The Meat You Haven't Met, Pt. 3

Rebecca Soja
WE MUST
MITIGATE
ADAPT

CARBON DIOXIDE
GENERATION

100 watt lightbulb burning for 20 days

1 kg of BEEF =

animal agriculture accounts for approx. 18% of annual greenhouse gas emissions that impact global climate change

60 60
2 oz cans of soda pop

18%
CATTLE DENSITY LEVELS
(# of cattle per county)

(data from 2007)

CATTLE TERRITORY

95,000,000
Cattle residing in the U.S.

32,500,000
Cattle slaughtered per year
CATTLE DENSITY LEVELS
(# of cattle per county)
(data from 2007)

- 20,000-500,000
- 8,000-19,999
- 2,000-7,999
- 0-1,999
- none

220 MILLION ACRES TOTAL

GROWING GRAIN FEEDS

- FEEDER CORN
  (animal feeds and ethanol, not human food)
  87 million

- SOYBEANS
  (< 2% used in human food)
  74 million

- ALFALFA HAY
  (requires fertilizers and replaces native vegetation)
  59 million

54:1 protein input to beef protein output

100,000 LITERS OF WATER FOR EVERY KG OF BEEF

SOIL EROSION

- Average soil loss of land producing grain feed crops:
  13 tons/hectare/year

- Average soil loss of pastureland for grazing:
  06 tons/hectare/year

- 54% of U.S. pasture land is severely overgrazed where erosion may exceed 100 tons

TOP 10 U.S. PRODUCE

- [asparagus, broccoli, carrots, cauliflower, celery, lettuce, honeydew melon, onions, sweet corn, tomatoes]

2,200 MILLION ACRES TOTAL

FOOD TO FEED

54% of SOY
47% of SOY
produced in the U.S. is consumed by livestock

60% of CORN

54%
of U.S. pasture land is severely overgrazed where erosion may exceed 100 tons

67% of land area of MT, WY, CO, NM, AZ, NV, UT, and ID is used for rangeland

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60% of CORN

54:1 protein input to beef protein output

RATIO

32,500,000 cattle slaughtered per year

95,000,000 cattle residing in the U.S.

100,000 liters of water for every KG of beef

shift from food to feed

feeder corn
(animal feeds and ethanol, not human food)

soybeans

alfalfa hay

requires fertilizers and replaces native vegetation

87 million

74 million

59 million

220 MILLION ACRES TOTAL

FOOD TO FEED
cattle are 'finished' on feedlot ranging from 4-10 months depending on initial weight, desired weight, feed quality, and feedlot conditions (from as early as 6 months old to as late as 22 months old)

WEIGHT GAIN & GRAIN FEED CORRELATIONS

2.5-4 LBS GAINED 6 LBS FEED POUND GAINED = 15-24 LBS TOTAL (PER STEER)

WEANING - balanced grain + protein diet; 'fresh' water

FEEDLOT STOCKERS & AUCTION

MATURE (slaughter weight)

1320
2010

100-60

OUT

60

BIGGER CATTLE
VERTICAL + HORIZONTAL INTEGRATION

U.S. CATTLE PRODUCTION

U.S. CATTLE PRODUCTION TOTALS (in millions)

AVERAGE NUMBER OF CATTLE PER OPERATION (actual)

FEWER & LARGER
VERTICAL + HORIZONTAL INTEGRATION

U.S. CATTLE PRODUCTION TOTALS (in millions)

AVERAGE NUMBER OF CATTLE PER OPERATION (actual)

NUMBER OF U.S. BEEF CATTLE OPERATIONS (in millions)

Market % of Fed Cattle

# of Cattle per Operation

- 80-90% >1,000 cattle
- 80% <100 cattle
- 5% >1,000 cattle

<1,000 cattle

100 < 1,000 cattle

51% of cow/calf producers

5% of weanling calves

15% of feedlot operators

2% of finished steers/heifers

10% of feedlot operators

9% of weanling calves

GENERATE 85% of feedlot operators

PRODUCE 2% of finished steers/heifers

9% of finished steers/heifers

85% of weanling calves

CO2NTRIBUITIONS

NUMBER OF U.S. BEEF CATTLE OPERATIONS (in millions)
Old McDonald

I'm so happy I could sing about my farm. It's nice to know that someone's looking out for us little guys.

#EIEIO #Beefville

Muscle Moe

My Mom always used to tell me to eat my vegetables, but now I know that eating meat every day will keep me healthy and energized to power me through my workouts.

