Are We What We Eat? The Landscape of Beef: Feedlots and Fast Food in the Colorado Front Range

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Oh beautiful, for spacious skies,
For amber waves of grain,
For purple mountain majesties
Above the fruited plain!
America! America! God shed his grace on thee,
And crown thy good with brotherhood, from sea to shining sea.

Katherine Lee Bates (written in the Colorado Front Range, 1893)

The extensive economies of the industrial food system are the driving agent of change in the landscape across much of the western U.S. Through the scope and scale of the agribusiness enterprise, in some areas agricultural territory has become metropolitan without the preamble of first inhabitation as a suburb or bedroom community. The agricultural metropolis is a network of infrastructure-fed hotspots of global trade linked by interrelated support services crossing a matrix of employee habitat. It derives its morphology from the locally constructed infrastructure for external global economic networks and the desires of a rapidly increasing employee population for their home landscape. These industrialized agricultural landscapes overlay the aesthetics of the suburbs – in their domestic and employee service areas – on the economic operations of the city within the context of an agricultural terrain (Fig. 1.) The working agricultural landscape, which seems to be obliterated by the sprawl of the inserted settlement, is in fact the agent for its own demise.

Our ideation of landscape, and our comfort with those images, allows us to overlook the operative landscape of industrial agriculture. We imagine a landscape determined by the rugged individual but live in a landscape determined by the production and exchange systems of global corporations. We have lost the ability to discern the difference between the endless field and the farmstead. For settlers of new regional metropolitan communities agricultural land is something difficult to understand, that exists apart from their daily concrete existence, with no direct practical use for them. The meaning of these landscapes seems to almost hide in plain sight – as the abstraction of scale is reinforced by the distraction of experience in a moving vehicle. The sense of loss that accompanies the carpeting of fields with subdivisions is a false response, because the sprawl and the landscape consumed by it are the same phenomena falling under the auspices of industrial agriculture.

Nowhere are the rifts between the landscapes we value and the landscapes we live in more evident than in the western states. In Colorado's Front Range, the instability of boom and bust economies, the complex bureaucracy of Federal land management agencies, the

Fig. 1. New tract housing between Loveland and Greeley

innate drama of the scenic terrain, the complex ideology of frontier settlement and manifest destiny, astonishing metropolitan growth and dynamic natural/environmental networks converge. The unique physiographies of "the west", emblematic of limitless opportunities, are increasingly settled by communities whose inhabitants occupy territory without drawing direct sustenance from it. Where these territories are understood to be a globally significant food source this seems a strange way to live. An examination of the agricultural practices, and the qualities of the resulting landscape, in and around Greeley and Loveland, Colorado was undertaken with the ultimate objective to generate tactics for an urban and agricultural interweave that utilizes sustainable food system practices to embed growing communities in agricultural territory. The resulting landscape could make evident positive aspects of the prevailing landscape idea, while increasing the odds of sustaining complexly interrelated ecologies of urbanism and agriculture.

Background

Census statistics indicate that Greeley, in Weld County Colorado, with a growth rate of 26.5 percent, is the second fastest growing metropolitan area in the country for the period 2000 to 2005. Greeley's sudden burst to prominence appears to have been instigated, in part, by regional growth in the "middle players" of the beef industry: the suppliers of feed, chemicals and equipment, the packers and the marketing entities that support the industry between the grower and the consumer.[1] The City of Loveland (Larimer County), 10 miles to the west of Greeley on the Denver – Fort Collins metropolitan corridor of Route 25, was already booming with middle player activity in the 1990's. The two cities operate in a kind of symbiotic relationship. If Loveland is currently the corporate face of a global beef industry, then Greeley is the works, the scene of production. As such, it has the attendant utilitarian aesthetic of a site of production, as well as some of the less savory sensory phenomena associated with meatpacking. The Greeley plant, and its yards, contributes to a distinct odor of Greeley – an aroma that may have detracted from Greeley's residential development appeal in the 1990's. In addition to its discernable drawbacks, Greeley, unlike Loveland, exhibits some of the less appealing characteristics of industrial urban social territory. After union busting, it became necessary to hire, and subsequently house, imported Hispanic labor to perform dangerous and demeaning work in the plant. On the upside, new ethnic groups radically increased the diversity of the human population; on the other hand, a local labor underclass with the ensuing crimes of poverty and higher costs for social services tends to be an investor buzz-kill.

