

**MANURE POLITICS:
MAKING SPACE FOR MODERN AGRICULTURE
IN THE LANDSCAPES OF EVERYDAY LIFE**

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ABSTRACT

Christopher Neubert: Manure Politics: Making Space for Modern Agriculture in the Landscapes of Everyday Life
(Under the direction of Sara H. Smith)

This thesis focuses on the presence of livestock waste in the Raccoon River watershed in northwest Iowa. In particular, I examine the liquefied mixture of feces and urine that pools underneath these animals in Concentrated Animal Feeding Operations (CAFOs) that is collected and then sold to local farmers. These farmers then use this waste as manure for spreading onto crop fields. The process through which hog waste re-enters the agricultural economy as “manure” relies on interwoven networks of power that continually produce the landscape and conceal the everyday, lived experience of this waste when it is spread near homes and communities. Relying on fieldwork completed in 2015, this thesis examines how seemingly small, bureaucratic interventions produce specific discourses that have spatial implications in everyday life and can change our understanding of waste, landscape, rurality, food, and farming.

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The idea for this project was formed in a hospital room in December 2014, when my mother was diagnosed with cancer and it became clear to me that I needed to be closer to home. She died just one month later before any of these ideas could be realized. She loved CCI, she loved my work in Iowa, she loved me, and I loved her. When I returned to Iowa last summer I drove to all my interviews in her old car. The thought of her presence comforted me even as I struggled to comprehend her terrible absence. The best honor I can imagine would be if some sense of her stubborn spirit and righteous rage against injustice is reflected in these pages.

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INTRODUCTION

Fifteen years ago, Elle and her husband Karl bought a small, two-acre homestead in rural Guthrie County, Iowa. Both Elle and Karl grew up on small farms, and though both now work in larger towns they missed the rural life. Elle especially wanted to live somewhere where she could be around animals. On the day I visited their small home on a long gravel road in early May, horses wandered around aimlessly, cats scattered to escape my car tires, and a peacock stood watch from his perch in a solitary tree. For Elle and Karl, this home was supposed to be the place where they could live the rest of their lives in relative comfort, where their grandkids might be able to experience a piece of the rural world they once lived. They invested all their savings into their home and settled into a quiet country life away from the city.

One morning, soon after they had moved in, Karl noticed their neighbors had begun clearing land, installing new utility poles, and putting up power lines. One call to the County revealed that their neighbor had received a permit to build a new kind of building to house 2,400 hogs – a Concentrated Animal Feeding Operation (CAFO) – less than a half mile from their home. That phone call led to others in a desperate search for help. The County told them it was too late, they had missed the permit notice in the paper, had lost their one opportunity to protest, and construction was underway. A local lawyer told them that for \$25,000 it might be possible to stall construction for a little while. Their misconceptions about CAFO construction – that neighbors had to be notified, that a process existed to ensure public input prior to construction, that separation distances would keep them sheltered – quickly dissolved.

Within months, the new CAFO was up and a few years after that, a new one was built, also less than a half mile away from Elle and Karl's home. Each CAFO was constructed above a concrete pit designed to collect the excrement that falls through the slatted floors over which the hogs live out their lives. This waste is regularly mixed with water to keep it in a liquid state. When the pits fill up – usually every six months or so – the putrid mixture is collected and distributed to nearby corn and soybean producers as manure. This manure is then spread on the fields, sometimes in combination with other chemical fertilizers. Corn and soybeans long ago surpassed other commodity crops as the most profitable per yield, and maximizing yields by any means possible has become the main objective for commodity growers in this area. The first CAFOs began to appear in Iowa in the late 1980s, but their popularity increased dramatically with the passage of laws in the early 90s that eased environmental regulations and established a bureaucratic framework through which CAFOs could be constructed and protected by the state from angry neighbors like Elle and Karl.

Elle and Karl's biggest concern was the stink produced by this mixture of feces, urine, water and other excreta. Many in the small town near their home told them to get used to this "smell of money." Their concerns were denigrated by politicians who told them "if you don't like it, move to a different state." The fields surrounding their home, up to the fence-line 100 feet from their back door, came to receive most of the manure from these two CAFOs. Eventually, the open pasture across the gravel road from their front door was plowed to make way for more corn fields, which also received manure. Elle and Karl's dreams of outdoor cookouts with the grandkids playing outside disappeared. They stopped fishing in the nearby creek, which runs green and frothy at certain times of the year, including the winter when it no longer freezes. Surrounded by feces-covered corn and soybean fields, Elle stopped nursing the injured wildlife

that wandered onto their property. There's really no place for them to go, but as she told me: "this isn't the farm life we were hoping for."

Both Elle and Karl grew up on small farms. They expected some smell when they moved to the rural countryside. But the regular spreading of manure on the fields near their home was unlike anything they'd experienced. They were stunned by the realization that in the years between their childhoods and their return to rural Iowa, "farming" had become completely unrecognizable to them. When I asked how they would explain the differences they've seen and lived, Karl simply replied, "It's not your grandfather's shit anymore." In a landscape dominated by discourses that claim Iowan farmers are simultaneously linked to traditional notions of family farming as they embrace modern technological efficiency, such crude statements pose a challenge to the politics behind the discourse. This politics is rooted in a moralistic vision – that Iowans must be allowed to "feed the world" – and, as I will show, these discourses have been an extremely powerful tool aiding the production of an industrializing landscape in rural Iowa today.

Sitting in their living room in May 2015, between squawks of peacocks and mews of kittens, I could hear the grunts and groans of hogs – a constant hum, one of the new markers of everyday life in the Raccoon River Watershed where they've made their home. The processes that have transformed the landscape are always present in everyday life in rural Iowa, usually as little more than background noise until they overwhelm the senses.

Less than an hour's drive to the northwest, in Sac County, IA, Ro tells me a very similar story. She and her husband Dean run a business from the small town near their rural farmstead. Their ties to the community stretch back further and deeper than Elle and Karl's. They moved to their current home in 1978 and maintained a small farm while running their business and raising

a family. Today they have mostly retired from the day-to-day operation of their business, and Ro spends much of her time protesting the construction of new CAFOs and working with local conservation groups to maintain a creek near her home. Her outspoken views on industrialized farming are well known in the community and she is a frequent presence at meetings of the County Board of Supervisors.

Several years ago, Dean suffered a heart attack and required long-term hospitalization in Des Moines. Ro spent most of her time with him, and on their return home they spotted stakes on the side of the road indicating new construction. Ro was livid – the stakes meant a CAFO had been permitted and construction was underway. Worse, once the stakes are in the ground it becomes nearly impossible to stop construction. She called supervisors who she thought she could trust and demanded an explanation. They pointed her to a notice printed in a local weekly paper which appeared when she and Dean were in Des Moines. “Well we just thought you’d see it,” the supervisor explained. Ro called other neighbors, demanded an explanation from the County Sanitarian, but found little support. “Nobody wants to walk up to you and say something about it,” she explained, “Later people said, ‘oh, we saw that. We wondered why you didn’t say anything...’ I think I could have stopped that one.”

Now, Ro and Dean have adjusted to life near a CAFO. Others have moved near their home since, and Ro pointed out three CAFOs that can be easily spotted from the end of her driveway. Like life at Elle and Karl’s home in Guthrie County, these CAFOs spread manure right up to the edge of Ro and Dean’s property line. The spreading can begin at any time, sometimes in the middle of the night, but any time Ro spots the “armies” of manure spreaders rolling down the gravel road she rushes to seal every window in their house. For several weeks after manure is spread, a trip outside requires a mad dash from the front door to the car. Even

then, Ro says, “I’ll be driving down the road and I’ll realize – my hair smells like hog shit.”

Depending on the time of year, the smell can be worse. In the winter, the sun shines all day and it melts, freezes, and then melts again. In the summer, a layer of warm air in the morning can trap manure particles close to the ground in an inversion effect similar to smog in larger cities. Ro worries about what the hydrogen sulfide and ammonia released into the air by the waste is doing to her husband’s health. Neighbors have written to her, telling her she should leave. She tells me, “I mean, maybe we should leave, but that would just break my heart.”

The transformations that have occurred on the land in and around the homes of Elle, Ro and others in rural Iowa are the most recent expressions of industrializing trends in agriculture since at least the beginning of the twentieth century. Particularly in the last three decades, complex state bureaucracies have emerged alongside new technologies of agricultural production, including the CAFO, but also larger tractors, manure spreaders, and genetically modified foods that populate the landscape. Thousands of hogs, cattle, and poultry are concentrated together to produce an animal population that far surpasses the human population in all of Iowa. The new technologies also produce new wastes, and the institutions participating in the industrialization of agriculture also work to manage the wastes that are produced – indeed to reclaim this waste and return it to the market as a new sort of quasi-commodity: liquid manure.

Because the concentrated waste of these animals produces such a sensory, bodily reaction in the humans who encounter it in and around their homes in rural Iowa, efforts to commoditized, transform, or otherwise eliminate it have led to tense political debates since at least the early 1990s. In general, the response of the state has been to support the efforts of livestock producers to give this waste value as “manure,” regardless of the actual benefits to the soil of any application of livestock waste. In the current livestock production process, when

liquefied waste reaches capacity in the pits below each CAFO, it is collected by the CAFO operators (who are not necessarily the owners of the livestock¹) and distributed to nearby crop farmers under pre-arranged agreements mandated by state law. These agreements are contractual obligations that vary significantly from CAFO to CAFO. Occasionally, crop growers will pay CAFO operators for this manure; however the details of these agreements are not always disclosed in required state documents. Thus, livestock excrement is imbued with value, though it is not exactly commoditized as is not bought or sold on an open market. Instead, interlocutors emerge to design Manure Management Plans (MMPs) and connect livestock producers to crop growers.

These relationships play a key role in the complicated and complex network of actors and institutions that form the Iowa agricultural apparatus of political and economic interests which are in turn influenced by dramatic changes occurring outside the borders of Iowa. The emergence of this apparatus will be discussed in detail in chapter two. In this apparatus, however, the material characteristics of excreted animal waste disappear in the discourse, a process I will discuss in chapter three. The waste then becomes implicated in the trend toward concentration: of animals in confinements, of manure in pits, of people who flee to cities and towns when this concentration via confinement fails to contain particles in the air, in the soil, in the water, and eventually in the home and body. The consequences and possibilities found in this material failure will be discussed in chapter five.

¹ “Vertical integration,” as it is known in Iowa and elsewhere, is the process by which large livestock corporations contract with independent CAFO operators. The corporations own the livestock and sometimes the buildings while the operators are responsible for raising the livestock to slaughter and maintaining the facilities. If the operator must also construct the CAFO they will often incur significant debt, but may increase their own potential profit long-term.

Outline of this Thesis

This project, then, seeks to recover what has been lost in the production of “manure,” a process that I argue is fundamental to the most recent transformations that have occurred in the Iowa landscape since the invention of CAFO space. Occasionally, I will give particular attention to hog waste given the crucial role that the hog industry has played in these transformations, and because of the uniquely onerous qualities of hog waste that is collected in confinement pits. This project explores how this waste of industrial agriculture is re-assigned value in the marketplace and the implications of that value on the socio-cultural landscape in rural Iowa. The answer to that question exists in understanding the state’s role in these processes of production (of “manure,” of a particular landscape, etc.) and its relationship to the representatives of capital and industry.

Chapter one begins with a review of the methods and methodological orientations that I employed in this project. This research is grounded in activist and materialist ethnographic methodologies, and I conducted the bulk of the field research over several months in the summer of 2015. It is also important to note that I have previously worked in rural Iowa as a community organizer and those experiences informed and shaped this project, both methodologically and analytically.

In chapter two I begin politicizing the history of manure management in Iowa, focusing on the apparatus of modern agriculture that emerged in roughly the last three decades in an attempt to concentrate, contain and transform waste into valuable manure. This history has roots that begin long before the introduction of CAFOs in Iowa, and will inevitably be an incomplete history of the actors and practices in the region. However, by relying as I do on the archives of activist organizations and the narratives of people who witnessed these transformations, I will

introduce a very different history of the transition to CAFO-style agriculture in Iowa following the farm crisis of the 1980s and the laws and regulations passed under the guise of environmental protections beginning in the 1990s and continuing today.

Throughout this history, I will be giving special attention to the representations of agriculture in the discourse that equate agricultural concentration with modernity. This discourse, in many ways, emerges as the element that holds these processes of transformation together. Resisting these changes then becomes fundamentally antiquarian, anti-progress, anti-modern, and thus un-Iowa and unsettlingly pro-hunger.

In chapter three, I then chart how this apparatus produces the landscape in its own modern image and the continued work this vision of modernity does today. From here I am able to deepen a theory of the operation of power in this landscape, examining interventions that produce the landscape to offer an alternative understanding of where that political history leaves us. Essentially, I argue that the long, gradual process of creating CAFO space by producing manure through these complex apparatuses simultaneously recreates the landscape through urbanization. Concepts such as rurality and nature dissolve as commodity crops intended for livestock feed or automotive fuel expand into previously uncultivated spaces, as the livestock fed by those crops is carried away by trucks fueled by those crops to the cities where they are slaughtered before being shipped to a global urbanizing elite. At the same time the waste of these animals that is not absorbed by the disintegrating soil washes off and enters the drinking water of urban centers downstream.

Chapter four then concludes this thesis by returning to a discussion of the materiality of the waste itself to reiterate the fundamental failure of these attempts at concentration because there of the life and liveliness present in the animals, manure, water, soils and air that flow,

mingle, intertwine and subvert boundaries and confinements. Here I turn toward how these changes in the Iowa landscape are experienced bodily through the odor the manure produces – as it collects in the CAFO itself, but more commonly when the collection pits are full and the manure must be spread onto nearby fields. This experience of waste tells an important story of how power networks in governmentality are enacted on the body; in other words, how this particular experience of waste is also an expression of the apparatus that emerges to regulate and confine hog waste. In this landscape, confinement is inextricably linked to modernity.

Confinement is a marker of technologies (of power) that are modern. And yet, this thesis is ultimately about the remainders that escape confinement, namely the livestock excretions that refuse attempts at commodification, spill over boundaries, and enter communities, lives, and bodies in varied ways. The apparatus is therefore flawed because it intends to contain the uncontainable. Perhaps the apparatus is flawed because rather than attempting to manage processes of concentration or urbanization, they work to reproduce the irreproducible.

Concluding with a return to materiality, then, works toward two aims – first to demonstrate that the problem of manure is about more than just its offensive odor, it is about the power it carries when it penetrates the most intimate spaces of the home and the body. This power leads to new everyday practices: attempts to avoid and adapt to the putrid matter that seeps in at night, that confronts you when you open the front door, that forces you in a mad sprint to your car, that you find in your hair on your way to work, that causes you to shut up your home from the outside in an attempt to secure your space. But as manure flows into streams, rivers, and air currents, so too can it penetrate the walls, windows and boundaries of the home. Thus, the second reason I choose to conclude with a return to materiality: to further open the

concepts of boundaries and space in an effort to craft a fuller understanding of the operations of state and capitalist power.

The Invention of the CAFO

In the early 1980s, when agricultural states across the United States faced a crisis unheard of since the Great Depression, prices on most crops and livestock fell to levels not seen in generations. The resultant hardship forced millions of farmers off the land – most due to debt and foreclosure. While prices would stabilize by the end of the decade and the agriculture economy would recover, the landscapes of these rural areas were forever altered. By the end of the 1980s, the smallholding family farmer was quickly being replaced by large-scale, corporate and industrialized factory farming. The social, economic and cultural consequences of the rapid depopulation and impoverishment during the “farm crisis” have been well documented (Murdock et al 1988; Foley 2015), as has the rise of new capitalist modes of production (Grey 2000; Mayda 2004). It was in this context that the CAFO began to emerge as the primary mode of livestock production.

While the farm crisis of the 1980s presented an opening for the rapid acceleration of CAFO construction, the transition from the hog barn of smallholding farmers to the large corporate CAFO was a gradual process represented in the changing architecture of livestock spaces. Mayda (2004) identifies the 1960s as a key period in the transition from simple structures intended to house only a few hogs to the massive confinement. Experiments were conducted (mostly at Purdue University, a public institution) that introduced open-front buildings, enclosed slatted-floored barns, and portable houses. These architectural shifts were in pursuit of the “most efficient way to raise pigs in confinement” – essentially to maximize weight gain of each hog for

the least cost in various stages of the production process. With the implementation of these changes, the required space per hog dropped, exercise was no longer considered important for the hog or sow, and the production process was separated into three stages to maximize efficiency: farrowing, nursing, and finishing, which correspond to the different types of CAFO buildings that exist today (Mayda 2004, 26).

While keeping pigs in these uniform, physically separated and distinct groups, the CAFO also produced technologies to fully manage the body of the pig. Animals are now kept within their age group and size range to maintain uniformity and efficiency. Breeding, for example, becomes the primary objective of the farrowing group, and artificial insemination is a common practice. Feeding is a fully mechanized process enabled by the development of automated self-feeders and waterers which give the hogs continuous access to food, maximize intake, and significantly reduce human labor costs: “no longer were hogs fed the garbage or leftovers of former years; in fact this became forbidden by CAFOs. Their diet was exacting,” including vitamins, minerals, and antibiotics (Mayda 2004, 29, 37). Thus the CAFO introduces several new borders, both conceptual and physical, between different groups of pig, between the pig and certain sources of food, and between the pig and the farmer or laborer.

By the 1990s, the CAFO was the clearly dominant space of hog production and the means of production of buildings and livestock had shifted from smallholders to “construction firms or large vertically-integrated, hog production companies” (Mayda 2004, 31). Hog housing became “standardized, uniform, and consistent” though this dominating process did not occur without significant resistance. Outrage was rampant as hog farmers transitioning to CAFO production “often alienated their neighbors over concerns of air and water quality” (Mayda 2004, 32). The growth of CAFOs nationally over the last half of the twentieth century coincided with a

sharp and significant decrease in the number of hog farms overall, and an increase in the number of hogs produced. In 1945, there were over 3 million hog farms producing around 46 million hogs across the United States. In 2002, there were just 75,000 hog farms remaining in the entire U.S., producing nearly 60 million hogs (Mayda 2004, 28). Thus the transformation of the hog economy was achieved through the production of the CAFO space, demanding replication to maximize efficiency.

Similar trends were occurring in Iowa. In 1980 in Iowa, 80,000 hog farms across Iowa produced an average of about 250 hogs per farm. By 2002, only 10,000 hog farms remained, with an average of 1,500 hogs per farm. Between 1974 and 2002, the greatest increases in average annual hog production per farm occurred between 1992 and 1997 (doubling from 400 hogs per farm to 800), and then again between 1997 and 2002 (from 800 hogs per farm to more than 1,500). In contrast, the average farm in 1974 produced about 200 hogs, and in 1982 only about 300 (Flora et al. 2007, 1-2). Thus, in less than a decade the hog economy of Iowa was fundamentally altered.

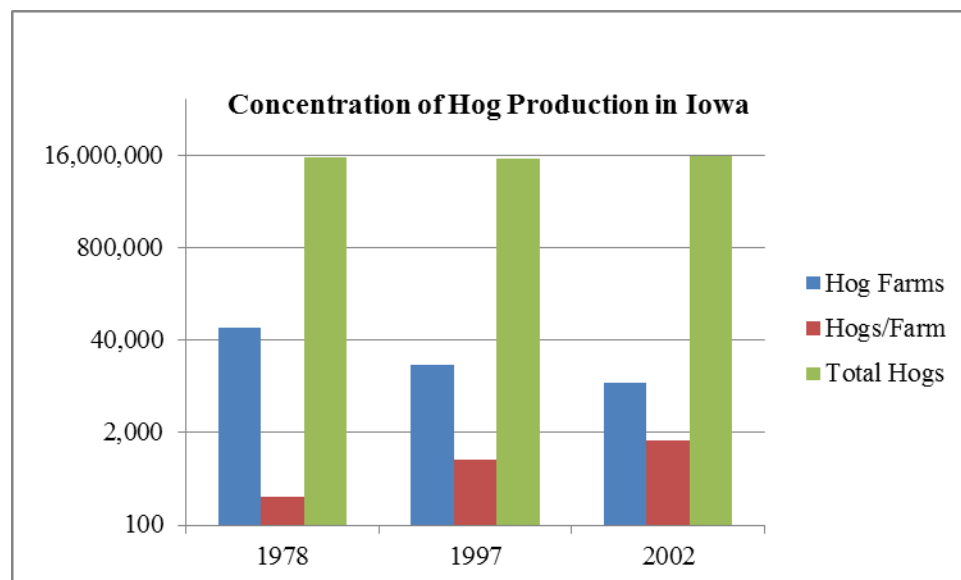


Figure 1. Concentration of Hog Production in Iowa (data source: Honeyman & Duffy 2006)

Waste management quickly became an issue for these new factory farms, engendering new spatial practices. Historically, waste had been used either as manure on fields or drained into nearby streams, but the increased concentration of hogs required new methods to dispose of unprecedented amounts of waste. The manure pit thus enters the architectural construction of the CAFO: “seldom discussed previously, [manure pits] were now so large that they needed to be managed. The pit became an important part of the hog housing structure.” The waste problem was becoming such an immediate and visible consequence of the CAFO construction that as early as 1969, U.S. Department of Agriculture warned that animal wastes could eventually “exceed wastes from any other segment of the industrial-domestic complex” (Mayda 2004, 27).