#Beefville #powerfulPROTEIN #workit

Soccer Momma

Always on the go from one sporting event to the next. Finally a family dinner with some steak!

#Beefville #rare #tabletalk #nomnom

CarnivorUS

I just don't get vegetarians. People should eat meat.

#eatMEAT #chomp&chew #Beefville
want answers about the BEEF YOU’RE EATING?

from farm to fork

Beefville, U.S.A.
transparency tour

we’re HAPPY to give them to you.

learn more at:
www.beefvilleusa.com
BEefville, USA Transparency Tour

YOUR COMPLETE GUIDE TO THE
BEHIND THE SCENES EXPERIENCE OF
THE FAST FOOD + FEEDLOT COMBO!

January 2015 issue

information guide

100% BEEF

HEFTY HEIFERS
may the scales be ever in your favor

GRAIN FEED DIET TIPS
THE GAINS OF GRAINS

GET YOUR SHIT TOGETHER!
how to manage your waste

FARMLAND WORLD
GRAND OPENING
NEW RECORDS
for milk production
REBECCA SOJA
The Meat You Haven’t Met
Undergraduate Thesis
Syracuse University
School of Architecture

advisors:
Sekou Cooke
Terrance Goode
Sinead MacNamara

PRODUCED BY
BEEFVILLE, USA
corporation

printed by GREEN-WASH PUBLISHERS
“committed to improving your ecological hoofprint.”
THE MEAT YOU HAVEN’T MET

BEEF comes from cattle. Yet the meat we buy rarely reminds us of the animal that lived only days before its meat was butchered and packaged into steaks or patties we usually associate with the beef we eat. This is because we don’t witness or experience many of the hidden processes of raising, producing, slaughtering, and processing beef. Generally we know cows need to be killed, but we are unconscious of an intruding architecture and infrastructure that destroys natural landscapes, symbiotic relationships, and local communities in order to support such a sizeable industry. Additionally, we are not always willing to accept the truth. Agribusinesses refuse to acknowledge the serious ramifications of their decisions that may not only contribute to the devastation of vital communities and ecologies, but also paradoxically, their own demise. Unsustainable and detrimental procedures and attitudes that permeate our daily lives are upheld and persist. As a result, animals certainly suffer, but so do humans and the environment due to immediate causes and more distant, drawn-out externalities.

Very few of the current approaches to resolve problems challenge reoccurring themes. Instead of changing the food system or the proliferation of an excessive American/western diet at a foundational level, proposed remedies treat problems like setbacks instead of crises. Modernist and productivist attitudes devoid of emotion and geared towards economy, treat animals like mechanical components or commodity outputs at the end of highly industrialized processes. They conform and react to conditions of confinement or economies of scale for profit through manipulation and technology to achieve greater control over fickle nature. Ironically, this often creates more unforeseen problems to confront.

We consume food, but in reality, we have no idea where it comes from and consequently fail to grasp the lack of sustainability behind it all. We trust labels, corporations, media, and the internet to inform us of our consumption choices. An increasingly distanced relationship with food is heightened by misleading, deceptive words and imagery in advertisements and packaging. This distorts perceptions and capitalizes on disclosure and lack of public knowledge.

Built environments and geographies also contribute to this distancing. Currently, architects really only operate at the consumption end of a food chain, designing restaurants, grocery stores, or other programs where meat has already been processed and packaged. Agendas involve drawing in more customers by offering pleasurable experiences or clean, lovely settings that shape brand/company reputations. However, the more technical and gruesome phases of production are usually designed by engineers specifically for efficiency and economy. Architects are only engaging in a small conversation that is part of a much larger discussion that is full of unspoken stories. Architects are only engaging in a small conversation that is part of a much larger discussion that is full of unspoken stories. Architects are only engaging in a small conversation that is part of a much larger discussion that is full of unspoken stories.

This project asserts that architecture has the agency to expose the flaws and contradictions within the conventional, industrialized food system. However, the approach may not be what one would expect. Instead of trying to implement more sustainable practices or buildings, there is a very sarcastic and subversive tone guiding the work. The objective is to appear to continue masking or greenwashing these deplorable operations, but in fact these methods will create transparency through concealment by intervening within existing spaces.

Through a lens of contradiction, the project aims to evaluate how architecture currently contributes to a lack of transparency in beef production and the commodification of meat in order to propose how it may more effectively serve to increase transparency and create a foundation for food activism that will lead to sustainable alternative approaches.
The magazine of articles telling you EVERYTHING you need to know about the beef you eat.