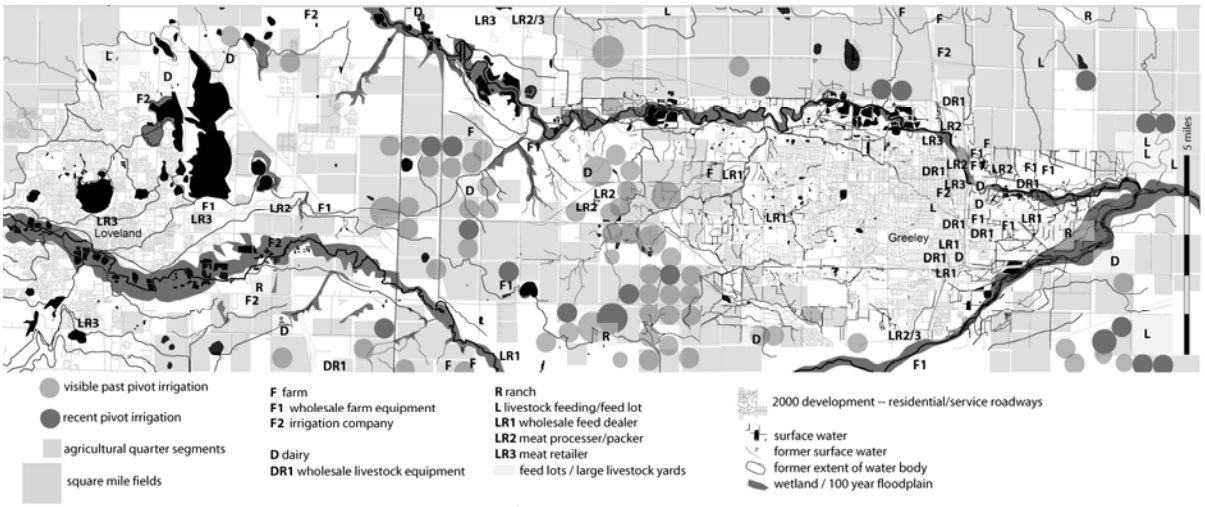

Fig. 2. The Landscape of Beef

Greeley and Loveland currently share operations of the Five Rivers Ranch, a joint venture between ContiBeef and Smithfield Beef Group that has become the largest cattle feeding operation in the world. It has a total capacity for 800,000 head of cattle on 10 feed lots in five states. The two feedlots near Greeley, Gilchrest and Kuner, fatten 180,000 head of cattle prior to slaughter at Greeley's Swift & Company beef plant. Five Rivers ranch headquarters is at Centerra, a mixed-use planned community in Loveland. Other significant middle players of the industrial food system permeate the corporate fabric of Loveland, such as Loveland Products, a global supplier of agrichemicals from fertilizers to herbicides. With the national–scale meatpacking headquarters, Greeley's retail economy remains, for the time being, more directly apparent as the landscape of beef. It is the local retail base for agricultural operations through farm and ranch equipment and material supply stores (Fig. 2.) When the projected development of new residential communities is plotted out[2], there will be no visible distinction between Greeley and Loveland. The two municipalities will merge in a continuous field of corporate management centers, retail malls and subdivisions.