Despite these efforts to confine waste within the space of the CAFO, it exceeds its boundaries and also requires the domination over spaces beyond the CAFO: “land requirements for buildings were small, but more land was required to spread the manure from these intensive hog operations” (Mayda 2004, 33). This waste is spread across this land beyond the CAFO wherever these confinements exist (such use of waste is integral to hog production), and eventually this waste makes its way into watersheds. The problem of the dead zone in the Gulf of Mexico, for instance, has been well documented as a consequence of manure runoff from CAFOs (Spellman & Whiting 2006, 499).

Today, the CAFO has become the defining feature of the contemporary meat industry, unceasing in its concentration and intensification, constantly demanding “fewer but bigger farms or factories, with more specialization of feed and other inputs, and fewer farm workers” (Emel & Neo 2011, 68). This is certainly true in Iowa and elsewhere. Most of these CAFOs are operated under contract agreements, where “contract farmers” are essentially hired hands, offering land and expertise to larger corporations to construct CAFO buildings. Often, these contract farmers

go into significant debt to build these buildings – the corporation only offers the livestock to populate them. Under other arrangements, the contract farmer will assume the deed to the CAFO after several years have passed – but in every instance the corporation maintains complete ownership over the hog itself. Such is the economic logic of a Fordist regime, where a market demands “standardized meat” and “commodification and intensification are thus presented as a ‘natural’ development and essential for survival” (Emel & Neo 2011, 69-70).

The livestock sector globally now occupies 30 percent of the ice-free terrestrial surface of the planet, much of this through its connection to cropland for feed (Emel & Neo 2011, 70). In Iowa, this connection between cropland growing corn and soy for animal feed with the animals in turn providing fertilizer for the crop closes a cycle that appears entirely natural in its operation on the landscape.

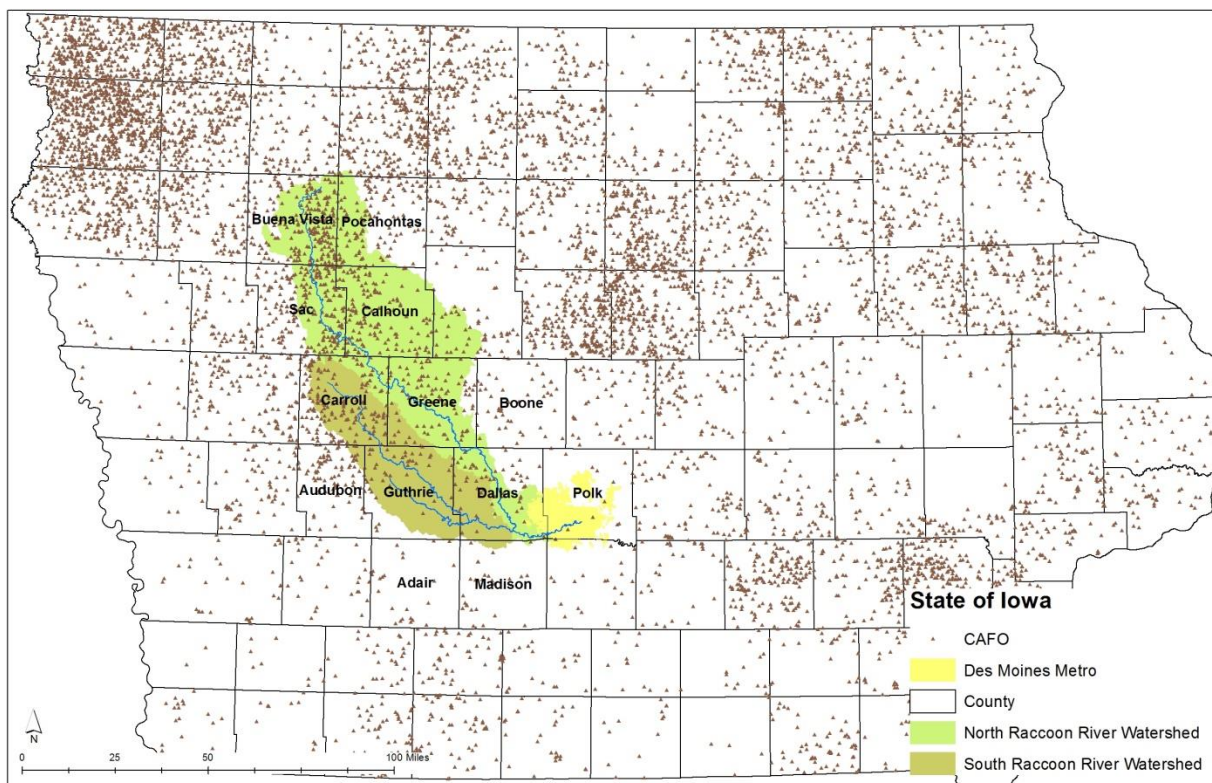


Figure 2. Map of Iowa featuring the North and South Raccoon River Watersheds, the Des Moines metro area and each CAFO in operation in 2015 (data source: Iowa DNR).

The Raccoon River and the Des Moines Lawsuit

Most of my research in the summer of 2015 was conducted in the watersheds of the North and South Raccoon rivers. As the map in figure 1 demonstrates, while the regions with the most concentration of CAFOs in Iowa are outside of the watershed, there are still a significant number of CAFOs operating close to rivers and streams that flow directly into the Raccoon River. This river is the primary source of drinking water for nearly a million people, most of whom live in the Des Moines metro area.

However, because of the tremendous transformations to the physical landscape of the Raccoon River watershed over the last century, namely the introduction of a widespread drainage system that made the land suitable for cultivation, pollutants such as nitrates enter the drinking water. This drainage system is essentially a series of large pipes (called “tiles”) that run deep underneath the ground, siphoning water from the surface directly into waterways. Before this region was cultivated, much of this watershed was a long, flat,



Figure 3. A typical drainage tile (source: Randy Schaetzl, Professor of Geography, Michigan State University)

swampy wetland – the site of the “Des Moines Lobe” of the Wisconsinian Glacier. These tiles made it possible to drain the water and prevent it from collecting again. When nitrates are applied to the surface as manure or chemical fertilizer they can also runoff into these tiles. It is then the responsibility of the Des Moines Water Works to run a denitrification facility at

tremendous cost to taxpayers in order to comply with the standards of the federal Safe Drinking Water Act. The problem, the Water Works contends, is that when it rains the liquefied mixture of livestock waste mixes with the water and runs off into these tiles. Thus in early 2015 the Water Works filed suit against several of these drainage districts in Sac, Pocahontas and Buena Vista counties, arguing that the drainage tiles themselves were “point-source polluters” and thus subject to regulation under the federal Clean Water Act (CWA).

This lawsuit immediately became a source of unprecedented political conflict in Iowa (even compared to the historically divisive politics of Iowa agriculture), with the director of the Des Moines Water Works, Bill Stowe, receiving death threats and the Governor of Iowa, Terry Branstad, publically declaring that “Des Moines has declared war on rural Iowa. When I interviewed Stowe in May 2015 about the lawsuit he said simply that they had “reached a point where talk without action is no longer acceptable from a public health standpoint, from an economic standpoint, from a leadership standpoint.” Nitrate levels were, he claimed, “alarmingly higher than we’ve seen in our history” and he placed the blame for those high levels directly with industrial agriculture. This lawsuit came at a time when activist groups like Iowa Citizens for Community Improvement (Iowa CCI) were organizing to stop a “surge” in CAFO construction across Iowa. CCI has been fighting CAFOs (“factory farms” to use their term) since the early 1990s through protests, legislation, and lawsuits, though victories had been few and far between. For them, an institution like the Des Moines Water Works led by a charismatic figure like Stowe represented a moment of significant possibility. If the lawsuit is successful, factory farms would have to be issued permits by the Environmental Protection Agency (EPA) to ensure compliance under the CWA.

The agricultural industry counters that it is already too regulated, that nitrates are a natural part of the soil, that excesses are caused by towns upriver or migrating geese, and that livestock waste from CAFO pits is a valuable and necessary product. Stowe counters that, for the city of Des Moines, “getting rid of [this waste] is the issue, not purchasing it or managing it under some economic model.” He also added, quite frankly, that he wasn’t buying the arguments coming from supporters of industrial agriculture, groups like the Iowa Farm Bureau, who claim that voluntary efforts were successfully cleaning water in the region: “In spite of all the pronouncements from folks in industrial ag, we’re not seeing any reduction, any hope, any sense that nitrate concentrations are being viewed seriously by the producers.”

But my project very quickly became less about the implications of the lawsuit and the potential changes it could bring about, and more focused on how such a situation came into existence. As it evolved, it also became much less about what happens to this waste when it appears in Des Moines and much more about what happens at the moment it exits the pit and is spread on fields throughout the watershed. To explain some of these transformations in the landscape, in chapter two I will look at how an apparatus has emerged composed of a complex network of actors and institutions which work together to produce an idea of agriculture that is modern and technological, while still linked to a nostalgic past even as vertical integration becomes economic reality. In trying to understand the relationship between apparatus and landscape, I also turn to questions in chapter three about discourse which I understand as something that people *do* – it is active, emergent, and practiced. This discourse appears not simply in political speeches or ads on television, but also in newspaper articles, emails, stories in a bar, photographs and other images, but this idea of agriculture that then emerges – as modern, technological, apolitical – has very real implications on the production of space and landscape as

they appear in everyday life. In chapter four, then, I return to the everyday, lived, material experience of this waste to emphasize that this problem is not just about changing definitions or introducing new regulation, but about the embodied practices that those definitions and regulations create.

CHAPTER 1: METHODOLOGY

Almost eight years ago, as a community organizer fresh out of college, I was sent to a rural Iowa town on a warm July day to help run my first public meeting. Our “target” for the evening was a young bureaucrat from the Iowa Department of Natural Resources (DNR) who was there to discuss with the fifty or so activists gathered at a local diner the implications of spreading liquid manure on frozen and snow covered ground. The activists wanted the DNR to completely ban the practice, citing the federal Clean Water Act and sharing stories of the manure-filled creeks that flowed near their homes every spring. The bureaucrat patiently explained the impossibility of such a ban without state legislative action, absolving the DNR of any responsibility for the practice while tactfully avoiding any acknowledgment that spreading manure on frozen ground was actually occurring. I sat in the corner and wondered when the exciting, less repulsive activism was going to begin – I had not signed up to listen to stories about shit fields in the winter. Had it not been for a massive, global financial crisis that was emerging around the same time, I likely would have left that job as soon as possible.

Instead I stuck with the organization and their members for four years, and my conversations began sharing similar themes: “Do you know what it means to spread manure on frozen ground?” I would demand in complete earnestness, “Do you know how dumb that is, to spread warm liquefied waste on top of snow and frozen soil?” I found myself increasingly intrigued by the question of how such a world, an entire reality, could have emerged where manure focused so prominently in political debates. How is it

possible, I would ask, that there are people out in this supposedly homogenous landscape of ‘rural Iowa’ who are confronted, every day, with the toxic odors, fumes, particulates and other matter that appear in their most intimate spaces without their consent? When I returned to Iowa in 2015 in the wake of the Des Moines Water Works lawsuit, this question began to seem much more important and is, essentially, the guiding question of this thesis.

In many ways, this research is motivated by my own experiences living, working, studying and organizing in Iowa for more than eight years. As an organizer at Iowa CCI, I was continually struck by the extraordinary mutual unintelligibility between the people I organized and the media, policymakers, and agribusiness interests who held so much power over decisions that would impact their everyday livelihoods. This unintelligibility was not, I maintain, due to a lack of intelligence or articulation on the part of the activists but rather the result of two very different and conflicting understandings of the Iowa landscape that have emerged with regard to agriculture in Iowa over the last few decades. One perspective, defined by a certain idea of technocratic objectivity, looks to the generally steady increase in livestock prices and agricultural products since the introduction of the CAFO and sees a healthy economy in a healthy state populated by healthy people. The other perspective is that of the small farmers who were recently marginalized, who either refused or were unable to transition to industrialized agriculture, and who now live in rural spaces surrounded by factory farm wastes and excess. It is in this second view of the rural Iowa landscape, and with those people, that I position my research.

This project was conducted using a variety of techniques that, together, form a sort of **discourse tracing**, building from a “critical and poststructural epistemology,” with an eye toward following power as it operates at “multiple levels of discourse, practice, and participant

voice” to understand how certain phenomena and policies have been created and transformed overtime. Ultimately, “such a method provides in-depth, thick descriptions of contextual and personal experience” (LeGreco & Tracy 2009, 1522). Given that this study explores a material object (livestock manure), which appears as an expression of power in everyday life, and the political implications of that materiality, discourse tracing is a fitting form of analysis. This also allowed me to include a variety of methods, such as interviews, observation, and archival analysis. A detailed discussion of these techniques and their use in this project follows a brief explanation of the methodological orientations in which this study is situated.

Activist Orientations

Working with activists does not mean that the knowledge produced in the course of this research is inherently “activist” – a project that actualizes activist goals must prioritize certain new objectives. Thus, in this research, I am seeking to make deliberate interventions with this project in line with the goals of social science as LeGreco and Tracy (2009) understand them, to “clarify and deliberate about the problems and risks we face and to outline how things may be done differently” (2009, 1537). Further, practicing activist research asks that the researcher identify their “deepest ethical-political convictions, and to let them drive the formulation of our research objectives” (Hale 2001, 14). Such research privileges “dialogue and collective work” in shaping research questions and objectives and encourages active participation at all levels of research (Hale 2001, 14). This is fully in line with a decolonial notion that knowledge emerges “out of sustained, critical dialogues with those who are the subjects of that knowledge” (Sangtin & Nagar 2006, xlv).

As such, an activist orientation to my research means that I privilege the voices of the people who have been marginalized by the most recent phase of industrial transformation in Iowa. Nagar (2002) outlines at least three questions that must be examined in such research. The first is the “question of accountability and the specific nature of our political commitments: who are we writing for, how, and why?” (2002, 179). In this project, I am accountable to the activists I have approached with the suggestion of collaborative possibilities, who expect that this research would contribute to efforts to improve their degraded landscape. These voices include farmers who have witnessed a remaking of the rural Iowa landscape in the last 30 years, live near and around the animal wastes that are applied to the croplands, and have theorized critical responses.

Nagar also raises the question of what it means to seriously engage and produce research collaboratively: “what does it mean to co-produce relevant knowledge across geographical, institutional, and/or cultural borders?” (2002, 179). For this project, collaboration emerges in my commitment to co-producing knowledge through my interviews and informal discussion groups. My interviews were structured very loosely. I reached out to my contacts before we met with a general list of topics that I wanted to discuss and looking back at my transcripts I am struck by how few questions I ever actually ask in ninety minutes of recording. Most often, my interviewees were people who were excited to talk and share their ideas about the changes they’ve seen in the Iowa landscape. For me, stepping in only to guide a conversation along and allowing my interviewees the time and space to talk on their terms – while certainly generating more work when the interviews were over – was the least exploitative way I could engage with them for this aspect of the project.

Of course, these interviews would not have been possible if I had not previously made my commitment to their concerns known. Several of my participants either knew that I had worked at CCI previously or had worked with me in that capacity. I had also, by that time, agreed to work on a collaborative project to map the fields receiving manure in several counties – a project that I document in the next chapter. In addition I was a frequent participant at protests and other events organized throughout the summer of 2015 where I would discuss my project with anyone interested. This participation was about more than fulfilling my obligations to participant-observation, it was about demonstrating my continued commitment to this community of activists and my willingness to also put my body in the struggle – in one case even donning a cow costume to protest at a gathering of presidential candidates.

Nagar's final question moves the researcher toward an "explicit interrogation of the structure of the academy... as well as our desire and ability to challenge and reshape those structures and values" (2002, 179). As a researcher with an activist orientation, I was regularly confronted with supposedly objective studies produced by institutions of higher learning that claim factory farms pose no harm to communities, and indeed are necessary to feed a growing global population. These institutions receive significant funding from agribusiness and produce research that reflects those ideologies. Of course, in the production of this type of knowledge the ideology is obscured and given an appearance of objectivity where none really exists. Still, that research produced with support from major donors often exercises more power than those knowledges produced by local peoples and activists. These conflicts between knowledges reappear constantly, and in chapter three I will discuss the work that "objective" science does in the

production of space. In the process, in using my own research to bring marginalized voices into the academy, my explicit objective is to speak back to these powerful dominating discourses.

To summarize this examination of activist research, I turn to the question of validation posed by Hale (2001), who asks: “Has the research produced knowledge that helps to resolve the problem, to guide some transformation, which formed part of the research objectives from the start? Is the knowledge useful? If so, to whom” (2001, 15). This question of validation serves for me as a final recognition that while research can be collaborative, can include non-dominant voices, and requires certain ethical and political commitments. It must also suggest some resolution. In other words, activist-oriented research must also be solutions-oriented. This is not the same as prescription. Rather, research under an activist orientation should point toward possible interventions. In a study like this, which analyzes the political forces that are producing space in the Raccoon River watershed, such interventions can emerge through the efforts to explain patterns and reveal the operations of power that are concealed by the discourse.

If a research is practicing collaboration, thoroughly incorporating marginalized voices, and engaging with these political commitments, then I believe the interventions can emerge. They are not always easy, they are sometimes reckless and seemingly impossible, but they can also be astonishingly clear and forthright. Throughout this thesis, I will then be looking for these opportunities for intervention, using the theories productively to explain patterns and undo some of the concealment that is such an important part of the dominating reality in Iowa today.

Materialist Orientations

In addition to an activist orientation, I am also pursuing a materialist methodology along the lines of “following the thing” as Ian Cook (2004) and other geographers concerned with materiality have articulated. I do so with the understanding that exploring social life through a

qualitative investigation of the things that make up everyday life can illuminate the “links and connections between objects that cannot speak, yet nevertheless bear messages” (Prior 1997, 77). In making those connections speak, certain powers that govern human relations are revealed. Such a methodology echoes Foucault’s archaeologies of things that investigate “the innumerable accidents and myriad twists and turns of human practice that have brought the text to its present form” (Prior 1997, 66). In this project, the “text” I am working with is the rural Iowa landscape itself, a “discourse materialized” in which messages have been normalized and naturalized as social and cultural practices to continually reproduce the discourse (Schein 2010, 225).

In the face of an ever more complex scientific understanding of the natural world, social scientists must be constantly concerned with how these materials-of-nature are part of the human production of the social world. How are technologies such as discipline and biopower utilized on bodies that can be understood as various configurations of cellular molecules or subatomic particles? Such a question at the very least demands that social scientists actively engage with this physical world of matter. Understanding how these material interactions then contribute to the production of given places, spaces, and societies forms the basis of material analyses. In the following examination of how materiality has emerged as a methodological practice in geography, Prior’s understanding of using Foucauldian methods as tools for examining and uncovering power is central to my understanding as well, and indeed complementary to my activist orientation.

Thus, I start with the question raised by Kirsch (2013) as the primary concern facing geographers engaging with materiality: how do insights from materialist geographies reflect back on our understanding of the production of society through

“materials in production, including the material and symbolic production of new objects, knowledges, and forms of life?” (440). To being answering this question, I work in this section to articulate a useful methodology that can thoroughly and thoughtfully examine the materials of everyday life in particular spaces and places. Such a methodology emerges from Tolia-Kelly (2004) and is picked up (among other studies) in an examination of everyday sustainability in long-distance Australian families by Klocker et al (2012). Their methodology begins with interviews exploring decisions made about material resources and their interactions with everyday, lived spaces. They focus these interviews on the values on which these decisions were based and the motivations for spatial and material distributions and arrangements. To supplement these interviews, they asked participants to guide them through their homes, discussing the “rhythms of everyday life... [which] triggered new topics of discussion, offering deeper insights into participants’ ways of living” (Klocker et al 2012, 2244). This materialist methodology focuses deeply on the everyday interactions between interviewees and the materials that inhabit the spaces of their lives. It is also a collaborative methodology, which asks participants to reflect on the materials of their everyday lives in ways that have not been considered before. Moreover, there is a larger contextual question at hand; in this case, it is the question of sustainability and the difficulties of maintaining sustainable practices over long distances.

Cook (2004) also represents a crucial employment of what could be called a deep materialist analysis, examining the connections formed through, within, and across space as humans buy, import, farm, pack, and consume papaya. In following “papaya” and its constituent materials as they physically moves in and out of spaces and places across the globe, Cook brilliantly traces the various points of intersection with various other actors and materials within the global market. His essay begins in Jamaica, with the production of the papaya itself – taking

care to describe the color of a ripe papaya, the height of the trees, the other materials created to remove papaya from the tree and move the fruit across distances. However, this is not a mere fetishization of papaya by any means. From his immediate grounding in the production of papaya as a commodity, he moves to a description of the everyday life of the papaya buyer, buying stock for London grocers.

His analysis expands further, weaving the various structures that are being constructed to support a papaya economy with additional stories of the everyday lives of the participants who interact with the papaya as a material at various points within the economy. He moves from production to the buyer, to the political economy and then the importer, to the plant as a commodity and then the farmer of that plant, he traces the global market routes and interviews the farm foreman, he discusses papaya payments and the papaya packer. He concludes with the capitalist consumption of the papaya, interviews an unwitting papaya consumer, and concludes with the full transformation of papaya from product to commodity, where it enters the everyday lives of countless consumers as “papain,” a commercially extracted ingredient in “Face-lift treatments. Slipped disc operations. Beer clarification. Chewing gum. Toothpaste. Contact lens cleaning materials. Indigestion remedies. Canned meats. Leather goods. Shrink-resistant woollen fabrics. Vegetarian cheese” and so on (2004, 662).