This book is a compilation of the many contradictions of an industrialized beef industry that shapes our excessive cultural consumption of meat. Topics such as air quality, waste management, treatment of animals, or worker conditions are covered. Instead of presenting extensive research in a more straightforward book layout with chapters and photographs or diagrams, the magazine already begins to critique the exploitive nature of conventional food system tactics. One may have to sift through for certain information, but that's kind of the point. At first glance, illustrations, advertisements, and bolded text appear to be positive, encouraging the reader to eat meat without worry or concern. A graphic design template sets a tone of freshness, sustainability, and old-time values, perhaps words one would associate with a bucolic farm. However, upon further inspection, the body of the text reveals the hidden distasteful realities of the big beef industry providing people with cheap meat. This subtle sarcasm subversively undermines the system while seemingly supporting its continuation, serving as a metaphor of how industrial beef's unsustainable practices for profit are paradoxically symptoms of the industry's inevitable demise. This also sets a tone of sarcastic underpinnings driving the following phases of the project.

An annual report containing the company profile, statistics, and reviews of industry progress.

This book also inserts key research points through text, diagrams, and charts, but is formatted as a publication that profiles a fictional beef producer, Beefville, U.S.A. Corporation. It represents all beef production in the United States and serves as the foundation for the following phase which is to design a transparency tour of architectural interventions. Through greenwashing, the corporation strives to gain support from wary consumers and protesters in order to continue operating at a massive scale. Like in the magazine, myths of what the beef industry wants consumers to believe are juxtaposed with the reality. The first step is to present the benefits of conventional beef and the strides that have been made towards a sustainable future. The corporation must form a convincing image of trustworthiness, responsibility, and morals. Emphasis is placed on targeting notions of Americana—the hard-working cowboy or farmer, vast stretches of land with roaming cattle and rows of corn, or the convenient fast-food joint or the distinguished steakhouse restaurant that are romanticized aspects of American life. Also included is an overview of each of the seven determined phases of the beef food chain starting with cow-calf operations and ending with the steakhouse restaurant. In this documentation, architectural elements and spatial qualities are identified to later be manipulated or transformed as components of the transparency tour. Areas of intervention are suggested that will contribute to a revealing experience.

Brochures, advertisements, and maps promoting the Beefville, USA Transparency Tour.

Employing a strategy of transparency through concealment, which amplifies current industry marketing strategies to cover up flaws to subversively undermine the system, a sarcastic campaign of a transparency tour for the fictional corporation Beefville, U.S.A. is devised. A tour guide map and series of brochures advertise and promote the amusing and enlightening experience. This tour has the intention of gaining consumer loyalty and support for industrial beef by implying consumers will be more willing to buy beef products if they know more about how and where they are made. Perceived obstacles preventing transparency would deceptively be removed. In other words, it would be a greenwashing campaign that sets up an experience rooted in positive messages, but still conceals the complete truth. As the architect of this experience, the objective is to take on the task of creating a better corporate image to fulfill the primary requests of the corporation. However, this will be done with sarcastic interventions that through concealment, only amplify the problems because the experience is so outrageous and ridiculous no one would ever believe it. Ultimately, this design phase would critique existing conditions and methods in which architecture and geographies, when combined with politics and culture, enable the conventional food system. Therefore, this phase is all about exposing through designed scenarios and environments.
DISCOVER THE POWER OF PROTEIN IN THE LAND OF LEAN BEEF

It’s what’s for dinner.
FREEZE YOUR BEEF to lock in FRESHNESS
GASTRONOMIC AROMATICS
you can attract attention with powerfully pungent perfumes

ILLUMINATING LANDSCAPES
photographic exhibition of stunning aerial shots

BRINGING HOME THE BEEF
meet the muscles behind the meat packing industry

GOT MILK?
show off that milk mustache: milk production at all time high

HEFTY HEIFERS
find your feed and may the scales be ever in your favor

BON VOYAGE
beef cattle have the privilege to traverse the globe

GENERATION GENOME
calves growing up with superior DNA

CARE FREE LIVING
on the feedlot there’s no need to worry when you’re a cow

EATING TO BE EATEN
exclusive sneak peek preview of the Diary of Angus Beef

FARMLAND WORLD
announcing the opening of a new kind of entertainment

WASTE MANAGEMENT
too much shit to handle? never.