Greeley was founded by Nathan Meeker, a former editor in the employ of Horace Greeley – as in "Go west young man!" – who intended to establish a community based on temperance and religion to be sustained by the technology of irrigation. The Union Colony of investors that Meeker organized selected the specific site of Greeley in 1869 primarily because of its location near the mouth of the Cache la Poudre River as it empties into the South Platte River. Greeley was incorporated in 1886, and by the 1920's civic-minded leadership and successful irrigation management propelled Greeley to regional cultural dominance and national-scale agricultural prominence. The primary crop was sugar beets – at the time called "white gold" – and Colorado supplied 25% of the nation's product. The Great Western Sugar Company factories were the early large-scale agricultural industry in Loveland and Greeley. One of the multiple uses of sugar beets was livestock feed. In addition to beets, farms and ranches produced a variety of other crops and livestock supportive of a local-scale food system. In the 1930's a Greeley rancher revolutionized the production of beef through establishment of a feedlot to control finish product and ensure a steady stream of cattle to an adjacent packing plant. This effectively adapted ranching practice to Taylorist industrial operations.

By the 1960's beef feeding and packing dominated the local economy. National changes in the beef industry – the technology and transport of boxed beef – led to shifting cattle feeding out of the corn belt and into cattle feeding areas of Colorado. Locating processing plants, for slaughtering and meatpacking, adjacent to the large-scale feeding operations was the next logical step to increase productivity.[3] As an indication of the dynamics of the scale of operational change, Greeley's original processing plant was absorbed by ConAgra, which by the 1990's,

was one of three companies that controlled 85% of North American beef production. Through a system of production reliant on agricultural chemicals, union busting and global marketing[4] ConAgra intensified the concentration, and magnified the scale, of the beef industrial process within a span of twenty years. In the new food system however, the intensity of operations in a specific location does not result in a corresponding intensity of connection to a specific location. The primacy of production for distance and durability[5] inherent to global marketing shifts the focus away from the field of operations and onto an abstract global territory – the meta-landscape of industrial agriculture.

The area's pioneers of dry land farming are retained as icons of American ingenuity, although successful water management was not simply a result of the hard labor of lone farmers. The increased land-values that were a result of the success of the sugar beet industry at the turn of the 20th century were a significant factor in federal investment in the Bureau of Reclamation's Big Thompson water project. Components of the project cover over 250 miles east to west over the Rockies, and 65 miles north to south. They comprise an elaborate Federal program to bring water from the Colorado River to the booming agricultural territory on the northern Front Range. The first survey was initiated in 1889; the most recent major project was completed in 1956. Unlike the Hoover dam – which announces itself with monumental scale – the Big Thompson diversion projects are situated ingeniously, or insidiously, in the landscape, as a series of lakes with invisible plumbing, and small dams along turbulent streams. The project's generation of subsidized hydroelectric power for the Front Range promoted the viability of ongoing large-scale industrial activities.

The landscape of beef

Sod Busting and Tilling:

Grain crop production for livestock feed is initiated by tilling the native perennial grasses under to plant a more controllable, annual, feed crop. Sod busting breaks the soil structure and opens it to processes of desiccation and oxidation, which deplete nutrients and essential soil biota. At Greeley, sandy soils respond by blowing away in dust devils, while clayey soils compact to form inert, oxygen-deprived masses. The humus-smell and rich color of soil fades to gray as water retention diminishes. Topsoil erosion in the Great Plains has decreased soil productivity by as much as 71 percent after sod-busting.[6] Despite conservation efforts, contour plowing and no-plow farming practices, topsoil is disappearing faster than it can be formed. Salinity afflicts local irrigated fields and can only be mitigated through flushing with large amounts of water. The living organisms of soil – as opposed to dirt or fill, which is inert – have been deprived of oxygen through compaction and extended periods of flooding, dehydrated by saline conditions, and seared by the chemical herbicides and pesticides necessary to control pests and weeds in the stressed conditions of mono-cropping. In order to retain productivity, these soils are augmented with chemical fixes to improve water retention, increase nutrient value and adjust pH. The soils underlying industrial agricultural fields are repositories of growth hormones, insecticides, herbicides and antibiotics applied directly to crops or carried in with manure from the local feedlots. These soils have more in common with the bionic man than the good earth.