Here, while Cook minimizes his engagement with materialist theory, he has still created a distinct image of the capitalist political economy as one that takes things, materializes them into commodities and, in so doing, produces new subjects in the people that interact with the material. His conclusions demand an inclusion of materials in all geographic understanding of neoliberal life, as materials are “an invisible part of

countless people's lives. In countless ways... Because they're not discrete things. By any means. Like anything you could try to follow. Unravelling and becoming more entangled in the process. Attempts to de-fetishise commodities raise tricky but important questions" (Cook 2004, 662-663). My goal in this project, then, has been to "de-fetishize" hog manure, understanding the complexities and networks that lead to it being valued as manure, following it back to its source in the landscape and the people who live in and around it, who must live with the material consequences from the moment of its excretion.

Ethnographic Methods

Within this methodological framework I employed qualitative, ethnographic methods including semi-structured interviews, discussion groups, and archival analysis. Semi-structured interviews provided a key opening for gathering important information and opening new lines of questioning for the project. These interviews were not meant to be formulaic, but were designed for me as the interviewer and the participants to develop knowledge collaboratively, through a deep engagement with these issues. My most successful interviews were several hours long, ranging from childhood experiences and memories of the farm crisis to the embodied experience of living with livestock waste today. However, while the individual focus of these in depth interviews allowed personal and intimate life details to be discussed they were "less useful for examining structural, systemic, and ideological practices that shape human experience" (Pollack 2003, 462). Therefore, throughout this project I worked to employ interviews strategically, recognizing their importance in understanding individual livelihoods and revealing some of the potential openings for discussions of power, while working in tandem with other methods, particularly my archival analysis.

In addition to the fourteen in-depth, recorded interviews I also conducted an informal discussion group with members of a local organization in the Raccoon River watershed. Throughout the summer of 2015 I participated in and observed several meetings and formal events where the Des Moines Water Works lawsuit and other water issues of concern to the Raccoon River watershed were discussed. All told, I estimate that I connected with several dozen individuals at these events, where I talked about my research, listened to reactions and shaped my project accordingly.

The data that I collected through the ethnographic methods outlined above was supplemented with analysis of various historical documents, including media accounts, State of Iowa legislative archives, archival documents from Iowa CCI, formal descriptions of the history in published materials, websites, and films about the topic. The goal with this archival analysis was to understand how the experienced impacts of this production of a landscape, influenced by livestock waste, compares with how these transformations are represented in the media and in state, academic and activist archives.

Stoler (2002) has written that the archives must be activated, treated not simply as “as sites of knowledge retrieval but of knowledge production, as monuments of states as well as sites of state ethnography” (90). In the process of recording events, certain ideas and people are concealed, as are relations of power. Thus by examining the archives of Iowa CCI my goal is to recover the events, people and ideas that are written out of other recordings of the history of the emergence of contemporary agriculture in Iowa.

In addition to these ethnographic methods, in mid-2015 I joined an ad hoc group working to document where manure was being spread by CAFOs across Iowa. My role in this group was to collect information from publically available MMPs and map individual

fields receiving manure using ArcGIS. Thus, this project brings together participant observation of a working group with rudimentary GIS analysis. I will discuss this project further in chapter two, and the final maps are included here in Appendix A.

Importantly, I maintain that each of these methods was required to provide a more complete and comprehensive examination of how livestock manure is managed, talked about, and ultimately appears in everyday life. In practice, the methods did not unfold as distinctly as they were articulated here. I interviewed members of the RRWA and the ad hoc working group, brought archival materials to my discussion with the RRWA, and ultimately relied on my interviews with rural Iowans to inform and contextualized the maps I eventually produced. The point here, of course, is that in each method certain ideas and knowledges emerged that informed the knowledge being produced through other methods, in regular conversation with participants, informants, and collaborators. The result is just the sort of deeper analysis and collaboratively produced knowledge necessary to de-fetishize and reveal the complex networks that compose manure politics today. The chapters that follow represent my attempt to contextualize that politics within geographic theory.

CHAPTER 2: CREATING THE MODERN AGRICULTURE APPARATUS

In this chapter, my goal is to demonstrate how actors and institutions work together to produce a particular understanding of everyday life in Iowa in which CAFO farming has quickly come to replace other practices and has become associated closely with modernity. To do this, I begin by exploring the meaning of an apparatus within a Foucauldian biopolitical framework and then using that analysis to reinterpret the history of the emergence of the CAFO in Iowa and the practices of government that were created to manage the waste of those CAFOs. At the center of this politicized history is House File 519 (HF 519), a bill passed in 1995 which, for activists in the region, marks a turning point in the proliferation of CAFOs across the landscape. While the introduction of the CAFO occurred decades before the passage of HF 519, this bill represents the first attempt by the Iowa legislature to address problems raised by activists and others in the region. In the process, the Iowa legislature codified a definition of the CAFO for the first time in Iowa and attempted to regulate the excess wastes that it produces. To perform this deep analysis, I am relying on interviews and the archives of CCI, the official archive of the State of Iowa and media reports from 1995 onwards.

Excreted waste figured prominently in these early debates about the CAFO as a new technology of agriculture, as the collected feces and urine produced by animals in confinement has a markedly different odor than that produced by animals raised in smaller barns or allowed to freely roam in fields. This change occurs due to four specific features introduced by the CAFO: 1) the concentration of the animal waste into large

structures positioned underneath the animals (the manure pit); 2) the dramatically increased numbers of animals being raised in a single building from a few hundred to several thousand (in the case of hogs and cattle) or even millions (in some poultry confinements); 3) the changes in feed these animals receive (to a corn and soy based diet); and 4) the introduction of constant antibiotics, which changes the bacterial composition of animal waste. HF 519's most significant contribution was to establish the framework through which that waste becomes manure and thus able to be spread onto crop fields. With this bill the Manure Management Plan (MMP) first comes into existence, and the Iowa Department of Natural Resources (DNR) is made responsible for administering those plans. Since 1995, the DNR has become a focal point of activism as the only agency in Iowa responsible for regulating factory farming, despite their previous, longstanding role in maintaining state parks, or issuing gaming and fishing licenses. By placing such regulatory power in a body unaccustomed to such a role, activists at the time charged that the state policy makers were making an intentional decision to mitigate the actual regulatory authority of that agency. Thus from the start, the state's commitment to regulation in favor of social and environmental protection was questioned.

The CCI archives from the time support this contention, and the DNR appears as a bureaucratic institution within this emerging CAFO-based agricultural apparatus that is very much an expression of governmentality and its attempts to manage populations. Toward the end of this chapter I will examine a project that I participated in that articulated concerns directly to the DNR. The failure of those concerns to be understood as truthful articulations of life in rural Iowa highlights the DNR's prime role in the maintenance of the apparatus of modern agriculture and the reality that it produces. Where on the surface the DNR is only concerned with managing the livestock population, my goal in the political history that follows is to show that their

position in the apparatus is very much about managing the practices of Iowans in their everyday life. This is done both through the discourse and in the role that the DNR plays in selectively refusing to regulate CAFOs. For activists who claim that the waste from factory farms destroys livelihoods to the point of causing health ailments like asthma or cancer, this can be seen very much as a biopolitical practice of letting die (Foucault 2008).

Truth, Political Economy, Art of Government

The problem that I work to understand beginning with this chapter is two-fold: 1) a certain landscape has emerged, characterized by the CAFO architecture and simultaneous monoculturing, that produces significant embodied harm in the everyday lives of people living in that landscape, and 2) this landscape is maintained, embedded, and naturalized by institutions that repeat a specific narrative about agriculture and Iowa living that also appears in everyday life. The two sides of this problem are not inseparable – in fact they can be tremendously difficult to conceptualize separately – but the attempt leads to a series of questions: how is this landscape produced? Who is producing it and toward what end? Why is this narrative about agriculture so powerful and how does it contribute to this production? Answering these questions requires a deep analysis of the function of power in Iowa, moving beyond concepts that work to separate state and industry. Such a separation, I argue, obscures how power operates within everyday life, and understanding the state as a monolithic entity of power makes it difficult to articulate an alternate reality. In this section then, I will work with Foucauldian concepts of governmentality, apparatus, and biopower to demonstrate how power is diffuse, not

concentrated, embodied and enacted through complex networks, actors, and institutions that together constitute an emerging reality.

In *The Birth of Biopolitics* (2008), Foucault articulates how an art of government interacts with political economy in order to produce a specific regime of truth. This regime guides powers, actions, and discourses as they circulate through the world. Foucault asserts that an **art of government** “must fix its rules and rationalize its way of doing things by taking as its objective the *bringing into being* of what the state should be” (Foucault 2008, 4, emphasis added). In the case of Iowa, the state emerges to manage the population within the borders of Iowa, working to promote and protect an agricultural economy that becomes inextricably linked to the vitality of the population. As such, bills like House File 519 work to create the state in a particular way – it crafts new bureaucracies, endowing them through legislation with new regulatory abilities that serve to manage the environment and the economy.

Political economy offers a way to fix these rules by discovering “a certain naturalness specific to the practice of government itself” – though importantly, this does not mean that political economy discovers “natural rights that exist prior to the exercise of governmentality” (Foucault 2008, 15). Thus, within a few short years after the passage of HF 519, the practice of government to regulate waste through documents such as the submission of Manure Management Plans (MMPs) becomes thoroughly naturalized. This practice of government is thus inextricably linked to the functioning of the economy, in such an embedded way that understanding waste as anything except “manure” is no longer possible (is no longer true). The consequence of creating this nature as something that “runs under, through, and in the exercise of governmentality” is then that “governmental practice can only do what it has to do by respecting this nature” (Foucault 2008, 16). Thus, the questions of what is true, what is natural (and also

then the possibility of limitation) are “introduced into governmental reason through political economy” (Foucault 2008, 17): excrement is no longer waste, it is a valuable product. It is now manure, a perfectly natural piece of the landscape, a raw material and natural resource which the state is obligated to protect so that it can maintain a healthy livestock economy – agriculture in Iowa being essential to the vitality of the population.

The question for the art of governing then becomes a question of judging practices not by a moral standard (as under a sovereign power, for instance), but by a division between true and false. Here the “**regime of truth**” is established, that when coupled with governmental practice produces an **apparatus** of power/knowledge that “effectively marks out in reality that which does not exist [a market] and legitimately submits it to the division between true and false” (Foucault 2008, 19). In other words, this apparatus can produce a “site of truth” where previously no site existed. For Foucault, the site of truth he is working with here is the market, which having emerged as a site of truth must now be left to function “with the least possible interventions precisely so that it can both formulate its truth and propose it to governmental practice as rule and norm” (Foucault 2008, 30). The market allows “natural” mechanisms to appear – the natural price, for instance – that then also becomes a true price. As such the market “constitutes a site of veridiction” – a truth-telling, which is a “site of verification-falsification for governmental practice” (Foucault 2008, 32).

Thus with the MMP, the state Legislature created the framework in HF 519 through which a market for manure could emerge. The MMP requires only that CAFO operators report which fields that have contracted to receive manure, but in so doing it operates from the naturalized assumption that this excreted matter is, in fact, manure –

not waste. Further, the details of costs exchanged for land rent or receipt of manure are not set by the state, nor required to be disclosed. Thus a market for manure emerges unregulated by the state that also simultaneously obscures its material characteristics. However, because the materiality of manure is particularly onerous, an apparatus must constantly work to maintain excrement's value as manure – indeed, the vitality of livestock production depends on this apparatus functioning properly to deal with contradictions and obscure the materiality of everyday life.

To expand on this notion of apparatus, I turn here to Agamben, (2009), who conceives of an apparatus as the network established between discourses, institutions, buildings, actors, or matter that has a “concrete strategic function... in a power relation” (3). An apparatus thus “appears at the intersection... of power and knowledge,” enabling the relationship between the two. However, an apparatus is also to be understood as a “pure activity of governance devoid of any foundation in being,” thus the apparatus must also produce a subject (Agamben 2009, 11). In producing this subject, the apparatus then appears as a set of practices that aim to “manage, govern, and orient... the behaviors, gestures, and thoughts of human beings” (Agamben 2009, 12). Importantly, the apparatus must appear useful or meaningful for human life, since “at the root of each apparatus lies an all-too-human desire for happiness” (Agamben 2009, 17).

Here then the connection between an apparatus and biopower becomes clearer. Again following Foucault, Rabinow and Rose (2009) establish that biopower “serves to bring into view a field comprised of more or less rationalized attempts to intervene upon the vital characteristics of human existence” (Rabinow and Rose 2006, 197), and thus offer three criteria that biopower must include: 1) **truth discourses** about the “‘vital’ character of living human beings, and an array of authorities considered competent to speak that truth”; 2) **strategies for intervention**

“upon collective existence in the name of life and health [involving]... populations that may or may not be territorialized,” and; 3) **modes of subjectification** “through which individuals are brought to work on themselves” (Rabinow and Rose 2006, 197). In each of these criteria, Rabinow and Rose reassert the idea that biopower is not simply about a biopolitics of death, but rather that “the economy of contemporary biopolitics operates according to logics of vitality, not mortality... letting die is not making die” (Rabinow and Rose 2006, 211). These ideas will reappear throughout this discussion of the emergence of industrialized hog farming in Iowa.

If we consider modern agriculture in Iowa as an orienting reality that has emerged from a biopolitical apparatus of power/knowledge, here too we can see the subsequent necessity for the emergence of a market for livestock waste – the response to the question “what do we do with all this shit” being so naturalized that creating a market was the only possible answer in this truth regime produced by the apparatus. Further, in conceptualizing the state as a collection of institutions, each performing a strategic function as part of an apparatus, and following how each thus treats the matter of manure, it also becomes possible to populate the apparatus with other actors, networks and institutions beyond the state, to offer, if not offering a complete portrait of the networks of power operating here (such a task would be impossible), then at least providing a few threads within the mesh of power that provide moments of clarification where a resistance could be articulated. In the next section I will work to sketch this portrait of the apparatus in Iowa, with the explicit goal of demonstrating how the flows of biopower and knowledge within the apparatus created a new regime of truth. However, my goal here is

to also bring the concept of apparatus out of a certain abstraction, showing that power is indeed embodied and practiced in everyday life.

In Iowa, this can be seen in how the state's allowance of manure enables its access into the intimate spaces of home, family and body – it is a very embodied expression of biopower within those spaces and on those bodies. This power is not separable from the governmentality that exists, however. **This appearance of waste in everyday life would not be possible without the simultaneous appearance of an apparatus designed to regulate manure, which in its apparent attempts to regulate actually enable the passage of waste through the borders intended to contain it.** Thus by following the manure as it travels conceptually through the apparatus it becomes possible to understand it as an expression of biopower on the body, and also indicates how the apparatus as a whole employs techniques of governmentality through its attempts to control waste. The ultimate goal is to produce a subject in Iowa that will support this apparatus.

Early Government Interventions

In the early nineties, Iowa state leaders were concerned about the dramatic growth in hog production in North Carolina, led by Democratic State Senator Wendell Murphy and the confinements being put into widespread operation by Murphy Farms². A group of Iowa legislators led by then-Senate Agriculture Committee Chair Berl Priebe traveled to North Carolina to meet with Murphy and other agricultural officials and returned to Iowa with a plan to introduce “model legislation” in 1995. In the summer of 1994, the legislature and the Branstad Administration held a series of public meetings across the state, where smaller hog producers

² Murphy Farms is now owned by Smithfield Foods, which in 2013 was itself purchased by a Chinese agricultural conglomerate, becoming the largest pork producer in the world.

turned out in droves to protest the proposed action and CCI first began to organize opposition to CAFO production.

However, according to Hugh Espey, the Iowa CCI executive director, tensions between “modernized” hog production and environmentalists had been simmering for several years before 1995. He pointed to a 1989 by the Iowa DNR to deny a construction permit proposed by Premium Standard Farms, a major hog producer at the time³, which had proposed constructing an open manure lagoon near The Ledges State Park, a popular public recreation area, and was met with protests from nearby residents. In their letter denying the permit, the DNR wrote that

Unplanned and unintended releases from a major lagoon system such as you propose through accident, or design, construction or operational flaws could have significant negative effects on the Ledges complex. Minimum design and operation criteria, particularly minimum separation distance requirements, do not provide a degree of safety and protection against such negative impacts commensurate to the size and degree of potential loss of resources and public harm which could result from those negative impacts.

The Ledges decision is striking for several reasons. First, because although the application met all legal criteria for approval, the DNR denied the permit based on their broader mission of protecting public resources from potential negative impacts. According to Espey, “they’ve never used that same rationale again.” Second, the Ledges decision, while citing the park as the reason for denial, was also undeniably a response to the large outpouring of opposition to the proposed lagoon. Third, this decision appears to be the catalyst for Priebe’s North Carolina expedition, which later resulted in the crafting of House File 519. As Espey puts it, the Ledges were never really the problem, but the administration needed a way out in the face of widespread opposition, “DNR had to figure out a reason. [Iowa Governor] Branstad had to figure out a reason – ‘Oh, it’s Ledges, that’s why.’” This opposition wasn’t fading away, however, and it was coming from a diverse group of environmentalists and small livestock

³ Premium Standard Farms is now also owned by Smithfield Foods.

producers – many who had just barely survived the 1980s Farm Crisis. The need, then, was to find a piece of legislation that simultaneously appeared as an environmental regulation while also codifying rules that CAFOs could follow to avoid protest in the future.

As I've previously indicated, to manage the new waste and enact a form of regulation HF 519 introduced via the DNR the Manure Management Plan (MMP) – a complex, written form which required that CAFO operators secure agreements with local crop farmers (usually growing corn or soybeans) to spread livestock waste on the farmers' fields. The MMP demands that the farmer account for every gallon and/or ton of waste that their operations produced, documenting which fields would receive which manure. As a bureaucratic innovation, it appeared as a remarkable solution to a complicated problem – if the state could track where every gallon of livestock excrement was being spread, it could ideally prevent any contaminants from entering important water sources or offending any neighbors. **Further, it reintroduces waste into the market (and the environment) as a valuable product: it now becomes “manure,” a valuable and essential resource needed to increase corn and soybean yields.**

House File 519 also clearly defined, delineated and demarcated the space of the CAFO, essentially bringing into being the spaces within Iowa where CAFOs could be built. Significantly, the borders of these spaces were defined first by limiting CAFO operators' ability to dispose of waste near water sources. The Act also placed sole responsibility for the regulation of these borders in the hands of the Iowa Department of Agriculture and Land Stewardship (IDALS, of which the DNR is a part), thus implicating the state and the corporation as co-producers in the emergence of an apparatus of modern agriculture:

The Act provides that the Department of Agriculture and Land Stewardship must regulate the disposal of manure in close proximity to [known water sources] ... The Act provides that a person is prohibited from disposing of manure on cropland within 200 feet from one of these water sources, unless the manure is

applied by injection or incorporation within 24 hours following the application or an area of permanent vegetation cover exists for 50 feet surrounding the area where the water source exists (ILSB 1995, 6).

In practice, however, many CAFO neighbors today tell me that the “injection or incorporation” of livestock waste does little to mitigate its odor. Moreover, as the Des Moines Water Works lawsuit contends, this would do little to actually prevent particulates like nitrates from entering underground tiling structures. It is also noteworthy that HF 519 refers to the “disposal” of manure, an early indication of how hog waste was still *becoming* manure. Similar legislation today would undoubtedly refer to the “application” of manure – after all, a valuable commodity is not something to be disposed of wastefully.

After defining the CAFO space in relation to the disposal of its waste products, HF 519 then turns its attention to the structures of the CAFO itself, again in relation to water sources:

The Act provides that an animal feeding operation structure must be located at least 500 feet away from the surface intake of an agricultural drainage well or known sinkhole and at least 200 feet away from a lake, river, or stream located within the territorial limits of the state, or marginal river areas adjacent to the state. However, no distance separation is required between a location or object and a farm pond or privately owned lake (ILSB 1995, 6).

House File 519 also enacted separation distances of anywhere from 750 to 2,500 feet between CAFO structures (including anaerobic lagoons, earthen manure storage basins, formed manure storage structures, confinement buildings, and egg washwater storage sites) and non-CAFO structures (residences, churches, schools, and businesses within a city) thus further dividing and marking borders (ILSB 1995, 6). It is important to note, again, that the bill was much more concerned with the actual pit itself, responding to the environmental concerns raised at the time, with seemingly little sense among the actors producing this legislation that allowing this waste to be spread on fields would be a much more significant source of conflict.

Understanding this in the context of the time, it makes sense – livestock waste had been used as

manure in Iowa for generations. Some legislators at the time, still mostly unfamiliar with the impacts of widespread CAFO proliferation, would have been unable to comprehend that CAFO waste would be fundamentally and materially different from their conception of manure, the collection of feces and urine in a concentrated pit producing new odors and sensual experiences, introducing its own unique challenges. Further, the apparatus emerging in that moment had a vested interest in legislators *not* comprehending a difference between waste and manure.

Thus, while with the passage of this legislation the State of Iowa codified CAFO regulation for the first time, for those contesting the emergence of industrialized farming, HF 519's essential failure was this inability to effectively regulate where this manure ends up, meaning that it is allowed (or rather, not disallowed) to enter intimate spaces such as the home or body. Moreover, the legislation articulating the MMP requires only that CAFO operators account for the manure in their plans, and only requires actual documentation that those plans were carried out when a legal challenge is made. Additionally, the original intent of HF 519 disallowed the right of neighbors to sue factory farms outside of a very limited set of criteria. Although this section was eventually struck down by the courts, in practice lawsuits against the agriculture industry in Iowa are very rare. Thus, when the Des Moines Water Works filed their lawsuit it represented a very real threat to an entire practice of governmentality that insists, as an attack ad from the summer of 2015 declares, that "Iowa farmers love this land, and for generations we've managed and protected it."