PUZZLES AND GAMES
spot the feedlot factory farm word search

FOOD FOR THOUGHT
additional resources to get you thinking
you can attract attention with powerfully pungent perfumes
The stench can be sensed in every direction for miles and airborne toxins can travel even further up to 300 miles away. Despite a drive for perpetual technological and social advancement, the overall atmosphere and air quality of CAFOs and slaughterhouses is perhaps one thing that hasn’t drastically changed as notably demonstrated in the description of the characters’ first exposure on the drive to the stockyards in Upton Sinclair’s 1906 novel The Jungle:

“A full hour before the party reached the city they had begun to note the perplexing changes in the atmosphere. It grew darker all the time, and upon the earth the grass seemed to grow less green... the landscape hideous and bare. And along with the thickening smoke they began to notice another circumstance, a strange, pungent odor. They were not sure that it was unpleasant, this odor; some might have called it sickening, but their taste in odors was not developed, and they were only sure that it was curious.... It was now no longer something far-off and faint, that you caught a in whiff; you could literally smell it..." The drive was coming to a halt, and the door was flung open, and a voice shouted- “Stockyards!”

Air pollution or contamination (in conjunction with greenhouse gas emissions contributing to global warming) is one of the most pressing issues caused by an industrialized and concentrated beef industry from one end of the food chain to the other. Although some gases give off rotten odors, air is otherwise something that goes unnoticed and is taken for granted. It is only when physical landscapes, felt climates, or personal health are noticeably altered that the impacts of invisible air become visible. There are several contributing sources:

1. Cattle Belching and Flatulence: Methane is produced by microbes and released through the animals’ noses and tailpipes during the enteric fermentation of ruminant digestion.

2. Excessive Amounts of Manure: Waste excreted by cattle on confined feedlots can not be cycled back through the system as fertilizer because it is too distant from feed production or exceeds needs. Instead manure is stored as liquid, solid, or slurry forms in lagoons, tanks, or pits. Decomposing manure emits 160 different gases with hydrogen sulfide being the most lethal and the most prevalent gases being ammonia, carbon dioxide, methane, and carbon monoxide.

3. Transportation: Tractor trailers, trucks, trains, and sea vessels carry feed and other inputs to factory farms, live animals to feedlots and slaughterhouses, and meat to distribution centers and/or retailers (stores and restaurants). Additionally, international imports or exports occur at a global scale.

4. Emissions From Deforestation & Overgrazed/Compacted/Eroded Soil: These practices increase nitrous oxide emissions due to pressures on the land from livestock for feed production (esp. corn and soybeans) and grazing. Global livestock production is the single largest user of land on the planet; this transformation of the land removes valuable carbon sinks that would help to offset emissions.

5. Widespread Overuse of Synthetic Fertilizers: For centuries, synthetic fertilizers have been used to grow crops, which in the beef industry means growing crops for animal feeds. Half of all energy used in intensive animal production is used during the production of feed from the manufacturing of fertilizers to the planting, harvesting, processing, and transportation of that feed.

(continue to pg. 09)
LIFE SHOULD SMELL DELICIOUS.

FANCIFUL FARMS fragrances

Each of our fragrances are carefully crafted to provide you with the aromas that bring you pleasure every day.
Animal agriculture is responsible for approximately 18% of total greenhouse gas emissions, but that number is on the rise. These gases contribute to global climate change. Although carbon dioxide is often blamed, other gases are much more harmful; methane has a Global Warming Potential (GWP) 23 times that of carbon dioxide and nitrous oxide has a GWP 300 times greater.

Global Warming has countless negative consequences with environmental, political, social, economic, and technological ramifications that are interconnected within the complex systems we have created to sustain our daily lives. For example, for the first time ever, drought in Australia has been scientifically linked to climate change. This impacts agriculture, which then impacts the meat industry that relies either on corn, soy, and other crops for animal feeds or the presence of healthy grasses in pastures for grazing. Beyond production, other sectors also become affected by issues like rising prices, food access and availability, or loss of jobs. This is a globalized problem that industrial economies of scale within beef production are both directly and indirectly contributing to and suffering from.

On another level, there are major impacts to human health, especially workers and residents of surrounding neighborhoods. Dangers to human health caused by contaminated air can include: respiratory problems (asthma, chronic bronchitis, acute respiratory distress syndrome), headaches, excessive coughing, and diarrhea or digestive disturbances. Mental health issues, like psychological disorders of anxiety or depression are also reportedly higher in these groups.

Furthermore, noxious and foul odors have social impacts on communal or personal identity, reduced social gatherings and enjoyment of outdoor spaces, or decreased property values. Often affected communities are low income and already have poor housing, education, infrastructure, and healthcare.