Fig. 3. Cornfield near Greeley

Seeding and Weeding:

Uniformity is the key to scientific management of the beef production process. Consistent feed produces a consistent beef product. To attain this end, mile after mile of mono-cropped grains are planted across the plains landscape (Fig. 3.) Since the objective is to bulk feed a single animal a single-grain diet, the diversity of planted species across a region is radically diminished. Farmers have fewer risks with a single cash crop, and since they are growing for forage, they no longer distribute products to the local public. Harvests, with their associated social rituals, are meaningless. Agricultural fields extend away from the roads in alternating planes of brown fallow and green forage with little direct

meaning for those who live among them. Yet the monoculture in grid geometry presents the ideal modernist landscape form as it amplifies the sense of vast open space. Straight roads and level topography practically induce speed. Despite the impression of freedom, the minimal plain is difficult to sustain. Homogenous, engineered systems can be "brittle", susceptible to volatility.[7] The middle players in the agribusiness economy continue to develop new products in an effort to eliminate the variables of livestock feed production. Cloned and genetically modified seeds are marketed to farmers with the assertion that the risks associated with dry land agriculture can be further diminished. The wholesale planting of single-species seeds limits intra-species diversity. The global impacts of this practice are enormous. In India, for example 30,000 native varieties of rice are in the process of being replaced with one engineered species.[8] As engineered products and support chemicals take over the market, the knowledge base, passed on over generations, for locally adapted plant material vanishes. Successful agricultural practice becomes more about picking the right material from a catalogue than from closely observed understanding of a unique environment. Chemical treatments that alter ripening processes disrupt the local calendar of planting and harvest to accommodate the mechanics of the global food market. To an outsider, the idea of farming in no way corresponds with the actual practice. The fields are mysterious.

Watering:

Colorado uses approximately 90% of the 1.8 trillion gallons of water diverted annually on crop production. With two thirds of Colorado's income generated by livestock production, and Weld County being the top income-generating county in the state, the conflict between urban and agricultural water use comes down to cash. On a detailed map or aerial photograph water appears to surface everywhere around Greeley. There are small ditches, large ditches, agricultural ponds, reservoirs, lakes and two major rivers. The flow of both rivers is supplemented by Colorado River water via the Big Thompson Project. From the air, dry land farms appear moist, a patchwork of dark green rounds of active center-pivot fields and former irrigated rounds traced on the surface of fallow fields. Surge irrigation gives a magic carpet effect – there is no telling what made a particular rectangle rich and green. On the ground, the dryness of the land is more evident. Concrete and dirt-lined ditches define current and historic field edges, but they do not necessarily define the fields – the ditches are there whether the land is being farmed or not. Ditches, viewed across the banked right-of-way, are deep and narrow gutters running along tractor routes. They rarely seem to meet the fields. Water is pumped up from the levee-like structures; and the infrastructure to support the pumps – the oil rigs and tankers or the rare solar panel – is more striking than the appearance of water in dry land. This is plumbing, and the character of the actual rivers is not far removed.

The flow regime of the Cache la Poudre is dictated by timed release of water from a lakebed on the other side of the Rocky Mountains, not on the seasonal snowmelt of mountains visible in the distance. The altered flow regime – based on economic, not ecological cycles – disturbed the plants adapted to seasonal variation, and altered the soil conditions at the river edge. The new, apparently erratically flowing stream resembles, in many places, a messy ditch. There are stretches of river that have preserved or restored floodplain used as parkland. These areas are as impacted as the rest of the river by the mechanics, and contaminants, of industrial agriculture – but residents walk in the evening along concrete paths with the idea that they are in nature.