Indeed, this particular law works as a piece of normalizing legislation. As made clear in the CCI archives, many legislators considered the question of CAFO practices "settled" after the passage of HF 519, and were reluctant to reconsider any aspect of the legislation. Thus HF 519 operates as law today essentially with the same intent, though minor changes to separation

distances have passed throughout the last two decades after significant political pressure. In fact, the most significant change to the function of HF 519 came when the Iowa Supreme Court struck down that amendment banning nuisance lawsuits. Thus the law in this instance fulfills its role as norm as Foucault describes it in *History of Sexuality*, where the “judicial institution is increasingly incorporated into a continuum of apparatuses... whose functions are for the most part regulatory. A normalizing society is the historical outcome of a technology of power centered on life” (Foucault 1990, 144). The life here, in this instance, can be defined very broadly, and is taken up in the discourse. This legislation is needed to protect the vitality of the “family farmer.” It is necessary in order to “feed the world.” This discourse appears clearly in the challenges presented by the Des Moines Water Works lawsuit, where lobbying groups have invested heavily in advertisements like the one mentioned above to rearticulate, maintain and reinforce this discourse. I will return to this discussion of the function of discourse in chapter three.

HF 519 and the Emerging “Modern Ag’ Apparatus

It is impossible to pick a starting point for when this apparatus begins to emerge. The ideas that led to the invention of the CAFO were being developed as early as the 1950s, and agriculture was rapidly industrializing long before that. For activists, though, HF 519 marked a significant turning point when the interests of the state and capital aligned, and the apparatus of “modern agriculture” first began to appear, and is thus also where I begin my attempt to demonstrate the apparatus as an embodied constellation of networks, institutions, and actors.

It is somewhat fascinating that during an era of supposed unprecedented partisanship the two major political parties, in Iowa at least, have been united on the status of factory farming since the passage of HF 519 (though representatives from both parties would likely disagree with

that statement). Moreover, many of the current elected officials are the very same generation of politicians whose careers were definitively shaped by the farming debates in the early 1990s. Consider that the governor in the summer of 2015, Republican Terry Branstad, was also the governor when HF 519 was passed during the last of his first four terms in office. Branstad, first elected in 1983 is, at the time of writing, the longest serving governor in United States history, serving in his second term after returning to office in 2010 (his sixth term overall), which will likely end soon after the submission of this thesis. In 2016, the incoming Trump Administration named Branstad the ambassador to China.

The twelve years between his first and second stints in office began with the election of Democrat Tom Vilsack in 1998. During the 1995 HF 519 debates, Vilsack was the author of the controversial addition to the law that prevented neighbors of CAFOs from filing “nuisance lawsuits” based on water or air pollution near their homes (efforts to pass these so-called “right to farm” laws still happen in agricultural states today). This prohibition was rejected by the Iowa Supreme Court in a ruling that described the measure as “flagrantly unconstitutional.” Vilsack served for two terms, flirted with a presidential run in 2008, and served as the only Secretary of Agriculture in the Obama Administration.

Vilsack’s replacement as Governor was Democrat Chet Culver, who won election in 2006 after a bruising primary. To unify the party he chose Iowa Secretary of Agriculture Patty Judge, a former Democratic state senator who had become well-known as a friend of the Iowa Farm Bureau (the largest and best funded industrial agriculture advocate), as his running-mate. Culver, the only prominent politician since 1995 to publically support local control measures being pushed by local activists, lost re-election in 2010 when Terry Branstad decided to run again. Judge has remained active in agricultural politics. In 2015 she became one of four board

members for the Iowa Partnership for Clean Water, an organization formed and funded by the Iowa Farm Bureau to undermine the Des Moines Water Works lawsuit that produced the ad cited above.

Throughout the summer of 2015, the Iowa Partnership for Clean Water⁴ ran several such ads on television stations in the Des Moines metro area, echoing Branstad's claims in one ad that the "Des Moines Water Works has declared war on farmers... They don't want a real solution. Instead they bully threaten and intimidate us... [using] slick lawyers to force needless job crushing regulations, hurting Iowans everywhere." In another ad, a nameless farmer tells viewers that "Iowa's rivers are the cleanest they've been in 20 years... But it's all in jeopardy because of a lawsuit... This lawsuit threatens our land, home and even your food." Interestingly, this ad first ran just one day before the Iowa Department of Natural Resources (DNR) released new information saying that "the number of Iowa lakes, rivers and streams impaired by pollution has climbed 15 percent in two years" for a new total of 725 impaired water bodies across the state. Since the ad ran without citations, it's difficult to ascertain where the claim that the rivers in Iowa are cleaner than in the last 20 years originated. However I find it important to note that the ads were produced by a Des Moines-based digital media company, Redwave Digital, which is led by Tim Albrecht, the former communications director of the Branstad Administration (who also led presidential candidate Romney's efforts in the state in 2012).

Patty Judge also has the distinction of being the only Democrat who spoke at the first ever "Iowa Ag Summit" convened in March 2015 in the "Family Food Center" at the Iowa State Fairgrounds. The main attraction that day was the presence of the entire slate of Republican

⁴ The Partnership quite clearly appears to be a mechanism for politicians with higher ambitions who want to strengthen their ties to industrial agriculture in the state. The mayor of Cedar Rapids, another board member of the Partnership, is widely expected to run for governor to succeed Branstad. In 2016, Judge made a failed attempt to unseat long-time U.S. Senator Chuck Grassley.

presidential candidates (those who had announced by the time), who had come to Iowa to spend a few minutes alone on stage being grilled by the man who convened the event, Bruce Rastetter. Rastetter has been called a “kingmaker” in Iowa recently (Evich 2015), both because of his political connections and his deep pockets. In the 2010 gubernatorial election, Rastetter committed over \$160,000 to Branstad’s campaign. Many reports suggested that it was Rastetter who was essential in convincing the then-former governor to run again for an unprecedented non-consecutive fifth term.

In 2011, Branstad appointed Rastetter to the Iowa Board of Regents⁵, the governing body for Iowa’s public university system which includes the University of Iowa in Iowa City, Northern Iowa University in Waterloo, and Iowa State University in Ames. ISU is widely regarded as the producers of agricultural knowledge in Iowa, and it is no mistake that ISU professors were routinely selected during the HF 519 debates to give “expert” testimony in committee. Notes from the House Agricultural Committee meeting on January 16, 1996 from the CCI archives reports that one professor in particular hailed HF 519 as a good bill, advocates the nuisance protection clause and claims that CAFOs are the most efficient method of swine production. When asked about how countries in Europe were regulating CAFO odors, the tenured, full professor replied that “Europeans are not as sensitive to odor as Americans... they are more willing to put up with a little bit of smell.” Among the activists in Iowa, these problematic relationships between industrial agriculture and ISU have eroded any sense of trust in the knowledge produced anywhere in the school. Elle, for instance, suffers from a chronic kidney condition that nearly threatened her life in 2014. She’s unsure if her drinking water is the

⁵ In 2013, Rastetter became the President of the Iowa Board of Regents. The College of Agriculture and Life Sciences at ISU also includes the endowed Bruce Rastetter Chair in Agricultural Entrepreneurship.

source of her illness, but she refuses to be treated at the ISU hospital, instead choosing to drive over four hours, to the University of Iowa hospital to receive treatment.

Rastetter was one of the earliest hog farmers to begin scaling up his operations with CAFOs in the early nineties. He later transitioned to corn and ethanol production, and became

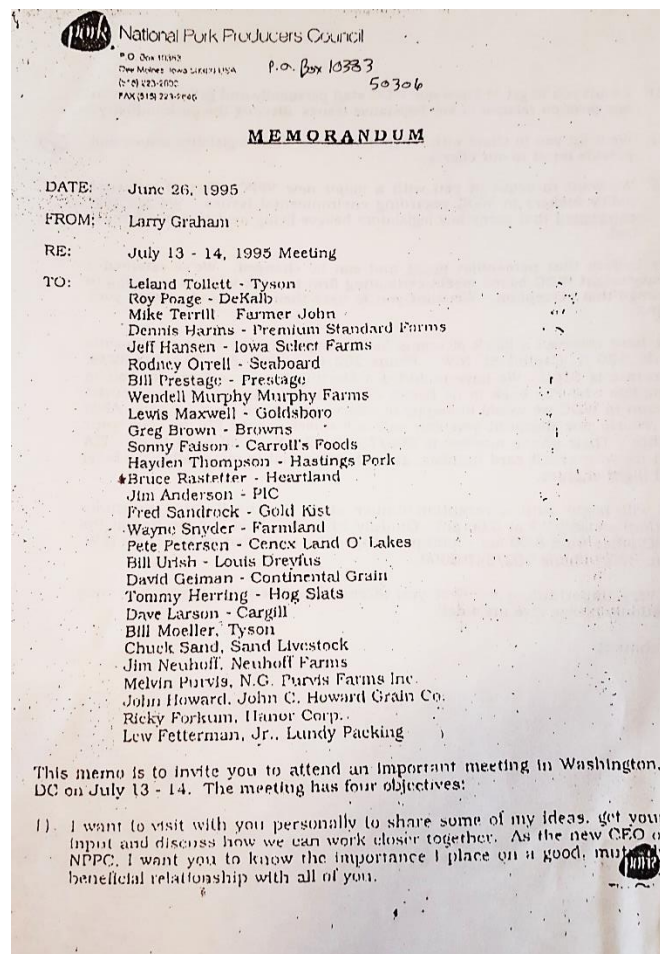


Figure 4. NPPC 1995 Memo (source: Iowa CCI archives)

one of the richest men in the state. In a memo from the CCI archives dated June 1995, authored by the National Pork Producers Council (NPPC), and delivered to 28 of the biggest hog producers at the time, Rastetter and his company, Heartland Pork, appears alongside such soon-to-be giants as Smithfield, Tyson, DeKalb, Premium Standard Farms, Iowa Select Farms, Prestage and “Boss Hog” Wendell Murphy of North Carolina. The memo, sent just months after HF 519 became law, outlines the beginnings of a strategy by NPPC to implement a “major new NPPC effort to

influence policy makers in WDC [Washington, DC] regarding environmental issues. We are very concerned that many key legislators believe living next to a hog farm is bad. We believe that perception must and can be changed. We’ve retained a heavyweight WDC based media consulting firm to work with us in trying to change this perception. We want you to hear their

more recently as a good example of how these activist claims fail to meet the apparatus understanding of truth.

That the agricultural industry in Iowa appears within an apparatus particular to it seems very clear at this point. **The CAFO structure would not exist without a specific arrangement of power and knowledge that enables its introduction into the landscape.** This politicized, embodied history of the relationships emerging roughly around the time of HF 519's passage is thus not intended to implicate any individual actor as a direct source of the current situation facing the quality of air and water in Iowa. Instead, my intention is to demonstrate how deeply complex and interwoven are the networks, institutions and relationships that have produced the current agricultural apparatus that makes it possible for a family in rural Sac County, IA to find their home filled with the “fecal particulate matter” of 2500 hogs on a hot a summer day. These powers and knowledges are exercised through state and industry institutions that seek to produce a particular subject in Iowa – one that is supportive of industrialized hog farming, but also a subject that sees hog farming as intrinsic to happiness and well-being.

Articulating Activist Concerns to the Apparatus

In June 2015, I joined a project initiated by CCI members in Adair, Boone, Dallas, Guthrie and Sac counties (all located along the Raccoon River watershed) to audit the Manure Management Plans (MMPs) for every qualifying CAFO in each county. In total, this meant examining 234 individual MMPs, looking for errors and evidence of over-application of manure. Each CAFO with a certain number of livestock⁶ is required to submit an MMP to the Iowa Department of Natural Resources (DNR). Its intent is to account for where every ton or gallon of waste that is stored in these confinements is spread when it must be removed from the pits. The

⁶ 1250 for swine over 55 pounds, 5000 for swine under 55 pounds; 50,000 for chickens over 3 pounds, 200,000 for chickens under 3 pounds; 350 for mature dairy cattle, 500 for immature dairy cattle and slaughter cattle.

CCI complaint filed as a result of this project alleges that, in practice, these plans obscure the real implications of the spreading of this waste on cultivated fields. At the center of this project was the concern from many members that the same fields were appearing in multiple MMPs – meaning that it was entirely possible that some fields were receiving far too much waste to be absorbed by the soil or taken up by the plants. My role in this project was to map, using ArcGIS, each of the fields that were mentioned in the plans as receiving livestock and document places where overlap occurred. The final versions of these maps are reproduced here in Appendix A, and they demonstrate that in certain areas of the Raccoon River watershed a tremendous number of fields have been selected to receive factory farm manure.

The team auditing the MMPs, myself included, met several times throughout the summer and fall, in person and on the phone, crafting a formal complaint that was submitted to the Iowa DNR on November 3. In the complaint, CCI demanded a full investigation of the MMP program by the Iowa DNR, along with “tougher” administrative regulation, oversight, and enforcement. While the MMPs audited included MMPs for all livestock, CCI specifically singled out hogs, writing in their complaint that “Iowa has more than 21.6 million hogs that produce over 10 billion gallons of toxic liquid manure each year.”

Before the complaint was submitted, it became clear that many of the concerns were unlikely to be addressed by the DNR. On the last call before the complaint was submitted in person, one member mentioned that the appearance of the same field in multiple MMPs is technically not against the law. It was questionable whether “over-application” of manure would even be a violation. Moreover, it would be nearly impossible for CCI members to determine if over-application was occurring because the Manure Management Plans were just that: plans.

There was no guarantee that the livestock waste collected would actually be applied on the specified fields, and records of where this waste ends up are kept confidential.

Predictably, then, the DNR dismissed Iowa CCI's complaint completely in December 2015, writing in their response that the complaint was "unfounded" and that the DNR "intends to take no further action as a result of the complaint." Speaking specifically to the issue of over-application, the DNR wrote that "There is no state law or DNR rule that prohibits producers from using fields listed in more than one MMP... DNR has no evidence that manure was over applied in one field by numerous producers." While it is absolutely true that there is no law prohibiting the use of the same field multiple times for spreading livestock waste, CCI members continue to maintain that the appearance of the same field in up to **four** MMPs is at least worthy of further investigation. However, as the response makes clear, "Manure application records are deemed confidential by Iowa Code... Tracking manure application in a GIS format or any form would also be contrary to Iowa law." Thus even if the DNR had decided to investigate, it seems unclear if they would have been able to collect any evidence of over-application (if, indeed, records of application are actually maintained).

This point about not knowing where the manure is actually applied would appear to undermine a fundamental intent of the MMP program, which is to track where livestock waste appears with an aim toward preventing its appearance in watersheds. Despite this, the DNR response repeatedly cites the full compliance of livestock producers as a sign that the program is a success (though compliance is required by law). The response also points to the lack of any violations found in the 685 MMP inspections and "spot checks" they conducted in 2015 as a measure of the program's success. Nowhere does the DNR response address the central concerns raised by Iowa CCI: the 15 percent increase in polluted waterways (totaling 725 in 2015), the

800 manure spills in the last decade, or the Des Moines Water Works operating their denitrification system for a record 148 days in 2015. Indeed, it is clear from the DNR response that this waste is not seen as a problem. From their perspective, once the waste leaves the manure pit it enters a carefully managed and coordinated program populated by responsible actors. The very suggestion that some livestock producers would be mismanaging their manure application seemed nearly impossible to DNR officials. “Manure is a valuable commodity,” they wrote, “and DNR believes it is unlikely that over application in single fields is occurring.”

The Manure Management Plan as it is constituted today was born out of the debates surrounding the passage of House File 519 in 1995, where CAFO waste first became formally commoditized as “manure.” Following the passage of HF 519, an advisory committee was established to craft rules to implement and administer the provisions of the Act. Representatives of the largest livestock producers sat on the eight-person committee and advocated for the complete confidentiality of MMPs submitted to the Iowa DNR. At the time, they claimed that disclosing the information contained in the MMPs would “force producers to disclose trade secrets” and were concerned that information in the plans would be used by “people opposed to manure being spread on farm ground near their homes... to persuade the landowners not to allow the manure spreading.”⁷ Moreover, the livestock producers insisted that the knowledge contained in the MMP was privileged information that the “public” had no right to access. As the poultry representative on the committee claimed, “There’s no reason for the public to know what the manure includes... What interest does the public have in manure?”⁸

The proposal to ensure the confidentiality of the plans passed 6-2, though ultimately the plans were kept public in part because of concerns that such confidentiality measures would

⁷ Fitzgerald, Anne. August 23, 1995. “Group wants plans kept Confidential.” P. 7A, *Des Moines Register*

⁸ Ibid.

blatantly violate Iowa open records laws. Functionally, however, the MMP rarely became a focal point of protest or activism outside of efforts to stop individual CAFO construction proposals. Indeed, the CCI 2015 audit appears to be the first time that MMPs were requested in such large numbers, and the DNR struggled to fulfil the request. Each MMP from the counties that CCI requested had to be digitally scanned or copied and sent to the CCI office. CCI staff had to coordinate with separate field officials located outside of the DNR head office in Des Moines, and it became apparent that with the constant staffing shortage and budget issues that the DNR faces, once an MMP is approved and submitted it is rarely, if ever, examined again. The process of actually obtaining the records took at least two months, with CCI receiving the last plans in June 2015, and while the DNR ultimately determined that the CCI complaint was unfounded they did find that 15 erroneous MMPs uncovered by CCI required further investigation.

Ultimately, the MMP is important because it remains the one piece of information about currently operating CAFOs that is made publically available, and yet as the CCI audit process shows it is an opaque document. It is designed to obscure the realities about waste application while simultaneously commoditizing that waste as “manure.” Industry fears in 1995, ostensibly about the protection of “trade secrets” but more likely about the ability of CAFO neighbors to use their documents to prevent the spread of waste near their homes, while unsuccessful in keeping the plans confidential *were* successful in keeping the actual application records sealed. In the process, they also made the MMP program so complicated that neither the public, nor the DNR, nor even the producers really use the MMP to prevent over-application or to maintain water quality. Indeed, the producers themselves rarely complete the MMP document on their own. Most MMPs that CCI reviewed were completed by an independent corporation, Pinnacle, which also guides the application process for many proposed CAFOs throughout Iowa. In July

2015, Pinnacle president Kent Krause was present at a meeting of the Dallas County Board of Supervisors where a CAFO application was rejected⁹ after members of Dallas County Farmers and Neighbors (DFAN) protested. Krause defended his company and their MMPs, claiming that DFAN members were “near slanderous” in their criticism of the MMP process. He also reiterated many of the claims that the DNR made in defense of the MMP: “We have to keep records for five years. We have to document every field and exactly how many gallons. The manure has to be applied by a licensed applicator. These manure plans are audited at any time on a random basis” (Caufield 2015).

However at the same meeting, the operator of the proposed CAFO, in attempting to explain the effectiveness of the MMP actually highlighted some of the deepest concerns of the activists. In explaining how a field could appear in multiple MMPs, the owner said,

You have farmers that farm a lot of ground... so you might have that field as an option in two or three plans. That doesn't mean they're applying to those fields every year. Any field that we haul to has to be pre-approved. It doesn't mean we're hauling to every field. So I take all the fields that somewhere in the future I might want to put manure on, and I'll put them in this plan because I'll generally move the manure around. So one year it might be on this field and this field, and the next year it might be on that field and that field. If I'm going to put manure on a field or even suspect that I'm going to — I might not ever put it on there but if I think I might — I go ahead and do the leg work and do the math and get it pre-approved so if, come fall, I decide I do want to put manure on that field, I've been pre-approved to go on that field (Caufield 2015).

Clearly, this producer believes that he is being as responsible as possible with his manure application by maximizing the number of potential recipient fields in his plan. His statement, however, appears to directly contradict Krause and the DNR's repeated claim that every field and every gallon of waste was accounted for in the MMP. The reality is much more like that described by the producer, where CAFO operators will

⁹ Rejection at the county level, however, is not absolute. The county in Iowa has relatively little power to stop CAFO construction. In effect, they provide a recommendation to the Iowa DNR, who make the ultimate decision to approve or deny a CAFO construction permit.

include an excess number of fields in their plan, unsure until the pits need to be emptied where that manure will actually end up. **It's an entirely unpredictable process, recast in the image of total predictability.** My own work mapping the fields that appear in MMPs supports this claim. I regularly saw MMPs with an estimated manure capacity (the total amount of manure that the fields appearing can hold, according to calculations made in the MMP) well above the amount of waste that was being produced by the CAFOs. However, this means that the MMP absolutely does not track where every gallon of manure ends up.

Nor could it, because as CCI's audit process, my own efforts to map the waste when it is spread, the Des Moines Water Work lawsuit, and claims of CAFO neighbors across the watershed demonstrate the waste rarely, if ever, stays confined to the fields it is meant to fertilize. As a liquid material it enters the drainage infrastructure, eventually flowing into streams and rivers. It gives off gases, odors, and particulates that travel to homes, entering the most intimate spaces and bodies. There is no Manure Management Plan that could possibly track where all of the constituent materials of this fetid mixture eventually end up.

