leisure community has slowly taken precedence over the agricultural community. Therefore, new development has been exploding with housing for early-retired couples, the middle-aged wealthy, and the young with a fortunate inheritance. The farm and the fields of green are covered with this new community causing mass degradation of land and resources. It is plain to see that these endless tracts of suburbia are bound to failure. A community more identical to the self-sustaining community of old Barber would be an attractive alternative to the suburban condition producing an improved, place-specific design for the new community. The old mill town of Barber

combined with homeplace, workplace, select services, and amenities to support the continuance and growth of its community.

Today, the appeal of living where you work has been transforming thousands to create a home/office situation. Many home gardeners and the like strive for their chance to leave work and go home to spend time in their gardens. So why can't the farms remain, or even grow larger employing those who wish to live in a more rural setting, while providing an actual context of place for the new leisure community to live in? By recognizing that a large, skillfully designed and planned village alone does not satisfy the continuance and growth of a community. This project only attempts to create a small village development strategy (100 acres) of the enormous Harris Ranch development (1,700 acres). The final result should create a consensual village that feels like it grew over time, incorporating a mixed-use theme, instead of the application of many of our crude design templates , i.e., trailer parks, strip malls, bedroom communities, etc.

There is a precedent to the Barberton Eco-village. The Marin County Solar Village, while never built, incorporated an adaptive re-use scheme for Hamilton Air Force Base. In 1979 Peter Calthorpe and Sim Van der Ryn designed this alternative development to create a work-live situation for a new growth area near the edge of San Francisco. The scheme defeated the need to commute and included farms, a business park, cluster housing, and open space for public recreation and nature.

Master plan

The Brownfield site for the Barberton Eco-village proposal consists of forty acres and is surrounded by Greenfields. The new development of the village would be confined to the Brownfield site. The surrounding Greenfields would be left undeveloped with the exception of the excavation for the wetlands, the aquaculture pond, and a fishing facility coupled with nature trails offering recreational opportunities to the general public. The soil excavated to create the wetlands and aquaculture pond would be utilized as a building material for the residential structures and the community center.

The Boise River Greenbelt would be redirected to accommodate pedestrian circulation for the village. The new path would offer ample shade with native trees and vegetation offering the users of the Greenbelt refuge from the desert sun. The village site is located halfway between the city of Boise and the Luck Peak Recreation Area making it a prime location for retail opportunities. At the center of the village, a

community center would offer a market atmosphere to the users of the Greenbelt where one could buy various refreshments and food that is grown on-site. The center also offers a thermal comfort pool creating a relaxing social environment.

Three community businesses are incorporated in the Barberton Eco-village. Cutthroat and Rainbow trout, apples, peaches, pears, grapes, and native trees are raised to provide job opportunities for the village community. The orchards and aquaculture pond provide food and generate income for the village community. The tree nursery grows native trees for the new development and cultivated trees for the orchard.

The existing buildings on the site would be reused and salvaged as storage facilities for automobiles, campers, boats, farm equipment, etc. preserving the functional uses of the buildings. Utility infrastructure would be either buried or mounded with the native soils from the site allowing for not obstructions to block the view of the sky. The well-developed roads of the existing sawmill would be preserved offering automotive and pedestrian access within the village.

On the east and west edges of the Brownfield site lies the clustered, yet private, residential areas. Automobiles would be stored in the sawmill structures and boardwalks would extend to the residences allowing easy front and rear door access for the physically disabled. Overall, thirty units make up the residential areas. An additional ten units would be located above the retail shops offering a market style atmosphere for the people-loving individual.

Residential

Natural systems dictate this design. The residential design resembles the same principles as a potato cellar. By taking advantage of the flywheel effect of earth sheltering, the residences stay cool in the summer and warm in the winter. Embodied energy from the sun and geothermal heat from a nearby hot spring modify the microclimate of the residences for human comfort, allowing human culture to live off the natural renewable resources. Compressed earth blocks made from onsite soils that were excavated to create wetlands make up the massive thermal walls of the residential structures. Exterior rigid insulation creates a high quality wall system that performs well in all types of weather.