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Ongoing research and other technologies attempt to address and monitor air quality. For example, experiments are conducted to reduce cattle methane production such as adding garlic to their diet to attack methane-producing microbes, breeding cows that live longer with better digestive systems, or giving cows pills that trap gas in the rumen and convert it to glucose. Methane digesters/manure lagoons also try to capture some of the gases for use to generate heat and electricity. However none of these approaches fundamentally change the system or western diet foodways. They only react so that industrial production methods can continue even though the most sustainable solution would be to shift away from the current system entirely.

Overall there is poor regulation and inspections within the beef industry that need to be changed and enforced. Federal policies give CAFOs billions of taxpayer dollars to address pollution problems created by confining so many animals in small areas. If industrial beef operations actually had to pay fines or finance clean-up with their own money they wouldn't be so successful. Factory farms are industrial facilities and should be treated as such with permits, inspections, and responsibility for monitoring, cleaning up, and disposing their waste products.

Tackling air quality is a challenge because of its inherently silent existence. More transparency would inform the public of where CAFOs or related risks are and raise local government and citizen participation. At the least, the common person has the power of consumer choice. ©
show off that milk mustache: milk production at all time high
or about two centuries, trying to get more milk out of a cow has been the goal. When we obtain milk from a cow, we are tricking her into thinking she is feeding a calf. That’s nothing new in animal husbandry, but what is new is the use of machines and scientific technologies to maximize milk production on factory farms. Farmers didn’t have the tools to realize their cows’ full milking potential until well into the 20th century. In fact, these tools led to national milk surpluses. However no one could have predicted the ramifications to come less than a century later. At the time, the application of Mendelian genetics or the chemical analysis of milk seemed to offer a promising future with greater access to milk.

Female cows reach sexual maturity at 15 months and are ready for milking by 24 months when they give birth to their first calf. To keep the milk flowing, dairy cows must be impregnated once during the course of the year or a 365-day lactation period. Over half a century ago, farmers would have kept most milking cows for a dozen years after their first lactation, but today most Holstein dairy cows pump out milk for only 2-4 years before they are culled for cheap hamburger meat. The cows’ services simply aren’t needed anymore as new cows are brought in even though they may be healthy and capable of producing milk for another decade.

Fewer cows are producing more milk than ever. In 1950, there were 21 million milk cows in America producing a total 116 billion pounds of milk; in 2000, 9,000 milk cows produced 167 billion pounds of milk, a number which has steadily been rising to now 190 billion pounds per year. In short, the average yield per cow is about 2.5 times greater than it was 60 years ago. Between 1950-2000, the number of U.S. farms with dairy cows also dwindled from an astounding 3.65 million to a mere 105,000, all while the average number of cows per farm increased 15-fold.

These impressive statistics are the result of scientific applications and industry concentration. First, is the use of selective breeding for cow types that could convert more of what they ate into milk than towards maintaining their body weight. These cows require greater calorie intake, leading to the use of ‘high energy’ feeds made with subsidized corn and soy ingredients that also stimulated milk production. Later, conventional megadairies used genetically engineered artificial growth hormone rBGH
don’t settle for standardized GALLONS OF MILK SQUEEZE only what you need

FRESH FARMS GROCERY STORE

2%

$0.02 per ounce

weigh in at register

1%

whole
(recombinant bovine growth hormone) produced by Monsanto Company to boost milk output. The hormone was approved by the U.S. Food and Drug Administration in 1993. Clearly the genetic manipulation has been working. However, unlike beef, where putting ‘No Growth Hormones’ on a label can be an opportunity to raise prices for consumers who are willing to pay more for hormone-free meat, this is not the case for milk which is subsidized by the government. Thus, megadairies are at a huge advantage compared to smaller farm operations which supports consolidation and concentration within the industry. Unfortunately, these economies of scale also pollute air, contaminate water and soil, and jeopardize public health like any other CAFO.

Milking cows is repetitive, strenuous work for humans. With so many cows to manage (factory farms in California or Colorado can milk 15,000-18,000 cows) in industrial operations, this work is executed by computer-programmed electric milk machines that are hooked up to cows every 8-12 hours. The dairy industry consequently depends on these machines and the energy consumption that goes along with them.

