Frac Sand Mining and the Disruption of Place, Landscape, and Community in Wisconsin

Thomas W. Pearson

Driven by hydraulic fracturing, sand mining has expanded rapidly in western Wisconsin, with hundreds of mining operations appearing over the past several years. Silica sand is extracted from hills and then shipped by rail around the country, where it is pumped under high pressure with water and chemicals into oil and gas wells. An often overlooked dimension of America’s unconventional energy boom, the growth of sand mining in Wisconsin has been incredibly divisive, generating wealth for some lucky landowners while creating new environmental hazards for others. This article documents how people experience mining-related changes and con icts, drawing on ethnographic interviews with residents living next to mines, processing plants, and hauling routes. While not everyone experiences mining equally, I argue that people grappling with a sudden in ux of mining activity suffer signi cant disruptions that erode their sense of place and belonging. These experiences, however, are rarely taken into account by policymakers, local of cials, or others seeking to evaluate the costs and bene ts of frac sand mining. This omission underscores the need for ethnographic research to deepen our understanding of how people are impacted by new resource extraction industries.

Key words: natural resource extraction, unconventional energy, social trauma, environment, place

“Do you want to see the mine,” asks Harlan? Of course, I reply. Harlan fetches his boots. Joined by his wife, Edith, we walk across a farm eld, our trajectory curving slightly with rows of edgling Roundup Ready soybeans. At the end of the eld, we push through several feet of brush before reaching a ridge that overlooks the open-pit mine. Harlan de antly hikes past the thin wooden stakes marking his property line. He climbs to the edge of the pit, striking the pose of a seventy- something mountaineer who has just conquered an imposing summit. I join him but do not ascend as high. Edith remains a few feet behind as we peer deep into the mine.

We look out at what had once been farmland worked by their family for generations. For over thirty years, Harlan and Edith had operated a successful dairy operation with around forty cows, small and increasingly uncompetitive by today’s standards. In thirty years, they left their farm for only one night so that Harlan could stand in a friend’s wedding. They nurtured their animals and their land with a combination of hard work and love. “We took care of the cows and the cows took care of us,” Harlan explains. Nearing retirement in the early 2000s, they sold part of their land, along with their original home and farm buildings, to an aspiring farmer and then built a new house on their remaining property up the hill. Ten years later, however, the neighbor was presented with an offer he couldn’t refuse: an out-of-state investment rm wanted to purchase the land at six times the going rate to harvest sand from the property. He sold, signed a nondis- closure agreement,
and retired out of state. The town lacked zoning and, at that time, regulatory ordinances addressing mining, and few knew that multiple mining interests were buying up land in the community.

Now the land is gone, swallowed by a massive hole in the ground. We watch as a solitary construction excavator sits amid a sea of sand, patiently waiting for a dump truck to approach. The truck will haul the sand to a processing plant and then to rail cars. One truckload at a time, sandstone bedrock fashioned by hundreds of millions of years of geological processes will be shipped to oil and gas wells around the country and then forcefully injected back into the earth. Innovations in oil and gas production known as hydraulic fracturing, or fracking, have spurred unconventional drilling in several parts of the country. The surge in oil and gas drilling, however, has also fueled an unprecedented growth of sand mining in Wisconsin. Mining companies extract a special type of silica sand unique to western Wisconsin, ship massive quantities of this so-called frac sand around the country, and then pump truckloads of it, along with water and other chemicals, into oil or gas wells. Deep underground, the granules prop open splintered shale bedrock, releasing valuable hydrocarbons.

Prior to the nationwide fracking boom, Wisconsin hosted only a few industrial sand mines that harvested sand for glass, foundry, construction, and other industries. With steady growth over the past several years, western Wisconsin now has over 125 operational or proposed mining facilities, many controlled by out-of-state companies.1
As we peer down into the mine, Harlan and Edith lament the loss of the farmland that had been their home. They are longtime residents of the Town of Dovre, an out-of-the-way rural community of roughly 850 people spread throughout thirty-five square miles of tree-topped hills and rolling farmland. In the past, Dovre consisted largely of dairy farms and rural homes, with a small Lutheran church and a 100-year-old wooden town hall building marking the center of the township. The new frac sand mine represents a disquieting transformation of a familiar landscape once defined by red truck-red barns and clusters of lazy, pasturing cows. Even though agriculture entailed intensive environmental transformation in its own right, the pastoral landscape had been normative and meaningful. It grounded Harlan and Edith’s sense of belonging, despite the decline of the small, family-run dairy farm over recent years. As further offence, it is rumored that the actual house they spent their lives in will be set ablaze and burned to the ground in a controlled exercise for the local volunteer fire department. In a potent symbol of “creative destruction,” the remnants of previous ways of life are destroyed to make way for a new extractive industry generating billions of dollars in profit for out-of-state investors. While they are angered by the incursion of mining in their community, they also feel hopeless in the face of its transformations.