Xeroscaping of the land around the residential structures emphasizes the importance of water conservation and allows the little water that exists

on the site to be used for the production of food instead of wasting it on toxic green lawns. Native elm trees would be strategically placed around the residential structures to shade the passive solar oriented skylights and thermal mass when needed during the hot, arid summers. The elm also produces life-giving oxygen, consumes global warming carbon dioxide, provides moisture retention during long arid summers, controls erosion during an occasional gullywasher, offers wind protection, and directs air flow through a cross-ventilation scheme.

Aesthetically, the creation of a residential design that blends seamlessly into its environment is also a priority. The intention is for the users of the greenbelt to notice the natural systems and cultivated trees on the site before they notice the residential structures. This will serve to remind them what raw, undisturbed land looks like and the necessity for the production of food. Although to most a potato cellar would seem like a dark and dreary space, this design offers the opposite providing a pleasant space that is full of sunlight, dry and well-ventilated.

Community Center

Located along the Greenbelt and at the center of the village is the community center. Local goods from the community businesses would be sold in the retail shops located on the first floor, and ten modestly sized residential units are located on the second floor. Public restrooms and showers serve the wading facility at the center of the first floor. The radial design is centered on a wading pool that responds to the seasonal temperature conditions and human comfort. For example, in winter when it is ten degrees Fahrenheit the pool draws water from a nearby geothermal spring creating a 103 degree F. wading pool. In the summer, when the temperature is 93 degrees, creek water is mixed with the geothermal spring creating a 75 degree wading pool. The water is circulated in a counter-clockwise, or natural motion for the Northern Hemisphere, into a purifying system. This natural system contains a pool of algae eating fish and a cascading waterfall full of aquatic plant life and microorganisms. After the filtration process, the water is circulated to the two clusters of residences where radiant floor systems are utilized for heating and cooling systems, depending on the season. The large piano noble base is elevated four feet above grade because of the high water table and the remote possibility of flooding. The base is made of rammed earth and the massive eighteen-inch walls are made of compressed earth block. This earth material was also excavated on site. The roof of the complex collects drinking water for the villagers and users of the Greenbelt. The water is collected in cisterns located on the south side of the building. Solar panels located on the top of the cisterns

convert solar radiation into electricity for retail and residential use. A living screen of grapevines shades the complex during the summer. In the fall the grapes are harvested in celebration of a productive year. The removal of the fruit and leaves allows solar radiation to penetrate the screen and enter the complex supplementing the radiant floor system for winter heating purposes.

Conclusion

Living earth is becoming a rare sight with the paving of the planet fixation. When open space and agriculture become secondary uses to new growth patterns, something must be wrong regarding the sustainable use of our land resources. When thousands of acres of empty Brownfield sites are passed over by new development to destroy precious Greenfield sites, time will be the only factor that will determine the dreadful end result. To correct this dreadful form of land use we must make the connections that support natural systems. In order to accomplish this task we need to appreciate nature and leave it alone; find ruined land and restore natural habitats.

The ruins of human culture need to be recognized as well in our campaign to restore natural habitats. Preserving historic traces of human evolution supports our own existence as a species on Earth. Wiping out the past creates voids within societies. The potential re-use of historic structures can add value and a sense of place feeding our cultural memory of a specific site. Adaptive re-use saves building material usage and is one of the foremost methods of supporting sustainable new development.

Suburban sprawl spreading across the Treasure Valley causes enormous waste, frustration, and long-term costs by depleting land and resources. Dependency on the automobile intensifies the problem while increasing pollution, congestion, and social isolation. The Barberton Eco-village hopes to address these issues by offering an alternative form of development that (1) doesn't displace native habitat, (2) preserves the historic remnants of human culture, and (3) promotes green community businesses in the area. May we someday find an alternative development that resembles our wilderness and the permanence of ancient Rome. We must fill in the empty voids within and on the edges of our cities before we eradicate our cherished and endangered Greenfields.

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