Feeding:

In an aerial photo, feedlots appear surreally monumental. The ground-level experience is powerful; thousands of head of cattle facing every direction – many looking right at you on the road as you pass – packed into yard-sized mud/excrement filled pens. At a feedlot, beef are topography. Subsidized corn has replaced sugar beets as the local feed crop. Corn disrupts bovine digestive processes necessitating treatment with antibiotics just to keep the cow alive. In an attempt to close a feed loop, corn is supplemented by feed made from the butchering-waste by products of other farmed animals.[9] Within the feedlot, this results in continuous noxious slurry of excrement that dries and becomes air borne. Feeders wet down cattle regularly to control

dust dangerous to humans and animals. A popular mechanism for this is an integrated fence-spray system. Runoff ponds collect, and try to control liquid waste seepage rates into groundwater. Manure management is a monumental task. Feedlots would prefer a closed loop system that utilizes manure as fertilizer for associated fodder, but the logistics of applying the truckloads of nitrogen-loaded material to even industrial-scale fields are usually overwhelming. The manure has to be removed and processed off-site.

Management, Marketing, Merchandising:

The corporate service developments of Loveland are an overlay on the industrial landscape; they have no infrastructural identity separate from it. The trappings of the middle landscape subvert the image of the industrial landscape and in the process sever the connection of the inhabitants to the territory in which they live. This is the endgame in the current projections for the merged Greeley Loveland landscape.

Five miles from Loveland, near the Route 25 exit, grows Centerra, billing itself on its website as "a 3,000 acre state-of-the-art, multi-use development centrally located at the foot of the Rocky Mountains in Loveland, Colorado. Centerra's master-planned community ensures excellence in business and an exceptional quality of life...Discover the heart of Northern Colorado." So far this has played out in the landscape as: a mall for outlet and luxury goods; a mall of fast food and chain restaurants; a corporate office park, a series of residential subdivisions (5100 units) with vaguely rusticated "Rockies" style homes on a variety of lot sizes; and the promise of a High Plains Environmental Center. The development rhetoric takes advantage of the popularity of environmental issues and frames its product accordingly. The guiding principles are advertised as: "Heritage, Ecological Stewardship, Responsible Land Planning, Healthy Livable Community, Economic and Social Vitality, Neighborhoods of Lasting Value, Authentic Architecture, Environmentally-Responsive Building, Life-Long Learning".

Fig. 4. Former irrigation ditch at Centerra's retail mall entrance

A lot of environmental stewardship appears to be riding on the impact of a network of reservoir frontage trails, a building with environmental interpretive features, and a restored wetland. Despite the arid climate, there are no mechanisms for water management and retention. The development relies on municipal water fed by the Big Thompson Project through local water districts. Runoff is carried away through municipal sewer pipes instead of retained for aquifer infiltration or gray-water usage. Most of the riparian environmental habitat is remnant agricultural infrastructure, such as ditches and ponds. (Fig. 4.) These "amenities" – concrete-lined channels carrying brown runoff drifting with white foam – are part of the industrial agricultural infrastructure. They are not resonant of a wilderness, or even pastoral, heritage. What of the farms? The Master Plan reveals no legible vestige of the grid or any feature of an agricultural landscape. Some of the house-styles have a vaguely homestead appearance – but since they are immediately adjacent to another home, and not set within the operative yard of the farm complex, they bear no clear reference to any agricultural habits of living. The significance of the distant agricultural past is not erased however, a plaque on a recent sculpture of a farmer yoked with water buckets in a planted area adjacent to a mall offers:

> *This sculpture is meant to remind us, in an age of push-button mechanization, of the tremendous physical labor that was put forth by the men and women of the American frontier. They considered it their daily obligation to perform arduous tasks to achieve what we today would consider meager gains. This is particularly appropriate to this area of Colorado, in*

> *that dry land farming with irrigation was, and is, a way of life here.*
> Herb Mignery, Sculptor

Warehousing, Slaughter, Cutting and Boxing:

Dusty white buildings, thousands of white semi-trucks, hidden cows; the plant itself is fenced and locked down (Fig. 5.) The terminal acts of beef production take place behind closed doors. Inside the plant, line-speeds of 400 cattle per hour are killed and cut by workers wielding large knives. A third of the workforce annually suffers injury that requires medical attention beyond first aid. During one 18-month period, the Greeley ConAgra plant hired more than 5,000 different people to fill roughly 900 jobs.[10] ConAgra sold the Greeley meatpacking plant after the fall out from an E. coli incident. Swift & Company now operates the plant and advertises its proactive approach to beef safety, but the risks of the spread of fecal-based pathogens are endemic to the centralized beef industry. No blood runs on the public terrain, so a continuous stream of trucks on the roads becomes emblematic of beef processing. This, and the periodic foul odor that leaches over Greeley when the City is downwind.

Fast Food:

In the retail territory, the industrial agricultural economy generates its own markets as it expands. Fast food and chain restaurants reflect the dictum of distance and durability as they relate to boxed beef, but human organisms fail when "super-size" is a dominant condition of food consumption. Uniformity of a satisfactory experience is the objective. The marketing and fast food production operations engender a complete dissonance of product and process, from mass merchandising to the anonymity of sites of growth and production. The restaurant does not exist in a singular landscape: it is anywhere or everywhere at once. The post-industrial twist in this arena of production/consumption is in the transference of a local product to global merchandise. In the fast food terrain, the ranchers, cutters, farmers and management employees in the beef industry consume beef as a national commodity, not as a sustaining product of their own actions.

Another possible food system, another possible landscape

First, it has to be acknowledged that to reclaim the landscape of the Front Range, it will be necessary to transform the productive landscape of the food system. This does not mean that the scope of the transformation is outside the purview of the design profession. The working landscape is not un-designed, but terrain in which form is predominantly determined by economies; this could be said of most of our landscapes. The detachment of the public from agricultural territory, through reduced legibility, distancing of production processes from the communities in which they are situated, and restructuring environmental processes as a means to an end in production, has opened an abyss between the landscape Americans inhabit in their minds and the territory in which they live their lives. Communities cannot fight for restitution of a landscape they cannot recognize as lost. Demonizing the existing landscape of beef cannot instigate more sustainable practices; environmental rhetoric cannot overpower core ideas of American landscape that situate Americans as unique in their ability to adapt to the challenges of the territory – to make it productive – and a belief in their preordained

Fig. 5. Feedlots and the Swift & Company Plant

belonging to a land of unlimited richness. And while some of the more aggrandized behaviors that can result from a compelling sense of belonging to a divine place and its people are destructive, attachment to landscape is necessary for having a home.

It has proved pointless to castigate the beef industry; it is not pointless to support, through design – and design rhetoric – a landscape of better beef production. The current pop-cultural interest in all things "green" makes this an opportune moment for effective action. Organic products have already captured the popular imagination. Even Wal-Mart has reaped the benefits of looking good, while making more money for encouraging sustainable land practices. Progress at the consumer end of the economy is a reflection of successes at the production end – although at this point the global scope of industrial beef far outweighs the number of farms, ranches and middle players that are exploring ways to reclaim a sustainable agricultural landscape. In order to change the food system, it will be necessary to reinvent land stewardship, which hinges on an intimate understanding-through-observation of a specific piece of land, and the unique interrelations of environmental processes active within it. The de-skilling of agricultural processes has diminished the role of farmers as guardians of their own land by encouraging reliance on government subsidies through programs which reward purchase of industrial food system products and not education of the practitioner. Agriculture is still a financially risky venture and loans are not generally given to try a new management technique that might make production processes more sustainable. Still, management intensive organic farming has gained a niche-market foothold and is growing.[11]