The experience of Harlan and Edith is not unique. Since around 2012, frac sand mining has ushered in dramatic changes to Dovre and surrounding communities, where mines, processing plants, and loading facilities cluster near the Progressive Railroad line running through southeast Barron County and northwest Chippewa County. The five adjacent rural townships of Dovre, Sioux Creek, Auburn, Cooks Valley, and Howard have permitted at least fifteen mines on roughly 6,000 acres of land, with major processing plants and rail loading facilities located in nearby New Auburn, Bloomer, and Chippewa Falls. Mining development has been incredibly divisive in this area, enriching some lucky landowners while attenuating picturesque hillsides and generating new hazards. Some residents worry about the harmful silica dust caused by mining activities, a regulated carcinogen in confined workplaces but rarely monitored in open-air settings before now. Experts disagree about whether people living near frac sand mines or haul routes are at risk (Walters et al. 2015). In addition to air quality concerns, withdrawal of groundwater for mining operations, as well as use of chemicals in processing plants, has sparked concern about water quality (Cooperative Extension 2012). Blasting, truck traffic, machinery noise, and bright lights also disturb serene rural communities. The destruction of scenic landscape undermines property values and tourism industries, introducing negative economic impacts despite industry promises of job creation (Deller and Schreiber 2012).

Just several years ago, Dovre residents like Harlan and Edith cared for their cows, went to church on Sundays, and pondered the fate of their land as they neared retirement. Now they contend with frac sand mining on a daily basis as a new and uncertain industrial hazard, one that introduces extreme changes to their community and the surrounding environment. While much local discussion has focused on the environmental and economic impacts of frac sand mining, my goal in this article is to document a pattern of social disruption. This disruption echoes the social and psychological impacts endured by other communities facing industrial hazards and disasters, where stress, uncertainty, and resentment generate profound feelings of vulnerability that undermine people’s connection to place and their trust in the integrity of basic community institutions. These disruptions and the sense of sociopsychological trauma experienced by some individuals fuel new forms of community strain and discord. Beyond Wisconsin, the expansion of unconventional energy development through hydraulic fracturing has introduced similar impacts in rural and sometimes urban communities in several regions of the United States, suggesting
that Dovre and similar towns now form part of an expansive commodity chain of energy development, provoking still poorly understood social changes.

Unconventional Energy, Industrial Hazard, and Place

Anthropologists have recently begun to study the social impacts of unconventional energy development, or fracking, in other parts of the country, suggesting several parallels with Wisconsin frac sand mining in terms of how people experience rapid social and environmental change as they grapple with the arrival of new extractive industries (De Rijke 2013; Willow and Wylie 2014). In rural Bradford County, Pennsylvania, Simona Perry (2012, 2013a, 2013b) found that the rapid industrial development associated with fracking compromises the ability of some people to enjoy their home and way of life, becoming a source of strain on people’s mental health and sense of well-being. In addition to immediate environmental stressors, however, industrial hazards are uniquely characterized by “invisible” dangers, such as silica dust from frac sand mining or groundwater contamination in the case of fracking (Kinchy and Perry 2012). Like other industrial hazards, scientific claims about the potential dangers of fracking are heavily contested, contributing to an “ambiguity of harm” that invites competing interpretations of risk (Edelstein 2004; Freudenburg 1997). This “social production of uncertainty” fuels anxiety, confusion, and distrust of experts, a climate which generates hostility and discord (Button 2010:13-15). In New York and Pennsylvania, for instance, Kinchy (2013) found that residents’ diverse perceptions of contaminated fracking wastewater contributed to skepticism about regulatory experts and policy, which in turn exacerbated stress, frustration, and feelings of vulnerability.

Both frac sand mining and fracking are also characterized by “human causality” but also “involuntariness,” setting the stage for intense distrust and anger targeted at neighbors, community institutions, and corporations (Edelstein 2004:17). In eastern Ohio, some people embrace fracking because they expect to financially benefit by selling or leasing their land or because they view drilling as a source of jobs and economic development. Others then resent that their neighbors have subjected them to potential harm, provoking feelings of vulnerability and loss of control (Willow 2014; Willow et al. 2014). In her research in Pennsylvania, Perry (2012:85) describes how people “question what they thought they knew about how their communities function, how their governments operate, what the future will be like, and how their neighbors are and will be.” Resulting social division becomes another source of stress or “collective trauma,” as residents question their relationships with neighbors and previous trust in basic community structures (Perry 2012; cf. Couch and Kroll-Smith 1994; Erikson 1994; Freudenburg 1997).