So what work is the MMP doing then? First, it acts as a means for the apparatus, acting through the DNR, to naturalize this reintroduction of waste into the economy as manure – the MMP essentially requires that CAFO waste be offered on a market as manure. Secondly, it creates the appearance that the bureaucratic apparatus is performing its regulatory function to protect air and water quality in the state. This function serves the purposes of the DNR, which can dismiss the complaints of organizations like Iowa CCI simply by pointing to the full compliance with the program (regardless of its

effectiveness in keeping water clean) and also industry representatives, who point to the MMP simultaneously as an example of farmers preserving water quality and of government overregulation. Third, the MMP limits the ability of activists to protest. As the one source of public information about currently operating CAFOs, opponents of CAFOs must articulate their complaints to the state in terms of either documented, observed violations of standing law or of the MMP. However as the CCI audit demonstrated, articulating the concerns of activists to the state in this way must first recognize the waste's value as manure, and in doing so participate in concealing the lived reality of that waste as a flowing, leaking, embodied material. As I crafted the maps in Appendix A, I was constantly nagged by the feeling that I was participating in that concealment, transforming the experiences of the people I'd interviewed into lines and boxes on flat space, participating in the production of a representation of space, which I'll discuss further in chapter three.

Still, for activists this project was a strategic maneuver, and this lived experience is never far from their minds. Through this process they were able to also experience and recognize these practices of governmentality as they are expressed through the Manure Management Plan, even as their claims were rejected, ignored, or ridiculed. More importantly, the deep analysis conducted by the participants allowed us to fully grapple with the stark differences between how the state understood "manure" and how activists understood waste. For the DNR, Pinnacle, or a CAFO producer taking care of waste was simply a matter of moving manure around an organized grid of fields. For those who live next to those fields, however, waste is a real problem that cannot be abstracted so easily.

It is in the words of Ro, who helped audit the MMPs, constantly “on our minds and in our noses.”

Conclusion to Chapter Two

By way of conclusion, I want to return to the definition of biopolitics outlined earlier. Throughout this chapter, I have highlighted different aspects of what I see as the three key components of Foucauldian biopower: truth discourses, strategies for intervention, and modes of subjectification. In discussing the CAFO as part of an agricultural apparatus, I attempted to highlight how truth discourse and state intervention through governmentality work closely together to produce a certain space, and how that space creates particular subjects – that of the new family farmer, the rural Iowan who supports industrial agriculture, and also the activist who resists. Ultimately, this chapter seeks to offer a new history of the CAFO in Iowa, more political and embodied than the one described in the introduction to this thesis, and working to destabilize the dominating discourse about industrial agriculture that casts it as a natural progression of farming that embraces modernity. If nothing else, I have worked to show that this progression is anything but natural; that it is in fact the result of a complex network of power relations that are constantly shifting and changing even as they create the appearance of naturalness and stability.

In the next chapter, I turn toward how the discourse produced alongside this apparatus also does work, in particular the work of producing an emerging industrial, and thoroughly urbanized space. As I do so, I recognize that I am attempting to put two theories in conversation – Foucauldian biopolitics and a Lefebvrian production of space – that do not always align. There will certainly be some unresolved tensions in this process, but my aim is use each theory to draw two important conclusions. First, that biopolitics is more than an abstraction, that the biopower that flows from governmental practices and circulates through an apparatus is also an embodied

form of power – that there are still people who experience and exercise this power even as they do so within an apparatus. Second, power is not absolute, it is certainly diffuse, but there are still subjects and objects that emerge here that have some agency and it is important that this agency is respected. While I have worked to show that the apparatus I am discussing here is certainly complex and difficult to narrate or understand, the people who participate in the apparatus – those who embody it and those who resist – are not all simply victims of uncontrollable biopower. Instead, I do this work to show that, while complex, the apparatus is not a fixed structure – these bodies and objects are unstable and as such able to be shaped by subtle changes throughout the web of power.

CHAPTER 3: PRODUCING A MODERN LANDSCAPE

In the previous chapter, my goal was to deeply explore the web of power relations that exist within the apparatus that has produced a particular reality of modern agriculture in Iowa. In doing so, I demonstrated that the state is embodied with actors who are also part of networks and institutions which make up an apparatus within which power flows and circulates. The question that remains, however, is how exactly this apparatus works to create spaces and landscapes that are open to capital and the specific demands of modern agriculture. There is clearly a new spatial order that has emerged simultaneously alongside this apparatus, and thus in this chapter I turn toward Lefebvrian ideas of the production of space to see this landscape as a produced space – as an abstract representation of space that nonetheless has effects in everyday life.

For Lefebvre the state emerges as an essential agent in the production of this space, as the only actor capable of “taking charge of the management of space ‘on a grand scale’... because only the State has at its disposal the appropriate resources, techniques, and ‘conceptual’ capacity” (Lefebvre 2009d, 238). This has several important implications that will guide this chapter. First, because of the important of the state in producing the landscape, I will continue to focus on political institutions and how their interactions within the apparatus described in the previous chapter are producing space for capital. Of course, this doesn’t mean that corporations disappear from this narrative, and the focus in this thesis thus far has demonstrated that the state certainly works to produce spaces that support corporate agribusiness. In Iowa, I maintain that the state relates to agriculture by reacting purely to the needs and desires of capital, and the state’s ability to marshal its infrastructural and legislative capacity is done to meet these needs and

desires. The examination of the apparatus in the previous chapter demonstrates how this relationship between agriculture and the state emerges.

However, Lefebvre also speaks of the “conceptual capacity” of the state, an ability of the state to shape the ideas and discourse that circulate within the landscape. Given that Schein (2010) and others describe landscape as a “discourse materialized,” this chapter opens with a discussion of the discourse in operation in Iowa and how it influences the decisions made by the state as it produces space. But the discourse under examination here is one specifically cultivated and disseminated by the Iowa Farm Bureau, the most vocal and prominent interest and lobbying group representing the interests of agribusiness (both livestock and commodity crop producers). Their role in the apparatus of modern agriculture has been significant, shaping the discourse in critical ways such that they are frequently recognized by state actors as the most truthful representative of farm interests. This may be true – but only of particular interests. This chapter thus aims to demonstrate exactly how the Farm Bureau discourse has come to feature prominently in the state’s conceptual capacity, with significant consequences for the spaces that emerge.

Thus, this turn toward understanding discourse as a concept that both Foucault and Lefebvre (and other scholars working with their theories) engage with productively also works to connect an understanding of power as it circulates within an apparatus and how space is produced. I return to those narratives that position the CAFO manager as a “family” farmer, continuing in a long line of hard-working agriculturalists in Iowa. The appeals to nostalgia are repeated, as is the position of this new modern farmer as a product of modern science. Each piece in this discourse is essential – an appeal to nostalgia or modernity alone would not support the apparatus. Taken together, however, the discourse that emerges continuously enables not just

the current operation of the modern agricultural apparatus, but also produces the space in which that apparatus emerges.

Once again, manure features prominently in this chapter as I work to capture the dizzying effects of the discourse as I experienced them in 2015. The Des Moines Water Works lawsuit drew significant attention to the problem of manure in the world, and the media was consumed with front-page stories, political attack ads, and letters to the editor working to either condemn or praise the lawsuit. These ideas were quickly taken up in everyday conversations, and soon the idea of a deep conflict opening up between urban cities and rural farms captivated Iowans everywhere. Once again, the material implications of life for those already inundated with livestock waste are lost in the discourse.

Defining Discourse

In this section, I turn my attention to discourse to demonstrate how deeply discourse functions together with institutions, actors, and networks to produce a particular landscape. From the point at which “modern agriculture” became associated with CAFO-style farming – roughly coinciding with the passage of HF 519 – the actors and institutions operating under this discourse are all strikingly consistent in how they talk about farming and agriculture, how they view the role of CAFOs within livestock production, and how they respond to criticisms from activists, environmental groups, and others living in farm country.

Such consistency has in thoughts, words and actions been essential to the (continuing) production of the Iowa landscape as a space open to this particular idea of modernity. Carefully crafted narratives are developed by organizations that receive significant funding from the livestock industry and industry-backed support groups. These narratives employ scientific “facts” – including in many cases prominent researchers from Iowa State University, which itself

receives significant funding and is governed at this time by prominent figures in the Iowa hog industry like Bruce Rastetter. In addition, the Iowa DNR, as an officially non-partisan organization, provides its own facts and figures while maintaining an apparently neutral position regarding factory farming. And yet, this bureaucracy is currently run by a man, Chuck Gipp, who was once labelled by activists as one of the top five recipients of factory farm money when he was an Iowa legislator and who also supported HF 519 in 1995 – the bill that essentially endowed the organization he now runs with these regulatory powers. Moreover, this discourse is not limited to Iowa, and is in fact enforced by global connections. Vilsack, in his role as Secretary of Agriculture, has participated in trade deals with China to increase the exports of Iowa Pork to China while supporting wide-ranging federal subsidies. In turn smallholding farmers are displaced around the world, but these practices perfectly align with the discourse that demands this modern agriculture is the only way to “feed the world,” despite dramatic numbers showing relatively little growth in the hog industry since the proliferation of the CAFO.

As a starting point for understanding discourse, and in pursuit of something like a comprehensible definition of discourse, I first turn to Escobar’s *Encountering Development*, where he defines discourse as a particular construction of reality – a compilation of knowledges, powers and subjectivities (Escobar 1994, 10) that defines and thus creates the “developing” world.¹⁰ This discourse is not meant to be understood as an abstract idea of the world - it is practiced by institutions, states, and planners, and throughout *Encountering Development* we are presented with examples of how this discourse, by appearing as a **neutral, technical, or scientific understanding of reality**, limits the emergence of any alternative to development

¹⁰ I find thinking of the rural Iowa landscape as part of a development process useful and productive, as it also speaks to the ongoing interaction between political and economic policies that occur within this discourse – processes that are quite similar to discussions that take place in the traditionally understood “developing world.” Further, it implicates these current strategies of landscape-making in Iowa in a global context of colonialism; the current rural Iowa landscape is inextricably linked to colonial processes.

while obscuring its practice. Escobar also shows how this discourse, far from being entirely neutral, is in fact **thoroughly political** – the result of a number of power relations working together. As such, the discourse Escobar is referring to is functioning as part of a development apparatus, and much of his project works to make visible how exactly that apparatus works – demonstrating as well how interwoven the concepts apparatus and discourse are.

Importantly, discourse is something that people *do* – it is active, emergent, and practiced. It appears not simply in political speeches or ads on television, but also in newspaper articles, emails, stories in a bar, photographs, etc. (Peet et al 2011, 34). Still, as Peet et al acknowledge, discourses are rarely dreamt up “out of thin air. Instead they are typically constituted from clusters of well-cemented concepts that circulate through the global media and through common understanding” (2011, 35). As such, they appear as categories, signs, and codes within everyday life, making it difficult to “unthink” the discourse or to imagine new realities. Dittmer (2010, adds that discourse includes both the linguistic and textual means through which certain truths are produced – truths that then **embodied** and enacted. This “fusion of material texts with other forms of communication, such as body language, interactions, symbolic acts, technologies, and the like” make up a discourse that can be understood as a “culturally-specific mode of existence” (Dittmer 2010, 275). Through interaction and recognition of this discourse among people in their everyday lives meanings are created, power is conveyed, and worlds are rendered recognizable.

Importantly, Dittmer notes that, while there are many theorists engaging with different ideas of discourse, most coalesce around the idea that discourses are “produced through an almost infinite number of small, local interactions... [which] together become cohesive in the form of social structures” (Dittmer 2010, 277). The form that these social structures take and the ways that they act on subjects and communities can vary dramatically, though Dittmer notes that

in our contemporary world those that actively employ discourse find that consent is often less costly than coercion, and idea that is reflected in the following examination of the interactions between discourses produced by institutions such as Iowa Farm Bureau and conversations in the spaces of everyday life in rural Iowa.

Understanding discourse in this way makes possible a turn toward Lefebvre and his understanding of how discourse (the codes, language, and signs of everyday life) produce a *spatial code* that is simultaneously, thoroughly social (Lefebvre 1991, 16). In the sections that follow, I will build on this definition of discourse beginning with Lefebvre's discussion of discourse and the "spatial code" from *The Production of Space*. Much of the first part of his examination of space focuses on its relationship to language as an essential part of how people in society articulate and understand the spaces they inhabit. As I hope to demonstrate in this chapter, language in Iowa and the spatial codes of everyday speech do not emerge within a vacuum, but rather respond to the modern agriculture apparatus which consists of actors with a vested interest in guiding and crafting those spatial codes to craft and articulate a particular representation of space.

Spatial Codes, Representations of Space, and the Landscape

The spatial code that Lefebvre speaks of emerges and corresponds to **spatial practice** and **representations of space** (he claims this first occurs in antiquity, in Greek and Roman cities, though it is perfected through capitalism). People stop going from "messages" that appear within the space of everyday life to "code" as a means of *deciphering* reality, and began instead to craft the code first, prefiguring what is deciphered, before moving to the messages of everyday life: "so as to produce a discourse and a reality adequate to the code" (1991, 47). This spatial code allows planning and organization to become knowledge and power institutionalized – no

longer a simple means of reading or interpreting space, but rather “a means of living in that space, of understanding it, and of producing it” (1991, 48).

This understanding of a discourse appearing as a spatial code is essential to grasping how Lefebvre conceives of representations of space. It is through this movement from code to message in the articulation of a discourse about space that the representation emerges. He writes that “representations of space are shot through with a knowledge,” knowledge here being a mixture of understanding and ideology (Lefebvre 1991, 41). Ideology, in turn, “only achieves consistency by intervening in social space and in its production, and by thus taking on body therein. Ideology *per se* might well be said to consist primarily in a discourse upon social space” (Lefebvre 1991, 44). It is here that representations of space combine ideology and knowledge within a social-spatial practice, and where they become barely distinguishable a representation emerges. Knowledge within capitalist production becomes a productive force immediately, and so a change in the relationship between knowledge and ideology must occur – *knowledge must replace ideology, but the distinctions between the two become blurred*. Where ideology is distinct from knowledge it is characterized by rhetoric, metalanguage, etc., but in their blurring through representations of space this knowledge becomes scientific, neutral, and apparently apolitical.

Producing this knowledge/ideology discourse is not a spontaneous act – it is a result of the homogenization of speech, acts, and practices, “reproducible and the result of repetitive actions” (Lefebvre 1991, 75). When it appears as planning or organization of space it is a practiced application of a predetermined science (Lefebvre 2009c, 168). As such, space passes as innocent, a container, “in other words, as not being political” (Lefebvre 2009c, 169). And yet, despite this “apolitical veneer,” the discourse does distinctively political work, resulting in bitter

disputes across the ideological spectrum – something that can be seen clearly in the debates surrounding House File 519 in 1995, where ISU professors provided “expert” testimony in committee meetings about the supposed efficiency of CAFO agriculture, while protesters were filling the rotunda of the Capitol building. Thus, while on the one hand the state and institutional actors employ this discourse to achieve supposedly apolitical ends, the spatial relations still “escape any attempt to subsume them under a fixed framework, whether through planning, regulation, or design” (Brenner & Elden 2009, 33).

When considering the landscape as a “discourse materialized” (Schein 2010), it is important to recognize here as well that landscape is not simply a “passive... receptacle of discourse,” but rather captures at once “the intent and ideology of the discourse and is a constitutive part of its ongoing development and reinforcement” (Mitchell 2012, 397). Thus, the landscape is produced through struggle, as spatial acts that normalize and naturalize landscape also produce practices that challenging the discourse. So while this chapter focuses on those spatial codes produced by industrial interests that do very real, material work in the landscape (aided by the state’s ability to marshal large-scale infrastructural projects), I also recognize that the perceived landscape is vague, duplicitous and ambiguous – concealing certain parts of the discourse while revealing others. The question at hand is to seek out what exactly is normalized, even as the processes of normalization are concealed, and to learn what other discourses are being concealed in that process.

Given that these cultural landscapes “are themselves representations embedded in, and that embed meaning in, everyday life” the spatial codes that operate in the landscape must be found in the analysis of everyday life (Schein 2010, 225).-As sites of “competing meanings” and struggle despite the “materiality and apparent stability of landscapes [which] tend to naturalize

the status quo,” a critical landscape analysis must first destabilize the natural appearance of the landscape (Duncan & Duncan 2010, 230). Further, it is important to consider how identities are performed through landscapes, understanding the landscape not as a mere visual representation, but as an intertextual source of the performance of discourse in everyday life. This demands an approach that seeks to “find other ways to analyze the taken-for-granted socially produced ‘regimes of truth’ that enable and constrain the way people construct their accounts” (Duncan & Duncan 2010, 236). The sections that follow will work to detail how such a landscape-producing regime of truth is enacted by actors and institutions in the apparatus, revealing contradictions along the way, and setting up an analysis of possible interventions in everyday life in the final chapters.

The Farm Bureau and the Modern Ag Discourse

Throughout my time in Iowa, interviewees frequently spoke of the Iowa Farm Bureau as sort of an ominous and shadowy organization, controlling the levers of power through political donations and high-paid lobbyists, while cultivating an appearance of the friendly neighborhood farm organization. As an institution, the Iowa Farm Bureau has deep roots in the farming communities of Iowa. Among Iowa livestock producers, it would be considered tremendously odd if another producer was not a member of the Iowa Farm Bureau. It’s through this embedded role in rural communities that they are able to wield such influence over legislators. As one Iowa activist told me, if you are a legislator in Iowa, and “you step out of line too far, Farm Bureau’s going to go after you. That’s what they fear. The Farm Bureau’s going to attack you for being anti-agriculture and, my God! You’re going to lose!”

Thus while many of the activists I’ve interviewed are rightfully furious over the Farm Bureau’s influence over agricultural legislation at the statehouse (they are regularly able to

effectively kill regulation as the representative “farm group”), I am more interested in the more subtle role that they play in shaping the discourse through their connections in these communities. It’s this role in producing the discourse about agriculture that simultaneously positions them as producers of space. In this section then, I will examine how the Iowa Farm Bureau, as the self-declared keepers and producers of agricultural knowledge in Iowa (and beyond), functions to produce discourse in a Lefebvrian way.

The Farm Bureau emerged in the early twentieth century as a legislative ‘farm bloc,’ “an organization that further institutionalized capital-intensive modes of production and made them central to the collective political identity of farmers” (Rosenberg 2016, 6). The organization quickly became institutionalized in the everyday lives of people living in Iowa, naturalized and embedded in the social fabric of the community – “you go to school, you go to church, you go to the Farm Bureau,” as one interviewee put it. The Farm Bureau had cemented its role in rural life by the end of the 1920s, and “the notion that farming should be organized primarily along industrial lines had achieved broad consensus” among farmers, aided by the interventions of Farm Bureau in the discourse (Rosenberg 2016, 6). Their role in the farmer’s life was, primarily, to not only introduce new technologies but to do so as a natural progression toward modernity. Thus when the CAFO was first conceived (roughly around the 1970s, but really perfected and put into practice in the 80s and early 90s), Farm Bureau and other commodity groups worked to introduce, embed, and naturalize its use.

This work is still done today, seen most clearly during my research through the “Iowa Farm Minute,” a piece of political propaganda that appears during almost every newscast on every television station in Iowa. It is intended to appear as news, is even hosted by a former prominent local news anchor, and repeats the messages of the discourse: Iowa farmers are

feeding the world, using new technologies for social good, always caring for the land and working to make life better.

In the summer of 2015, while the Iowa Partnership for Clean Water was producing ads attacking Bill Stowe and the Des Moines Water Works lawsuit, declaring that “Des Moines has declared war on rural Iowa,” the Farm Bureau, via the Iowa Minute, was taking a more understated approach. One production in particular begins with a shot of the skyline of Iowa’s second largest city, Cedar Rapids, while Laurie Johns, the ubiquitous Iowa Minute host, announces: “Home to the world’s largest corn processor, Cedar Rapids is a city with proud ties to agriculture. No wonder they’re taking a collaborative approach, working with farmers to improve water quality.” The implication here is clear to those following the lawsuit politics: unlike the warmongering citizens of Des Moines, Cedar Rapids is willing to work with farmers. The Cedar Rapids utilities director mentions that he’s looking into cover crops, “comprehensive nutrient management,” wetlands, buffers and bioreactors, implying that Cedar Rapids is invested in supporting a healthy agricultural sector rather than suing struggling farmers for political gain (though each of the practices he mentions are farming practices, and are not really under the purview of the utilities director in Cedar Rapids).

Here this Iowa Minute takes an interesting turn. After reciting the litany of methods available for cleaning water, Laurie Johns returns to remind viewers: “Embracing new ideas. Trying new technologies. It’s what Iowa farming is all about.” The final scene interviews a “Cedar Rapids area farmer” who tells the viewers that “the way we farm today is quite a bit better than what Grandpa did. Grandpa did the best that he could, but technology has come along to really improve our footprint on the environment.” It’s yet another reminder that livestock production today is thoroughly modern, technological, but above all better than ever before.