Holistic ranch land planning, based on the work of Alan Savory, is one example of an alternative approach to ecological management, outside the industrial beef-raising purview, currently practiced across the western states.[12] An alternative landscape of beef would not have brown expanses of open soil and skies darkened by vast amounts of dust in the wind. Intensive livestock management establishes a herding procedure that mimics native grassland grazing species, it has been proven to reduce off-farm inputs through making use of native perennial plant material. Use of perennial plants for forage or grazing increases bio-diversity and decreases problems typical with agricultural soils. Off-farm inputs to soil would be minimized through management. Planting diverse crops restores complexity to soil organisms and diminishes weeds and pests that easily gain a foothold to prey on a mono-crop. This would eliminate the need for many, if not all the chemicals used to control weeds. A dynamic and diverse visual feast of fields would replace the monotony of the fallow. Twelve-month grazing strategies eliminate the need for feedlots and recycle manure at a rate that allows absorption of nitrogen for plant nutrient uptake. The shocking territory of the feedlot could be eradicated, and replaced by the imagery of cattle grazing in a field with the same density, and having similar impact on the ecology of the field, as the American Bison. Seasonal rotation of supporting annual forage and cover crops creates a complex, changing array of vegetation usable for cold season livestock feeding and local marketing. This would restore a direct relationship of the public to the production process through purchase of local products. Local produce may not replace fast food, but it could have a more powerful presence than the chain restaurant through the social benefit of building community relationships at farmers markets.

Treating the water as a resource within the overall food system could mitigate the internal conflict over water within the industrial landscape between agriculture and urban usage. New water infrastructures would serve specific needs with specific types of water. In the corporate territory of the food system, runoff would be collected in retention ponds for distribution to the agricultural production territory. The vernacular of ditches could be retained, but re-designed to be a resource for the inhabitants of the beef landscape while improving water quality. Civic water infrastructure would permeate the beef landscape; it would be as significant in a retail mall as in a ditch in a field. This would also radically decrease water consumption of Federally subsidized water – use of the industrial scale for water retention might supplant the need for out of basin diversions and lead to the restoration of seasonal flow to regional streams. The ecology of the seasonal flood plain would be restored to the riparian image.

With careful management the production levels of the beef landscape could be retained and production costs lowered. Successful intensive range management practices require a higher than usual density of herds moving relatively quickly across a smaller acreage of land than is commonly used in the industrial beef process. Energy is put into strategic decision-making based on local conditions and direct labor, not an off-farm production site. The slower growth that would result from cutting into the growth of the middle players of the food system would not have an adverse impact on the region. Public concern for the transforming landscape has already led Loveland's planners to adopt "smart growth" strategies. Through realignment of the calendar of production to the seasonal calendar, legibility is restored to the landscape – which could in turn drive more public interest in the landscape process.

Less space can produce more. This debunks the critique that sustainability is not viable for the high productivity rates required to provide a global food supply. It can also lead to a reassessment of land ownership structure – coalitions that combine herds and share territories have been successful enterprises. Prioritizing closed loop-systems and efficiency over distance and durability, makes smaller farms more viable. This could lead to restoration of the connection between the two sides of the production landscape through proximity, and create a spatial condition that could restore agriculture and urb to a sustainable landscape continuum. The new landscape of beef might be worth living in.

Endnotes

1. Robert Gottlieb, *Environmentalism Unbound* (Cambridge: MIT Press, 2001) 190.

2. North Front Range Metropolitan Planning Organization, *Future Land Use Map*, Available Online, www.nfrmpo.org.

3. Gottlieb, *Environmentalism Unbound*, 195.

4. ibid.

5. ibid., 224.

6. Paul Hawken, Amory Lovins and L. Hunter Lovins, *Natural Capital* (New York: Little Brown, 1999) 204.

7. Hawken, Lovins and Lovins, *Natural Capital,* 197.

8. Hawken, Lovins and Lovins, *Natural Capital*, 194.

9. Eric Schlosser, *Fast Food Nation: The Dark Side of the All-American Meal* New York: Houghton Mifflin, 2001.

10. ibid.

11. Hawken, Lovins and Lovins, *Natural Capital*, 196.

12. Sam Bingham, *The Last Ranch* (New York: Pantheon, 1996)