Additionally, cows are treated like milk machines. The well-being of the cows and their natural behaviors are practically ignored to meet demands and gain profits. Grazing for larger herd sizes requires too much expensive land, so diets of grain-feed have become the norm. These feeds are enhanced with additives and antibiotics to prevent cows from getting sick by eating food their ruminant digestive systems weren’t designed to handle. Still, many cows still suffer from acidosis and laminitis. The cows get little to no exercise and eat regulated feeds rather than grass due to the efficiency of confinement. Living in such crowded, manufactured environments is not pleasant. Often cows walk on hard ground surfaces and rubber mats instead of soft soils. Often they also stand in their own wastes. They rarely go outside and have limited access to open-air areas. Maximized milk production is also very stressful. Many cows have calcium deficiencies, lameness, and compromised immune systems leading to contraction of diseases like mastitis (inflammation of the udder). It would be a miracle if cows in such conditions even survived past their up-to-6-year pre-determined expiration dates.

Sadly, with milk costing more to produce than it is sold for, farmers have to reduce production costs and optimize yields just to stay afloat or risk losing everything. It is also cheaper to distribute milk from Californian factory farms across the country for retail, than it is for local farmers to sell to consumers, making it nearly impossible for small-scale operations to compete. They have little choice but to adopt the techniques that cause more harm than good.

The alternative- rotational grazing on pastures with small herds that are genetically diverse, no use of antibiotics, hormones, or medicines seems like a fantasy now that the dream of optimal milk production has been realized.
calves growing up with superior DNA
THE FUTURE OF CATTLE BREEDING

There are at least 800 breeds of cattle worldwide, however certain breeds are rapidly dominating industrial dairy and beef operations to produce specific results. Traditionally, a diverse range of cattle were raised to meet various grazing or climatic conditions for the multi-purpose of producing meat, milk, labor, and leather. Today, with the specialization and concentration of dairy and beef production, certain breeds and genetic traits are selected to produce standardized commodities. Cows are intentionally engineered to lactate and yield milk, or to achieve a certain quality grade of meat. A CNN article comparing grass-fed and grain-fed beef also stated that the breed mattered as much as the feed when it came to factors of price, taste, and nutrition.

Specialization is a result of selective breeding and artificial insemination. Heifers kept in the herd will reach sexual maturity by the age of 15 months and are bred to deliver their first calves by the time they are 24 months old. A typical gestation period is 9 months; following the first calf, the cow is rebred after 2-3 months to deliver another calf for an ideal calving interval of 12 months. On average, cows will reproduce for an ideal calving interval of 12 months to deliver another calf between 2-3 years. The cows and bulls that remain in the herd are kept because of their favored genetic material that is expected to be passed down to offspring.

This is classified as selective or conventional breeding which capitalizes on basic biological processes.

Commonly, these cows are artificially inseminated, i.e. a bull’s semen with living sperm is collected and introduced into the female’s reproductive tract, which requires special instruments and skilled persons. Embryos from females can also be extracted and used in a similar way. This practice has its benefits including: better record keeping, increased conception, less risk of spreading genital diseases, ability to impregnate cows who refuse to mate at the time of oestrus, and the semen of old or deceased bulls or bulls with superior genetics from a completely different location can still be used. It also supports an industrial beef food chain that focuses solely on producing beef. However, advantages and greater control have impending costs.

Artificial is the opposite of natural. Cows are not given the option of whether they want to reproduce or not. They are tricked into thinking they are being aroused and every time a cow is milked, she thinks she is providing food for her calf. Cattle are social animals who form friendships and family bonds; given the choice, cows would have preferred partners with them, which reduces stress levels. Furthermore, these social connections are disregarded during conception and later on when calves are weaned from their depressed mothers.

‘Livestock Eugenics’ reduce gene pools. Intensive breeding creates only a few parental lineages with supposedly superior DNA dominating expansive family trees. There is a rapid trajectory towards lack of biodiversity as certain varieties are specifically bred. 80% of pure-bred dairy cows are Holstein, with only four other breeds (Jerseys, Ayrshires, Guernseys, and Brown Swiss) constituting virtually all of U.S. milking herds. Beef cattle breeds remain more diverse because of varying habitats and fluctuating market demands; yet still over 60% of beef cattle are either Angus, Hereford, or Simmental. Herds are becoming homogenized.

It’s incredible to think that there wouldn’t even be cows in America at all if Christopher Columbus or the first British settlers in Jamestown hadn’t brought the animals across the Atlantic Ocean with them. Without diversity, entire herds or groups of cattle become susceptible to diseases. Cattle are bred for longer lifespans; better digestive systems, more milk per lactation, more

(continue to pg. 17)