More importantly, the invocation of “Grandpa” draws a connection to nostalgia for the past, implies continuity with traditions of family farming, but still clearly positions the modern livestock producer as the best of all possible outcomes. It is a spatial code in operation, sending the message that the space of rural Iowa is a pristine landscape of family farms, populated by

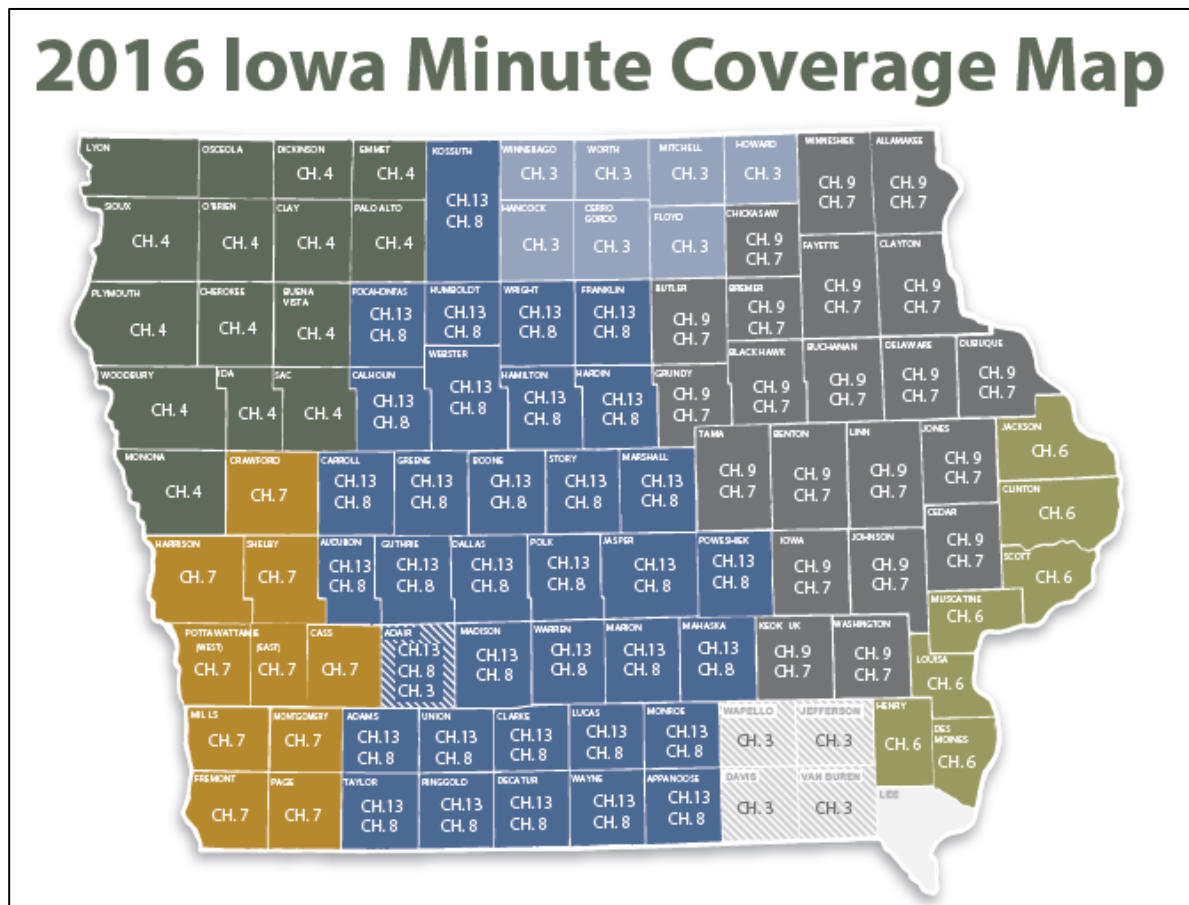


Figure 6. Map of Iowa Minute reach in Iowa. (source: Iowa Farm Bureau)

hard working family farmers who care for the land, but it’s also a modern space and as such, the only possible space.

If this particular Iowa Minute only appeared once, or if the Iowa Farm Bureau were a mere political propaganda machine, the clip might not have same the impact or carry any significance. The Farm Bureau is a multifaceted operation, however, with a wide reach across Iowa and each Iowa Minute segment is repeated several times over weeks, months, or even years

and broadcast every day during the evening newscasts that cover 98 out of 99 counties in the state.

In fact, during my time in Iowa in 2015, I saw several Iowa Minutes that were broadcast when I was still working for Iowa CCI in 2012. One in particular, where Johns interviews an “ISU food scientist/dietician” on the impact of High Fructose Corn Syrup (HFCS) is significant because it is not ostensibly about farming, but rather a prominent commodity produced by Iowa corn. The dietician, representing the voice of science, tells viewers that “there is no health benefit to substituting sugar for HFCS in food products. They’re handled by the body in the same way.” Johns then cheerily adds that HFCS-free products are actually just creations of “savvy marketers offering you a choice... So, you should feel good about products made from corn grown right here by Iowa farmers.”

This affective appeal regarding choice reappears in several Iowa Minutes – Johns tells us that organic crop farming isn’t really better, but it’s another choice you can make that Iowa farmers are happy to offer. Same with free range chickens – “farmers are happy to provide you the options” – but of course the cost of eggs will be triple that coming from the CAFO, where “hens are kept indoors for protection from predators and disease.” Obviously this last piece was filmed before the bird flu outbreak in the summer of 2015 that killed millions of chickens in CAFOs across Iowa. The theme of choice, however, also follows the pattern of a spatial code – the message here being that the space produced is one of freedom and independence, and the viewer should feel good about it.

Each Iowa Minute follows a similar trajectory – the familiar face of Laurie Johns looks directly into the camera, smiles wide, and with a reassuring voice tells the viewers that the Iowa farmer of today is an integral part of the fabric of society, courageously struggling against anti-

science crusaders who want to limit your choices, happily toiling away in an effort to feed the world. It's tempting to be dismissive of these Iowa Minutes, but they do real affective work in the landscape. No other political institution could match the airtime that the Iowa Farm Bureau receives, and for all the money that they spend on political campaigns and lobbying, it's the



Figure 7. Laurie Johns adds "a little sugar" to another Iowa Minute, 2016 (source: Iowa Farm Bureau)

message delivered by Laurie Johns and the Iowa Minute that people in rural Iowa hear repeated in their communities.

The Iowa Minute is certainly the most obvious and consistent mouthpiece of the Iowa Farm Bureau, and also the clearest and most articulate expression of the message they are trying to send through their work. However, the Farm Bureau as an institution, embedded and naturalized in communities, also does the work of maintaining that naturalness and in so doing enacting the spatial codes that appear in the discourse in the actual, physical production of space. The Farm Bureau conducts on-site workshops, training farmers to use the latest technical innovations. They regularly sponsor local festivals or gatherings – a meeting in small town Iowa

is as sure to feature an Iowa Farm Bureau banner as a minor-league sports game or even the farmers market in Des Moines. Viewers of the Iowa Minute are reminded of this role in a segment where Johns interviews a local school superintendent, who tells her how thankful he is of the Farm Bureau's support for programs that the school would not otherwise be able to afford. Johns then offers that it's all part of Farm Bureau's commitment to healthy, educated Iowa families, telling viewers "it's about supporting the most precious commodity grown in Iowa – our kids." These activities of the Iowa Farm Bureau create another kind of spatial code, with a message of community and neighborliness, a space where everyone in Iowa shares an equal responsibility for things like water and soil quality. People who disagree with the Farm Bureau then are shut out of these communities. Activists who actively challenge this discourse are even worse – they are un-Iowan, anti-science, agenda-driven lunatics who want to tear down the farms and small towns that keep the rural Iowa landscape functioning. The Farm Bureau never says exactly that, of course, they never have to. Having worked to craft a specific discourse, producing a particular representation of space to correspond to it, any sign of difference becomes a threat to the reality of many people who live in those spaces.

Tessa and her husband Rob are two of those outsider farmers who are not members of the Iowa Farm Bureau. I first met with Tessa on her farm in rural Dallas County, just 25 minutes northwest of Des Moines. She and Rob farm a little more than three acres on their ten-acre piece of land, selling their harvests directly to consumers through community-supported agriculture (CSA) shares. As members of Iowa CCI they have been active in fighting CAFOs in their county for several years, including a proposed CAFO that withdrew their application after a very personal conflict became public in 2012. Following those efforts, Tessa helped establish a local, county-based organization that tracks new MMP applications at a local level. Their goal is to

stay on top of new applications on behalf of CAFO facilities in a way that is not always possible with CCI's statewide membership.

However Tessa and Rob consider themselves farmers first, activists second, and so are also members of Practical Farmers of Iowa (PFI), an organization that encourages alternate methods of farming, including organic methods and a CSA business model. When Tessa goes into the town near her home, however, she finds that her way of farming is almost unintelligible to the conventional corn, soybean and livestock producers. When asked about the transformations that have occurred to produce the Iowa landscape in such a particular way she points to the impact of these discourses on everyday speech: "Language has totally shaped how everyone's thinking about it... Farm Bureau and all the commodity organizations are very,

very good at capturing language and rhetoric and shaping people's thinking... they're so convinced, that makes them convincing." In particular, the moral imperative to feed the world is powerful, deeply embedded and repeated in regular conversation:

A month or two ago at the church, [Rob] was chatting with a neighbor who's a corn and soybean farmer, and they were talking about the weather and this or that, and the guy said something about, 'well yeah, but you know I gotta feed the world.' And he was very serious about it. And [Rob] kind of looked at him and



Figure 8. Spatial codes in operation at the Iowa State Fair (source: National Parks Service)

said, well you realize... you're not even growing anything you can eat. Of everyone here, everyone on our road, we're the only ones growing food... And he kind of shrugged and that was the end of the conversation.

In this conversation at a rural church, when Rob challenged the discourse of modern agriculture, it immediately failed to be understood as truth and as such was shrugged off. This encounter is incredibly revealing because it speaks to the discourse by which this corn and soybean farmer produces space, and as a “corn and soybean farmer” he quite literally returns to his land and cultivates it according to the standards set forth by Iowa Farm Bureau and other commodity groups. Tessa and Rob are speaking here of the sort of spatial codes that Lefebvre understands as producing representations of space through their homogenization and repetition. Much like the CAFO structure itself is a homogenized, reproducible structure, so too is the language with which the CAFO is discussed until a particular space emerges. Foucault may also refer to this as the articulation of the regime of truth. Regardless, as Tessa tells me, this discourse has been “adopted by pretty much everybody out here. They’ve heard it enough and now they think it’s true. Right? You say something enough, it becomes their truth.”

To conclude this section, I find this question of language and discourse, and how it is employed in everyday life, a tremendously productive way to think together with Foucauldian biopolitics and Lefebvrian production of space. It is a compelling question to me because, oriented as this project is toward revealing a counter-reality about the presence of livestock waste in everyday life, understanding how the modern agricultural apparatus produces space through the discourse also clarifies how the messy reality of everyday life is then obscured. Tessa summarizes the problem well:

I don't call people who have confinements 'farmers' because that just feeds into that idea of what a farmer is... I don't talk about manure, it's not manure. I call it waste... [but] there's a whole generation of people that that's all they've known, right? That's how you do it. That's what farming is and they've been told all those

other stories: this is how it had to be, this was the trend, this was the only way we can feed the world, [and] we have to feed the world.

The wide, deep, and broad reach of an organization like the Iowa Farm Bureau demonstrates the blurring of boundaries not just between ideology and knowledge, but between state and capital, discourse and apparatus. Their embeddedness and naturalized function makes thinking outside the categories they've derived very difficult, and yet as Rob and Tessa demonstrate this does occur. The importance of language and discourse should not be understated, as Tessa explains, it's critical to how they understand their work:

Those of us who have an analysis of the thing, and realize what's going on need to completely change the language of how we speak about this problem to counter it... Farm Bureau wants to tell us what success is at farming... We need to redefine what success is.

Returning then to *Encountering Development*, we can see more clearly how Escobar's thesis that "modernity and capitalism are simultaneously systems of discourse and practice" (Escobar 2012, xiv) is realized in the apparatus and discourse of development, and further that these practices are now very much a part of how states incorporate development into their practices of governmentality. Indeed, for Escobar, while the development discourse still dominates despite certain postdevelopment critiques and "discourses of transition" that have emerged, development has not been completely totalizing, and he pinpoints certain "ontological struggles" that have emerged in response to this development discourse that "have the potential to denaturalize the hegemonic dualisms on which the liberal order is founded" (Escobar 2012, xxviii). These alternative forms of social organization have emerged in spite of a development discourse that rests on the notion that no alternatives to development exist or are possible while simultaneously enabling practices of power that marginalize any resistance that emerges to create the alternative.

The same is true in Iowa, where the discourse routinely reiterates that industrialized agriculture is the only means available to feed the world, and yet activists are pursuing alternative methods to produce food – methods that are not “traditional” but are wholly new, operating in completely different circumstances than in the pre-CAFO era.

The Rural and the Urban in the Production of Abstract Space

In the sections that conclude this chapter, then, I want to build off of these Lefebvrian concepts of discourse and the spatial code and their production of a representation of space, to demonstrate how this particular production of space is reflective of the co-constitution of rural and urban space. For Lefebvre, the relationship between the urban (town) and rural (country) are central to understanding how abstract, capitalist space emerges from *absolute* space, which he understands as “a fragment of agro-pastoral space” (1991, 234). When that space or a piece of that space is assigned a “new” role it becomes a site for the exercise of political power, and a specific relationship emerges where the town “draws off the surplus product of rural society” (1991, 234). A series of interrelationships are then established between land, capital and labor in which the space emerging from the center, the urban, is expanded into the country. This ensures the reproduction of capitalism beyond the industrial city, extending its reach over the land. The survival of capitalism depends on its ability to extend and intensify its reach over space in its entirety, over the land, over underground resources, and over above-ground expanses.

In its total occupation of pre-existing space, capitalism also produces this new space through, as Lefebvre writes, urbanization marked by reproducibility and repetition, the breakdown of differences between space and time, and the destruction of nature and “nature’s time” (1991, 325-326). **It is through this urbanization that abstract rural spaces are produced.** As urban space becomes an active abstraction it also becomes a “tool of terrifying

power... integrating specificities even as it uncovered them”, not destroying nature but certainly enveloping and commandeering it (1991, 269). When thinking about the transformations that have occurred in the Raccoon River watershed, I find understanding them as a part of processes of urbanization tremendously productive because they run directly counter to the dominating discourses that rest on the preeminence of rural space and the primacy of the “family farmer.”

The impact of urbanization on the landscape of the Raccoon River watershed cannot be understated. The CAFO, as a technology intended to maximize the efficiency of livestock production, was justified as a response to a growing need for meat in global cities that cannot produce their own food. Thus the Iowa farmer must now “feed the world.” Brenner (2014), following Lefebvre, describes this as a process of cities extending outward “via thickening long-distance logistics networks” into surrounding territories, with both woven together to integrate rural spaces into spatial divisions of labor. Rural farms thus become peripheralized, remade into “strategic locations within heavily industrialized landscapes” (17-18). Iowans speak of CAFOs being accompanied by larger equipment, bigger hauling trucks, dramatically increased traffic that stresses the gravel roads of the rural countryside as hogs are hauled off to the slaughterhouses that are quickly becoming the last source of employment in small to mid-size towns. Thus the CAFO transforms the landscape in a very particular way, with processes of concentration and dispersion overlapping in a new “industrialized urban fabric” which links the rural economy more directly to “transnational flows of raw material, commodities, labor and capital” as cities and their operational landscapes are “woven together in mutually transformative ways while being co-articulated into a worldwide capitalist system (Brenner 2014, 18).

Fundamentally then I am arguing that this discourse, which emerges alongside an apparatus of modern agriculture, conceals these processes of a sort of planetary urbanization.

This is possible because products such as hogs or manure “do not speak the truth about themselves. On the contrary, it is in their nature as things and products to conceal the truth” (1991, 80). Ultimately, these products as commodities lie, and they do so “in order to conceal their origin” which in this case is as the messy materials that are the excesses of capitalism and urbanization (Lefebvre 1991, 80-81). The very phrase “hog production,” conceals the complex, interwoven apparatus of relations among and between people, institutions, objects, and spaces. At the most basic level, hog production conceals that it has modified raw materials – that of the land, the pig, or the pig’s excrement – through the application of an appropriate knowledge (Lefebvre 1991, 113). The hog itself, in this instance, does not necessarily refer to the “pig” as a living animal, but rather to a specific commodity – the hog, which is ready to be processed into a new product, pork, which is a type of meat-commodity that is ready for consumption. But the consumers of hogs are not the eaters of pork; the consumers of hogs are the processing facilities (the meatpackers, butchers, etc.) that produce the pork. In order for a “pig” to become a hog, to eventually become pork, the pig must enter into a produced space – the CAFO. The same is true of the pig’s waste as it enters the apparatus and becomes manure through technologies like the Manure Management Plan. In producing this space, the apparatus must maintain the concealment of the forces of production, and thus while “the repetitive must be made to appear new; the identical must be made to appear dynamic” and a narrative contributes to a discourse that emerges where industrial factory farming, while relying on a completely different set of social relations between people, space and capital, is still constituted as a natural progression of the traditional family farm: “Hence the incredible mixture of the neo, the retro, and the archaic in modern life” (Lefebvre 2009d:246).

Counter-spaces Emerging in Contradictions

For Lefebvre, the possibility of resisting capitalism and its production of space lies in identifying and taking advantage of the contradictions that arise. Abstract space always contains contradictions which, though they may seem to be resolved in capitalism, are nonetheless revealed by analysis: “the ‘logic of space’, with its apparent significance and coherence, actually conceals the violence inherent in abstraction” (1991, 306). A central contradiction is that found in the absurdity of a space that is simultaneously homogenized and fragmented, as is the factory farm. Further, Lefebvre specifically points to the contradiction of agricultural overproduction and its dialectical relationship with “new scarcities” invented by the state to produce commodities with exchange value (1991, 333). Thus we find a constant discourse about world hunger, the Iowan farmer feeding the world, at the same time that industrial livestock production reaches newer highs while the problem of world hunger never appears to subside. The industry thus requires significant state intervention in the form of subsidies, which prop up the overproduction to support the extension of capital while concealing the fact that the scarcity is invented.

Lefebvre identifies the issue of pollution in the environment as another central contradiction resulting from the production of abstract spaces. While he writes that pollution has always existed in some form, in that humans have “always discharged wastes... into their natural surroundings” a certain “symbiosis – in the sense of exchange of energies and materials – between nature and society” has been ruptured by industrialization (1991, 326). As such, pollution at once acknowledges that it is waste at the same time that it conceals this former symbiosis. At the same time, pollution interacts with the environment, a term that Lefebvre writes is conceived as an “empty... neutral and passive ‘medium’” when it interacts with

pollution (1991, 326). Thus we have a contradiction of abstract space that sounds familiar: pollution that is both benign and dangerous, entering an environment that is both natural/dynamic and active/passive.

Lefebvre holds that it is possible that a non-capitalist society could “undoubtedly invent, create or ‘produce’ new forms of space on this basis” and yet, the existing property and production relations erase these prospects for us (1991, 357). Thus the turn toward contradictions is vital, in that the possibility for the emergence of a differential space in the margins and interstices of the homogenized realm could produce resistances or externalities (1991, 373).

However, history is full of situations where that opportunity has been lost, and Lefebvre concludes *The Production of Space* with a call toward increasing democracy and pluralism. Such a conclusion aligns well with Iowa activists call for local control of rural spaces that has been ongoing since the emergence of CAFOs. Lefebvre holds that the only possibility of altering the operation of the centralized state is to introduce a measure of pluralism that enables a “challenge to central power from the ‘local powers’” (1991, 382). Lefebvre cautions that this challenge in space should not be viewed as the end of one space and the beginning of another (since all space emerges from a previous space), but rather as an important transition, one that is characterized by its contradictions, those “poisonous flowers that adorn the present period” (1991, 408).

Such a transition can only be brought about by re-politicizing a conception of space that these institutions have a vested interest in keeping depoliticized. After all, depoliticization of spatial production occurs almost immediately after the apparatus produces a space, since “a politicized space destroys the political conditions that brought it about, because the management and appropriation of such a space run counter to the state as well as to political parties” (1991, :416). Again, Lefebvre reminds that political power needs to conceal itself and suppress its own

conditions in order to intensify its assertion over everyday life (2009a:76). Thus in exposing contradictions in space, openings are made for differential spaces, counter-space, and counter plans. This makes possible the necessary inventiveness that a truly new space requires, and is only possible in the interaction “between plans and counter-plans, projects and counter-projects” (1991, 418-419). It is Lefebvre’s hope that when a social group refuses to accept the production of space brought about by the State and capitalism, and forces itself to understand and master its own conditions of existence, then democracy, pluralism, and *autogestion* may be possible (2009b, 135).

Conclusion to Chapter Three

In this chapter, I have worked to demonstrate how spatial codes crafted by an apparatus of modern agriculture form a discourse that produces space open to that configuration of agriculture. As such, I’ve explored how specific institutions within the apparatus, such as the Iowa Farm Bureau, play a critical role in disseminating the spatial codes that make up the discourse. These codes do tremendous work, shaping the social relations through which representations of space are conceived and understood. The Farm Bureau is an integrated part of everyday life in rural Iowa, however, and demonstrates that the lived, perceived, and conceived spaces cannot be neatly divided and are actually constituted with blurred boundaries in the mind as well as in the cultural and physical landscape.

Turning to chapter four, then, I will finally examine how these discourses, productions of space, and practices of governmentality actually appear in embodied, everyday lived experience. Importantly, this final chapter will focus on the experiences of activists who are struggling against these industrializing processes, have a much different understand of their everyday life than livestock producers would. Though both, presumably, experience the odor of concentrated

hog manure in the same way (that is, they have the same bodily, physical reaction), their interpretation is completely different – the producer smells money, the activist smells an onerous intrusion into their most intimate space. Though the previous chapters offer some explanation for how this difference emerges, chapter four will emphasize the material properties of waste that simply cannot be ignored.

Thus, it is the space of intimacy where I will make this final intervention. How have the home and the body been implicated within this apparatus? How does the production of a space suitable for a market of manure change the spaces of home and everyday life for people who don't participate in this market? These questions are important, I believe, because they are exactly the sort of questions that are impossible under the regime of truth that operates in Iowa. The MMP mapping project demonstrated this – had those activists attempted to file a complaint without maps or papers, but simply the testimony of livestock fecal matter in their pores, they would have found themselves facing an even less receptive audience. Thus, while it may seem odd to only engage deeply with materiality at the end of a thesis that is ostensibly driven by a materialist orientation, I do so both because I find it essential to first understand that this experience is so deeply concealed by the apparatus and discourse that dominate in rural Iowa. Revealing it here, then, is a political act, in part an attempt to expose the contradictions in this capitalist space.

CHAPTER 4: MATERIALITY, INTIMACY, AND RESISTANCE

In this final chapter, I want to open up a discussion of livestock manure as a material object with a certain livingness of its own with properties that flow outside of the various boundaries created (by an apparatus, discourse, or produced space) to manage it. I have previously discussed many of these properties, but in this section I want to discuss what these material characteristics of manure mean for understanding the production of space in Iowa, how the embodied experience of manure disrupts attempts at management, and how these experiences can inform efforts by activists to produce new spaces and counter-discourses.

Obviously, I must start this chapter with a discussion of the odor that this waste produces as it collects in the pits underneath individual CAFOs and is later spread across fields in the landscape. This odor is the most common complaint raised in discussions with people living near CAFOs, both because it is the clearest signifier of the presence of waste and also because reaction to that odor creates many of the new everyday practices I have discussed. These activist complaints, I contend, are about more than modernist demands for a clean, ordered space – most, if not all, of the people I interviewed in this project are perfectly fine with some animal waste in their lives. I argue instead that this waste – this livestock (and in particular, hog) manure – is a very new sort of material that has appeared in everyday life in Iowa in the last two or three decades. It is a material with toxic properties – when it enters a watershed it releases or produces hydrogen sulfide, nitrates, phosphates, cyanobacteria, even antibiotics – all materials that have been deemed deadly in large quantities by various state institutions, and yet they are allowed to exist (at the very least, their regulation is disallowed). This question of waste then must be

understood both as an everyday, bodily experience, but also as a process of this apparatus that produces a particular space. In this chapter I will focus on the implications of this particular arrangement of governmentality and space and their implications for everyday life in rural Iowa.

Starting with odor allows me to draw a connection between Lefebvre's understanding of the production of space and more recent discussions about material implications of spatial relations. Smell, for Lefebvre, was an essential part of how people understood the tangible spaces they inhabit, producing an intimacy between subject and object in space (1991, 197). In part, this is because, as will become clear in a moment, smells are not decodable: "they 'inform' only about the most fundamental realities, about life and death" (Lefebvre 1991, 198). Odor for Lefebvre thus holds a kind of immediacy. It does not signify, it simply is, and as such clearly expresses "the intense particularity of what occupies a certain space and spreads outwards from that space into the surroundings" (Lefebvre 1991, 198). A smell, then, is an immediate sensory reaction to a particular space, informing without language certain meanings about that space, producing an experience of that space that is still social and produces further reactions and interactions.

Describing the actual smell of this concentrated animal excrement in words is thus tremendously difficult because it is so experiential. Susan, a woman living in rural Dallas County with two adjacent CAFOs located just over 1000 feet from the edge of her property, described well the immediate, sensory reaction to the smell even as she struggled to describe the odor itself – "If they're spreading it, or even when they're just pumping it, um... yeah it's, it's an experience. Yeah, you really just... you can't go outside and breathe. And you can actually be completely locked in your house - you will still smell it." When the first CAFO was built near Susan's home, she and her husband purchased new windows and doors in an attempt to seal off their home, and

yet when it is spread the manure carries smells and other objects into her home: “You can still smell it in my house! In this front entryway I’ve got dead flies all over the floor. You know, they just keep coming in.” Indeed, on the hot June afternoon when I interviewed Susan, the CAFO closer to her home than any others I had seen to that point, large black flies swarmed all around us. Some bit my exposed skin. One fell into the drink I had left sitting untouched. Their buzzing produced a constant, unsettling background hum in my recording as I later transcribed.

Other interviewees described the smell to me most often as a rotten egg smell, but mixed with an intense feces and urine-type scent. A few days after being applied to the ground, it gives way to a swampier, but still overpowering smell. Several people I spoke with referred directly to the chemical composition of the smell: hydrogen sulfide, para-Cresol, ammonia. There are other smells besides the excrement. Since the CAFO is almost fully automated, much of the daily labor now involves clearing hogs that have died and piling their bodies in large dumpsters that can sit outside for days waiting for pickup. In addition to flies that are already attracted to the manure, these dead bodies attract vultures that, driving across the Iowa landscape, are a clear indication of a nearby CAFO. At times farmers will incinerate these bodies on their property.

Cyanobacteria, or blue-green algae, accumulate rapidly in bodies of water that are close to fields that receive manure. On one occasion, a couple I met with in Boone County took me on a tour of their property, surrounded by fields that receive the waste from a nearby CAFO. A pond on their land that used to be a small fishing hole, which was actually swimmable when the couple was much younger, was already covered with green slime by the time I visited in late May. As we drove up a small hill approaching the pond, in an old truck with the windows down, I was overwhelmed by a smell I can only describe as intensely moldy and rotten, so overwhelming my eyes stung. I could feel the taste stick to the roof of my mouth, and this was the only time during

the course of my research where I actually thought I may pass out. It is this cyanobacteria that closes beaches on Iowa lakes throughout the summer – the greenish, scummy surface concealing the stale mix of shit, ammonia, and E.coli in the water below.

Materiality and Geography

Within the discipline of geography, following materials and examining their characteristics in relation to the spaces they enter and help produce challenges the “self-evident and unassailable” qualities of matter. In doing so, my research contributes to this project of “undermining the idea of stable and predictable material substance,” making the solid foundation of existence which can be so comforting to human understandings suddenly very fluid. These theories push us further toward a realization that the non-human world is far more “complex, unstable, fragile, and interactive” than previously understood (Coole & Frost 2010, 13). In so doing, they also push geographers to reconsider the matter of objects within space, destabilizing long held notions of subject/object relations.

As Tolia-Kelly (2013) notes, these examinations compel an acknowledgment that “humans and non-humans alike are material configurations, not dividable, separate or separable, but integrated, co-constituted and co-dependent” (Tolia-Kelly 2013, 153). Kirsch (2013) uses the example of gold from Shoenberger (2011) to demonstrate that a material only has value when it enters the human world, when it is commodified and assigned value in the exercise of social power. While gold as a commodity is valued abstractly, “it only succeeds instrumentally as a technology of social power because of its specific material qualities – its beauty in color and sheen, its malleability, its natural and artificial scarcity, its imperviousness to corrosion” (Kirsch 2013, :436). From this example, I reexamine manure in the Iowa watershed: what are the

material qualities that give manure its social power? Qualities that are granted such tremendous value that they enable users of manure to dispense with its understanding as waste?

Unquestionably this manure does contribute to plant growth. As it is relatively easy to produce, prodigious, and readily available, it is also much cheaper than chemical fertilizers such as anhydrous ammonia. I mention this to acknowledge that, certainly, excreted waste has material properties through which it could be considered valuable. The concerns, then, turn on the material qualities of this waste *in concentration*. It is always incredibly odorous, but that quality is made significantly worse by the method of its production in the CAFO pit, and again it is through this odor that the manure comes to interact with most humans. This odor is also deadly. During my time in Iowa, I heard the story of a young man who fell into a manure pit in his father's CAFO while trying to retrieve a tool that had fallen in. He was immediately overwhelmed by the fumes. His father, attempting rescue, also fell in and was overcome. Both died in the pit. Ro also recounted a recent story of a manure spreader whose tanker plugged up. He entered the nearly empty tanker to clear the plug, passed out from the fumes and suffocated.

For me, these stories represent the importance of taking the materiality of supposedly harmless, neutral commodities and their relationship to human bodies seriously. Braun and Whatmore (2010) write that far too often geography that engages with biopolitics is divorced from the "things that constitute human life as such" instead cast in "ahistorical and metaphysical terms, unable to account for the retinue of objects and technical knowledges that condition the vitality of bodies..." (xi). For Braun and Whatmore, geography must engage critically with the things and technologies that constitute everyday life, a concept they call technicity, which recognizes that things "whether understood in terms of language, equipment, or machine – [are] not merely a supplement to human life;" rather, they are originary (2010, xvii). As such, the

human body only comes into being in relation to the objects, things, and technologies of the world – “There is no moment at which humanity comes to be contaminated by technical objects and practices – no fall into a world of things – because there can be no human without them” (Braun and Whatmore 2010, xix). Understanding this technogenesis in the context of rural Iowa, then, we understand that life cannot be separated from the object and commodities of technology there – the manure, hogs, CAFOs, corn, and soybeans – all of which are produced, in some way, by humans and all of which, in turn, shape human social life in unpredictable, messy, unsettling ways.

Matter out of Place

In this section, I deepen this understanding of the messy, destabilizing materiality of hog waste by defining it through Moore (2009), following Douglas (1966) as “matter out of place.” Throughout this project, I have participated in what she describes as “a politics of manifestation, or making garbage visible” in an effort to expose and exploit the contradictions between the expectations of modernity and the actual, material form of a modern landscape (428). As matter out of place, wastes like hog manure represent a risk to “modern urban societies” and as such the forces of production work to keep it contained and concealed (Moore 2009, 428).

Fundamentally, the objective of the apparatus I have discussed is to keep the matter in its place – that is, to keep livestock waste contained in CAFO pits, or produced as “manure” and contained on the fields where it is then spread, wherever the Manure Management Plan had determined it’s application. Yet as ongoing activism has demonstrated since at least the early 1990s, concentrated hog waste retains its material characteristics as “matter-out-of-place” and as such exposes the contradiction in this modernity between what Moore (2009) has described as an “imaginary environment of order, cleanliness, and rational space” and a capitalism that is

constantly producing excess material that “exceeds the capacity of waste managers to expel it and purify the space of the city” (427).

The state-industry apparatus that produced HF 519 and the Manure Management Plan, in working to conceal, confine, commoditize, or cover up the abject materiality of hog waste is attempting to create a modern sense of order out of a fluid, volatile material. As manure, this waste is a valuable product, but as a dirty, repulsive material that enters bodies and intimate space it is matter out of place, an upset to order, unruly and improper, the spectre of value (Douglas 1966; Longhurst 2000, 30; Gidwani and Reddy 2011, 1627). The attempts of the industrial-ag apparatus to commodify this waste as manure align with the efforts of the state to continuously act on and improve waste, as Gidwani and Reddy describe, to bring the waste inside modernity and preserve the order of society (2011, 1628). In understanding hog excrement not as abject matter, but as untapped potential, the state here territorializes its wasteful nature, safeguarding the property and value it seeks to protect (Gidwani and Reddy 2011, 1630). Hird (2012) also points to waste as a source of potential value in the eyes of capital – wasted time or property can be understood as a “resource out of place,” and as such the efforts to bring them back in place means bringing them back into the market (Hird 2012, 455). This is exactly what the MMP attempts to do with livestock waste produced in the CAFO: return it to the market as manure. In this instance, a particular kind of property is the focus of protection – the livestock – and in denying the wastefulness of manure the state effectively obscures the bodies of those people who must live with the waste in their everyday life. They become the new abjection in the CAFO economy – unproductive, wasteful citizens, complaining about matters they cannot understand.

Thus we also see that borders are constantly destabilized by this waste – including those borders between the body and the world, between city and countryside, and intimate and global space. However, it is in this destabilization, where the reinscription of such borders is made impossible by the presence of filth, that Moore (2009) also finds the possibility for political action that exposes the “the unstable and fragile nature of the imposed categories of modernity and the institutions responsible for upholding them” (429).

This possibility is why I am concluding this thesis with a return to the everyday experience of living with the material produced by hog waste, because identifying the key contradictions in this apparatus, as Lefebvre would argue, is essential for creating some sort of new space. Here I find a valuable contradiction: manure is cast as a public good, but it creates havoc within intimate space in/on the body. The borders and distinctions between public and private are thus thoroughly dissolved: when hog policy begins to determine where you live, how you clean your body, or where you raise your children, the public/private distinctions seem almost absurd. Recall as well the livestock producer on the HF 519 rules committee from chapter three who asked in 1995, “What interest does the public have in manure?” I think the answer at this point is clear – given how manure undoes the boundaries between the public and private worlds, “the public” cannot help but be invested in the application of manure. The materiality of livestock excrement forces recognition that the neat categories sought by the apparatus are actually messy. The discourse fails to account for this messiness and the result is a manure politics that is continually contested, with an activism that demands recognition of the inevitable failure to keep matter in place.

The stories I have discussed in this project reveal to me the complex interactions between the state, discourse, knowledge and power that are occurring in the homes and bodies of rural

Iowa. Sealing windows in an attempt to secure the space of the home, worries about fecal matter in the hair and lungs, sprints from the front door to the car, even the city of Des Moines removing nitrates to keep them out of the bodies of children – all of these are new practices produced by the agricultural apparatus. In general, the response of the state has been to reintroduce waste into the economy value as “manure,” regardless of the actual benefits to the soil of any application of livestock waste. In this process the material characteristics of waste disappear in the discourse. The waste becomes implicated in the trend toward concentration: of animals in confinements, of manure in pits, of people who flee to cities and towns when this concentration via confinement fails to contain particles in the air, in the soil, in the water, and eventually in the home and body.

Manure and the Dissolution of Public/Private Distinctions

Much of this project has been motivated by certain frustrations that I’ve felt both as an organizer in Iowa and as a scholar sifting through the decades of research and ruminations about the problem of the hog confinement and its waste. As an organizer, I often felt that I was spinning wheels when articulating the concerns of the people I was organizing to state legislators, bureaucrats, and corporate representatives. There was little common language, almost as if we were living in a world apart from the state entirely, even as the state appeared in the very intimate spaces of our lives via the hog waste. Appeals to scientific reason seemed to be unhelpful: a study demonstrating the health effects of pollution on the body would be rebuffed by economic arguments or some other science produced at some other institution. A discussion about the impacts of hog confinements on communities would constantly, and intentionally, remain unresolved, even as those impacts had very material consequences for the people living in those communities. Policy-makers thus had simply no reason to act. If the science on the

impacts of CAFOs was in doubt, than the status quo – where a few influential people were making a lot of money – was better than upsetting the primacy of Iowa agriculture.

This situation is why I have found a focus on intimacy and everyday life in this research so essential. Focusing on the intimate scale of manure politics provides an opening “for interpretations that undo familiar connotations about ‘private’ life by emphasizing its historical and social situation” (Wilson 2012, 32). When people must deal with fecal matter in their hair, in their pores, and in their homes, the separation between public and private has been irreversibly destabilized. It becomes impossible to speak about the production of a landscape “out there” as if it has no immediate consequences for intimate life. Thus, such a focus on intimacy works to directly undermine these masculinist discourses that function to maintain a particular idea about Iowa agriculture somehow separate from the people and landscapes that are produced alongside it. Bodies have historically been removed from these discourses. Neighbors are expected to learn to live with and expect “a little smell.” Otherwise, they are invited to “move to a different state.” Iowa, after all, is for the hogs and hog producers: people who can’t handle this are outsiders who don’t belong.

And yet, it’s not just the activists or troublemakers who experience the lived materialities of hog manure (after all, CAFO workers and manure spreaders are killed by dangerous fumes every year). When this waste enters a landscape, through its collection in the manure pit or when it is spread across the land, it also enters the bodies that inhabit and constitute that landscape through the water, soil, and air. Thus by invoking the idea of the intimate body in my research I am setting aside other “philosophical generalizations,” even if only temporarily, in favor of “lived materiality: the body’s history... its preferences and pleasures; its surface appearance” (Pratt & Rosner 2012, 10). Doing so forces my attention on a materialized understanding of the

body when I do also theorize on a global scale, an important step in understanding this particular landscape where scales and divisions between public and private have been so blurred. In this landscape it is abundantly clear that “intimate, sexual, familial, and other types of attachments are more than personal or private affairs; social, economic, and political worlds are built around personal attachments” (Pratt & Rosner 2012, 8).

This is true not only when thinking through the effects of waste on the body, but in thinking about the bodies that populate the apparatus – who exactly is enmeshed within these levers of power? Which bodies are exposed to the experience of hog manure in their everyday lives? Which bodies produce the “science” that aids in the maintenance of the discourse? I maintain that *these are not the same bodies*, which fundamentally explains why the tensions within the landscape are usually resolved in favor of the dominant modes of spatial production. The stakes on these questions are “ramped up when the focus is on the materiality of encounters that are in themselves often seemingly mundane” (Probyn 2012, 62) – an important insight that, I contend, leads to a fuller understanding of the operations of power in everyday life, revealing not only the porousness of borders and distinctions such as public/private, but also how the constitutions of landscapes and apparatuses are fundamentally made through intimate encounters.

Reminders and Possibilities for Resistance

In this final section I return to biopolitics, and a discussion of Revel’s (2013) understanding of how resistance can emerge within a Foucauldian understanding of governmentality. Revel writes that in 1984, near the end of his life, “life itself” represented a difference in Foucault’s thinking; that is, in respect to power, life was irreducible and incommensurable, “always already being political, social, productive, expansive and inventive”

(Revel 2013, 18). This notion of life is essential to understanding how to think through resistance with Foucault. In this conception of life, there is **no possibility through which difference can be eliminated**, through which “the same could totally subsume its other, without any possible remainder... The ‘remainder’ is always there” and thus there is always some dismeasure between the management of life and life’s power. In other words, within governmentality, which must govern while simultaneously comprehending resistance to governing practices, affirmations of liberty, power and subjectivation are “indissoluble and, at the same time, dissymmetrical” (Revel 2013, 18).

I position hog waste – matter out of place – as one such “remainder.” This has powerful implications for those subjects on the ground who seek to articulate a resistance to the apparatus— in the very least that there is the recognition of the possibility of difference. In revealing the dissymmetries and remainders within this apparatus, so too is it possible to act on difference when it emerges, which is why Revel holds that a Foucauldian dismantling of history was necessary for decolonial movements in order that a “real thought of difference could emerge” (Revel 2013, 19). Thus, this idea has important implications for activists in Iowa, for whom taking on an entire apparatus or discourse would seem an impossible or insurmountable task, and rightly so.

As Revel reminds us, however, “The order of discourse exists as a specific case inside an infinity of ‘practices of setting in order’... into the real, of objectification and hierarchization of the real that is not necessarily discursive...” (Revel 2013, 20). These practices, a reflection of power, do not exist as a unified object, but instead consist of power relationships that are localized, where different rationalities are articulated and overlapping – an infinity of power relations which exclude but also form hybrids (Revel 2013, 22). Take the MMP mapping project,

for instance. While the apparatus certainly compelled a certain direction of the project, including accepting, if even temporarily, the notion that waste can be contained within fields, the challenge also produced a change in the apparatus. In an Iowa Minute broadcast in March 2016, Johns introduces a wholly new innovation – “precision agriculture” – a practice that is “all about balance” because “farmers aren’t wanting to overapply [nitrogen] at all.” It is difficult to imagine this ad being produced before the CCI complaint to the DNR. It also serves as another recent reminder of the adaptability of discourse and apparatus.

Ultimately, the analysis of power I’ve arrived at with Foucault and Lefebvre is essential to understanding how difference can emerge – if power appears as an infinity of practices producing space, then so too are there an infinite number of possible responses to that power. The appearance of a unity is merely that – an appearance that is supported by a truth claim, and though in practice that unity can certainly appear real it is essential in the analysis to understand that “Dissymmetry exists and consists in the power... of men and women to invent themselves, from **inside the reign of power, and more generally inside the determinations to which they are subject**” (Revel 2013, 23, emphasis added). I maintain that in Foucault’s writings and lectures, as he attempts to work out how the subject appears in its relation to power, that this dissymmetry is essential to his understanding of how history unfolds. After all, without this dissymmetry there would be no history – life would be merely a biological determination.

There is another remainder that escapes the apparatus in the Raccoon River watershed - those people who refuse to accept the discourse as truth, who demand a new space of life. Some of these people are activists, others may be small farmers. Certainly, the apparatus attempts to marginalize these people, casting them as backward, resistant to modernity, or even contributing to world hunger by attempting to limit the ability of industrial agriculture to “feed the world.”

However, in continuing to resist these people are also continually forcing the apparatus to react and change. Perhaps this can be seen most clearly in the Des Moines Water Works lawsuit, which has very publically challenged the discourse, in both the public imagination and in the judiciary. This is a challenge that cannot be easily marginalized and, though the ultimate outcome will likely not be a fundamental dismantling of the apparatus (as complex and interwoven as it is), the hybridization that emerges will by necessity be very different.

Conclusion to Chapter Four

In ending with this discussion of materiality, I am also hoping to open up new discussions about the presence of waste in everyday life within the rural Iowa landscape. For activists, I aim to point toward a serious questioning of the institutions and networks that enable the passage of waste in their lives, and its commodification as manure. The goal here is further to enhance the discussions of governmentality, discourse, and the production of space that preceded this chapter. Where I worked to populate the apparatus in chapter two, explore how the discourse is operationalized in chapter three, here I have opened the definition of waste to uncover what is concealed by the processes in those previous chapters: the lived experience of a world surrounded by waste.

This is absolutely “not your grandfather’s shit.” It gets in your hair, your clothes, your pores. When the spreader comes by, residents scramble to seal their homes in an effort to preserve their most intimate space from the intrusion of modern Iowa farming at work. But when they come out of their homes, enraged and emboldened, they go to their own work – offering counter-discourses and creating new institutions, with a very different vision of what an Iowa landscape could and should be like.

CONCLUSIONS

The work of activism, it seems, never really ends. As the research for this project was wrapping up, new challenges for activists in the Iowa landscape were emerging: large agribusinesses were expanding slaughterhouse operations across the state, a new presidential administration proposes weakening key environmental standards, and the state's long time governor was tapped to be the new ambassador to China, cementing a geopolitical relationship between the two governments that will have long-lasting implications for the landscape. The Des Moines Water Works lawsuit remains unresolved, some CAFO constructions have been halted, but many others have been constructed, and some of the activists I interviewed have since abandoned their homes and moved their families away from the toxic odors in their everyday life. Once again, however, the stink of manure politics is difficult to escape.

As I have worked to show in this thesis, the odor of manure presents a very real political problem, prompting the emergence over the last three decades of a complex apparatus and discourse that produces a spatial landscape that provides openings for both capital and the appearance of waste in everyday life. This occurs while the materiality of the waste is continuously obscured. Several political actors and institutions are brought into contact as this apparatus grows and expands its reach, and all participants are changed along the way. This process has clearly had impacts beyond simply agriculture, as those actors have participated in the neoliberalizing of education, restricting immigrant rights, or shaping broader environmental regulation on a global scale, to name just a few examples. Thus the traces of manure spread and flow throughout the apparatus.

Theoretically, I have worked to offer three interventions through this project. First, I demonstrated how a biopolitical apparatus of power operates to create space through its efforts to manage a specific population while protecting the interests of capital. In this case, the populations of rural Iowa are produced as specific subjects – either CAFO farmers who are the intended beneficiaries of state interventions, or the others who are continually marginalized, their concerns erased from the discourse. The second intervention, then, builds from the first and shows how powerfully that discourse operates. Beyond offering narratives to support the apparatus, the discourse actually creates space as it is materialized in the landscape. Discourse also becomes a site of struggle, as activists recognize how important language is to shaping the truth regimes on which the apparatus depends. Articulating the grounds on which this struggle must be waged is difficult, however, and the third intervention offers an opportunity by insisting on a focus on the materiality of manure as it appears in the everyday lives of people living in the landscape.

More broadly, my methodological orientations have insisted on offering a more concrete intervention for activism, and this has proven a more elusive and difficult intervention to make. In some ways, the work of the research itself when it was collaborative (as in the project to map MMPs in several rural counties) brought the results of this project into an actual conversation with activists and policy-makers, but there are no policy prescriptions to be found in this work. Indeed, much of this project has demonstrated the difficulty – if not outright impossibility – of attempting to change the operating apparatus through policy alone. Ultimately, my conclusion on this front is simply that if power is to be found on some scale everywhere in the apparatus, which operates in everyday life, then it is in those everyday interactions (conversation in a church, for instance) where this political struggle is going to be most successfully waged. Is it possible to

change the discourse by changing everyday speech, as Tessa has suggested? Can we operationalize the flies, as Susan did during my trip to her home? These remain unanswered questions, but they are the questions that I insist must be the site of the struggle moving forward. I find tremendous liberating potential in the idea that power, as Foucault might say, is diffuse – it means that the apparatus is not fixed, not nearly as stable as the discourse makes it appear to be. Same with the space that the apparatus appears – if it is completely social, formed by the language and discourse, then that too can be changed. Even the excretion of livestock itself can be remade, its material properties reacting as they do to the reality in which they emerge, much like people. When you always feel like you’re playing someone else’s game, you have to change the rules. If nothing else, I hope that is the message this project delivers.

While activism is often organized around big moments – whether a protest or committee meeting – it is in these everyday interactions that I find the most potential for progress moving forward (a lesson that would have served me well during my time as an organizer). In October 2015 I returned to Iowa for the 40th anniversary celebration of Iowa CCI. I met many old friends there, some who I interviewed for this project, all in good spirits and hopeful for the future of their homes. I am constantly amazed every time I work with CCI at the indomitable spirit of the activists who volunteer their time to challenge a landscape that seems so very different from the world they envision. By most accounts, it is a landscape that doesn’t appear to be changing dramatically anytime soon. Many of my interviewees told me they believe only an unprecedented crisis could change the minds of enough of their fellow Iowans to really alter this space. Even Bill Stowe, the Des Moines Water Works director, is anxious about the future, telling me that “science will point us to greater risks that we haven’t considered fully yet.” Despite this, having spent now most of my adulthood struggling with these same issues, working

alongside these same activists, I remain hopeful that science – or at least the collaboratively produced knowledge as I believe science can be – can point toward more than just risks we can't conceive of yet, but toward real strategies and solutions that embody hope. It's an idea that I think Foucault, Lefebvre and all the other theorists I've engaged with in this thesis struggle toward as well. What other reason is there for performing a detailed analysis of the underlying operations of power within tremendously complicated networks that seem impossible at times to challenge or grasp?

At the end of each interview I conducted for the project, I asked a variation of the question "how do you maintain a sense of hope?" It was a question for me more than for the participants. With each new story I heard I risked turning away from activism, acknowledging the overwhelming sensation of the apparatus; in essence, accepting that the people of rural Iowa should just live with the shit. I was searching for that sense of hope myself. Admittedly, not all of my participants felt particularly hopeful, or even optimistic about the future. Many were outright pessimistic, believing that the reality of a future Iowa had already been written. But each of my participants expressed a sense of resolve, a refusal to just let the reality of their world dictate the operations of their lives. In a way, my question was misguided; I should have been asking how they survive. In some way, they are the remainders, and I want to end here with a sampling of answers to that question, letting the difficulties and contradictions stand on their own, challenging me and the reader to pose new questions in the effort to produce a more just manure politics:

I'm not necessarily hopeful that anything will change or that I or anybody can stop this great march of the hog confinements. So I'm not really operating at this point on any sort of hope or idealism. It's just all about... I don't think I could live another way.

To me it's the struggle that gives you hope.

If I have to be anxious that my whole lifestyle and livelihood can be taken away by a large scale livestock confinement, then they can be anxious that, should they decide to put one up, they're gonna have a shitstorm to deal with... We'll do everything we can to make things miserable for them. That's some comfort to me.

I've been cynical since the early 80s when we lost our farm, so that's never really gone away... that's why sometimes I act like I don't give a shit anymore because... it's tough.

You can't give up! That's what they want you to do.

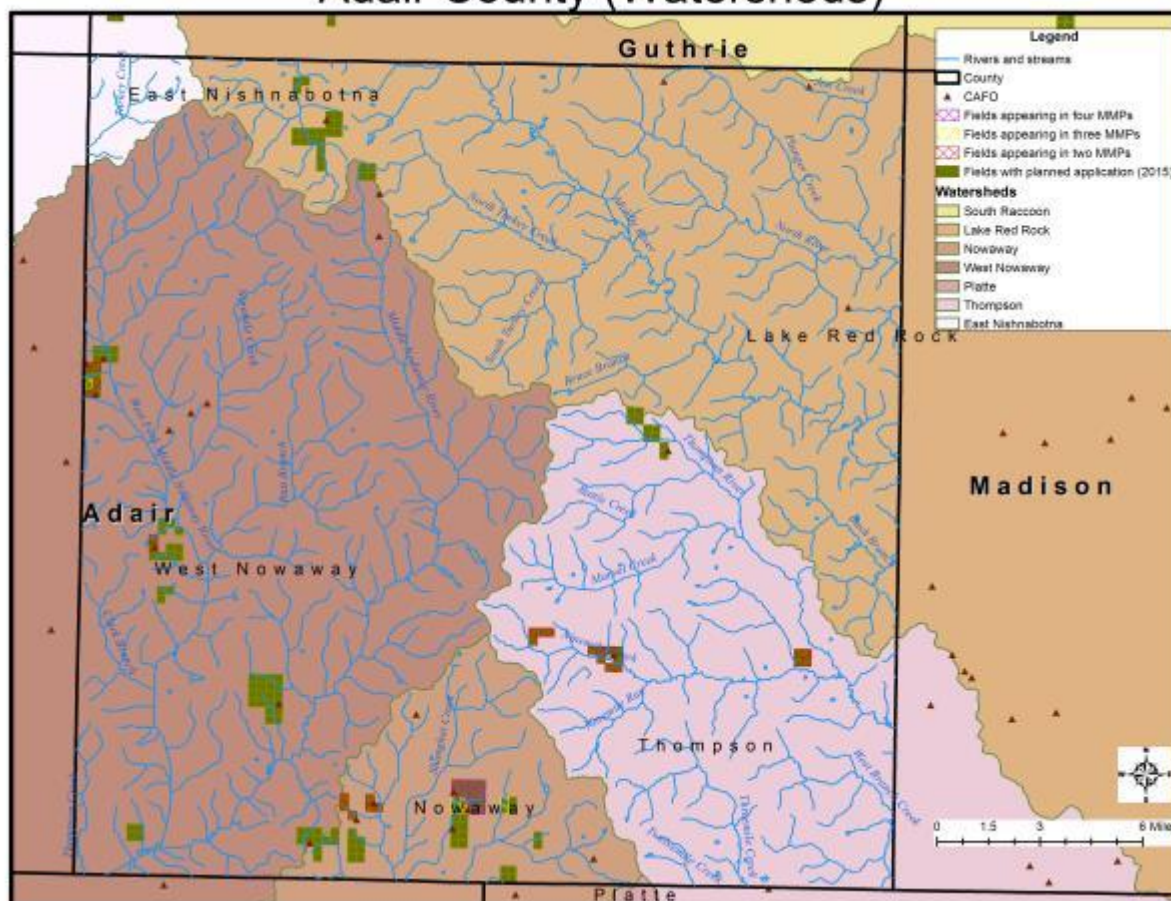
If people saw more people in their community exhibiting some resolve, and some guts, and standing up, I think that can be contagious... We can maybe stand together instead of just suffering alone.

You try, or you do nothing. And we know what's going to happen if you do nothing. So you try. That's all I know to do.

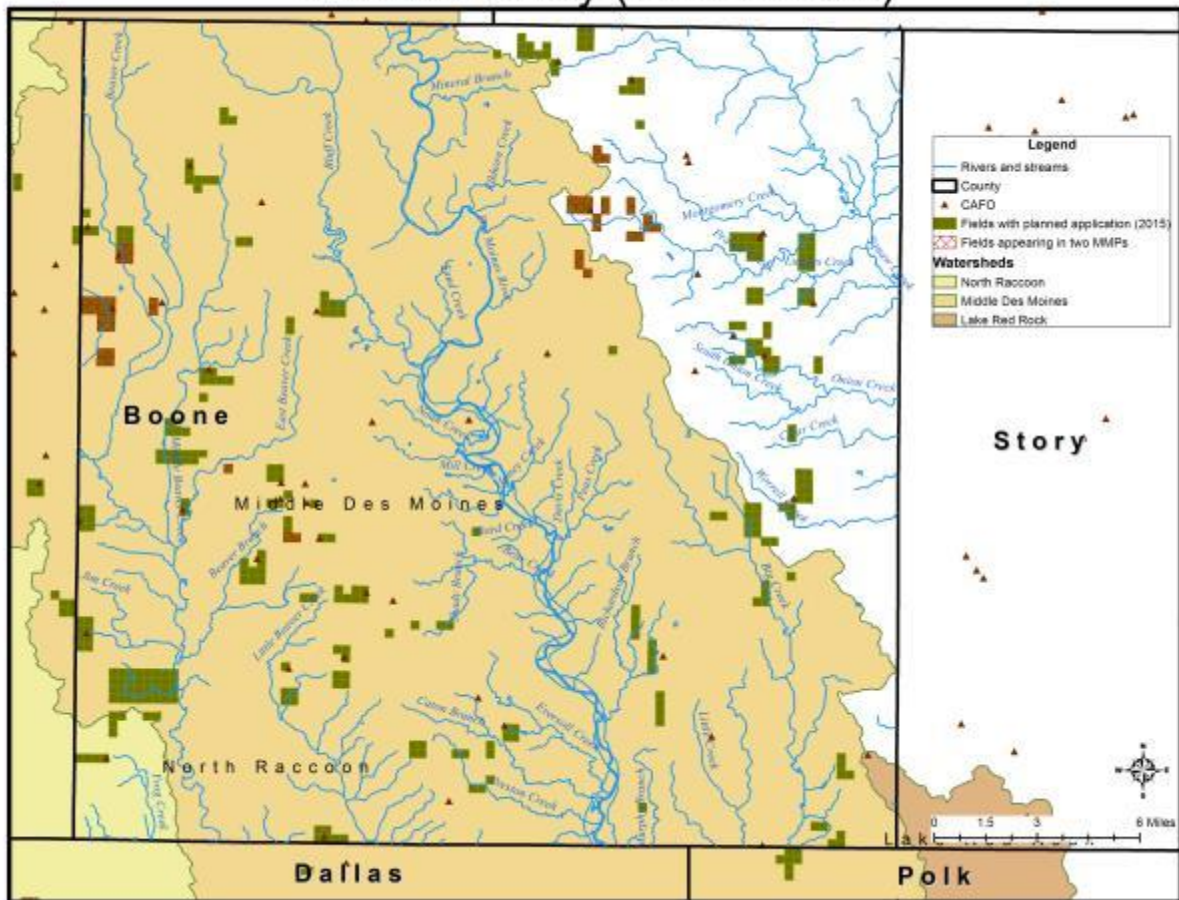
I don't know. Just being hopeful and not getting bogged down. That's what the capitalists want. Capitalists want people to give up.

APPENDIX A

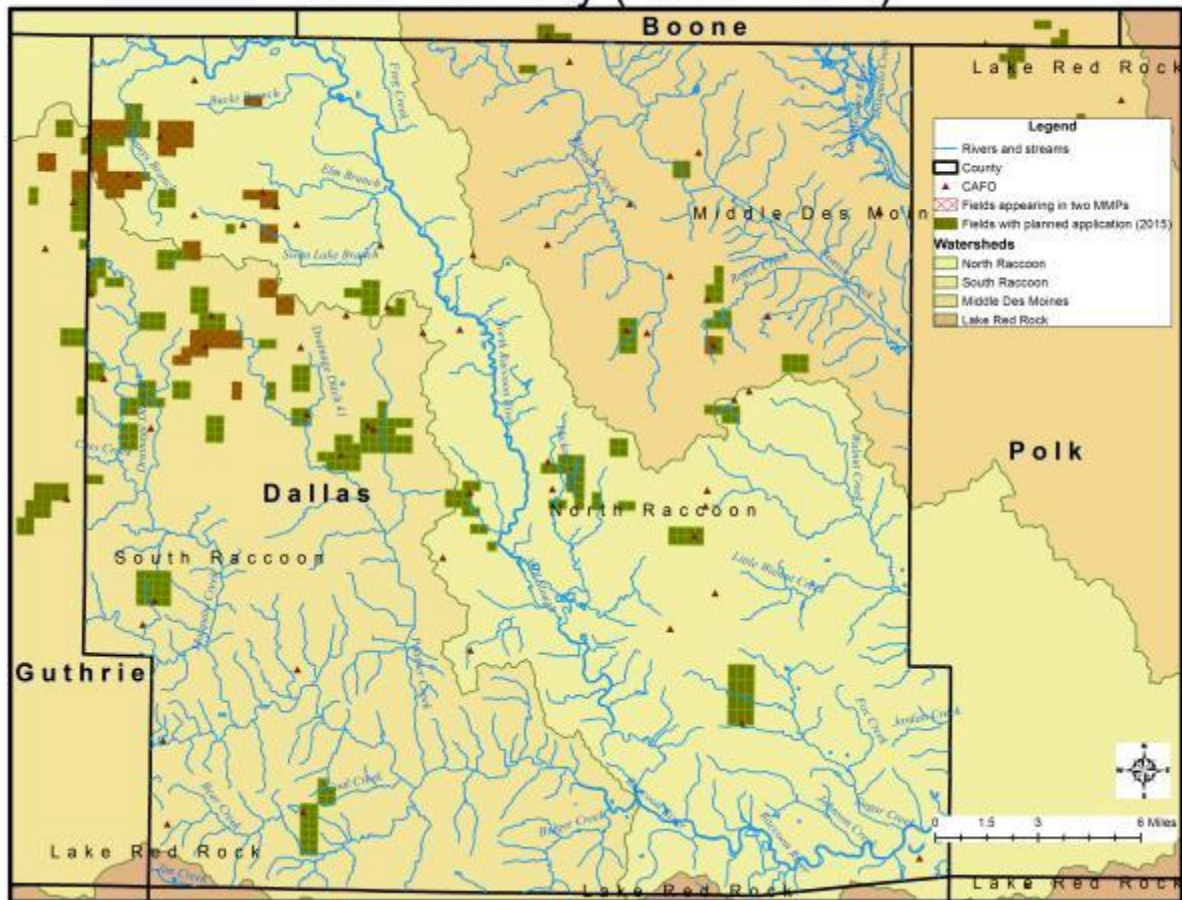
Adair County (Watersheds)



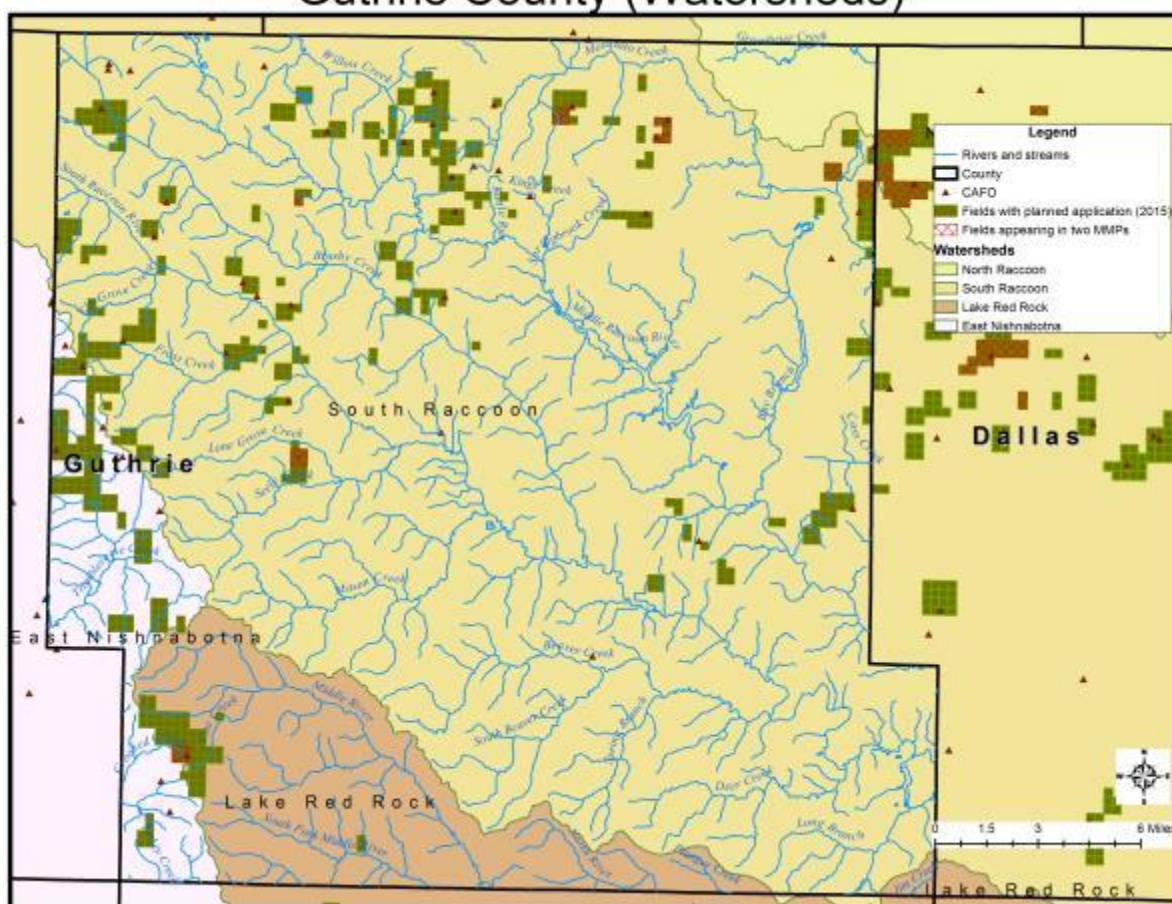
Boone County (Watersheds)



Dallas County (Watersheds)



Guthrie County (Watersheds)



Map of the Upper Mississippi River Watershed

Legend

- Rivers and streams
- County
- CAFO
- Fields appearing in two MMPs
- Fields with planned application (2015)

Watersheds

- Blackbird-Soldier
- Maple
- Boyer
- North Raccoon
- South Raccoon

Counties

- Buena Vista
- Pocahontas
- Ida
- Calhoun
- Blackbird-Soldier
- Sac
- Boyer
- North Raccoon
- South Raccoon

Scale

0 1.5 3 6 Miles

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