A further question is how unconventional energy development alters people’s relationship to place, landscape, and the environment, an often unrecognized factor in people’s sense of well-being and community cohesiveness (Perry 2012, 2013b; Poole and Hudgins 2014; Willow 2014). While people commonly view places as static stages for the drama of social life, anthropologists and geographers increasingly theorize the relationship between people and their surrounding environment in more dynamic terms (Biersack 2006). As people interact with their surroundings, places are “invested with meanings,” a process of social construction mediated by history, culture, and emotions (Pool and Cliggett 2008:2). Our subjective understanding of who we are, as individuals and groups, is shaped through attachments to specific places (Williams and Brandt 2013). From this perspective, “place is also a way of seeing, knowing, and understanding the world” (Cresswell 2004:11).
This relational and process-oriented conception of place applies to the notion of landscape as well, which is much more than “the distant scenery we sometimes stop to admire” (Willow et al. 2014:57). In a community such as Dovre, the landscape is not only physical but also symbolic, and people relate to it in diverse ways. Longtime residents may view the rural landscape as a source of economic production or a resource to be utilized, but it also serves as a symbolic “repository” of meaningful social ties and memories (Miller and Rivera 2007). Kin-based social networks are often understood in relation to the land, “where roads and hills are named after families who owned the most land on that road or hill,” or where people associate a landscape feature with a distant family member (Perry 2012:86). Such “genealogical landscapes” relay local history and social relationships as if inscribed into physical geography (Allen 1990). In addition to longtime residents, over the past two decades communities such as Dovre have also seen an increase in middle-class “amenity migrants,” usually ex-urbanite professionals or retirees who move to the countryside in pursuit of rural peace and quiet, fresh air, safety, sense of community, and nature (Schewe et al. 2012). They value this “consumption landscape” on a primarily aesthetic level, viewing farms and agriculture as an expression of the perceived natural world they felt disconnected from in the city (Marsden 1999).

In this sense, for both longtime and more recent residents in Dovre, landscape and place act as dynamic, constitutive elements of the human experience. People construct identity and community in relation to their physical surroundings and the places they inhabit. When mining alters that geography, it erodes the social meaning of landscape as well, provoking an “almost foreign outlook” on once familiar landscapes and calling into question attachments to place (Miller and Rivera 2007:141). In addition to landscape change, invisible
hazards such as silica dust undermine how people relate to the surrounding environment. As Willow (2014:61) argues in the case of fracking in eastern Ohio, fear of an uncertain toxic hazard transforms previously mundane or “formerly positive experiences of place into experiences of profound alienation” (cf. Jackson 2011). As many other social science researchers of industrial hazards have concluded, “even when people are not physically displaced” or suffering from immediate health impacts, the “perception of pollution” and fears about the prospect of future harm are often as psychologically traumatic as the physical hazard itself (Willow et al. 2014:61; cf. Freudenburg 1997). Entailing visible landscape change as well as invisible hazards, frac sand mining “pushes itself into consciousness” as something unfamiliar and uncertain, undermining previous taken-for-granted assumptions about the integrity of place and environment (Kroll-Smith et al. 1997:2). As I describe below, while some people have been

displaced by mining operations, others endure a form of ontological displacement: as mining transforms landscapes, introduces new hazards, and alters social relationships, some feel alienated from places that previously grounded their sense of belonging.⁶

In what follows, I draw from numerous in-depth ethnographic interviews conducted in Dovre and surrounding communities to explore how people respond to the unexpected and unwanted arrival of frac sand mining.⁷ I describe the emotional turmoil experienced by those facing what they perceive to be a new industrial hazard, the impact mining has on their sense of well-being, and the ways in which the disruption introduced by mining “damages the bonds attaching people together,” including the relationship between people and the places they call home (Erikson 1994:233).

**Learning of a Proposed Mine: Crisis, Distrust, Polarization**

On a warm spring evening in 2014, I sat with Susan and Michael on their patio overlooking an acre of land along a state highway in Dovre. Sand trucks clambered by every minute or so, and a street sweeper periodically crept along the side of road, vacuuming up sand and what the industry calls “fugitive dust.” Susan and Michael moved here about thirteen years ago, drawn by the beautiful landscape and land

they could afford with their modest salaries as state workers. They desired to “build a space for themselves,” as they put it. For a decade, they commuted to work in a nearby city and enjoyed their home. A few years back, they had seen some sand processing plants and mines in the region but were not immediately impacted. “Out of sight, out of mind, I guess,” said Michael. But then one night a friend called to tell them a neighbor had sold to a mining company.

Michael: It was quite devastating. It was a very hard night. We knew the world was just gonna change.

Author: What did you imagine at that point? What were you thinking?

Susan: There goes our rural, quiet life. I don’t know. I just cried a storm. I called my mom, I was devastated. I said why us? Why this road? Why this area?

Susan and Michael threw themselves into the issue in an effort to shield their home and way of life from unwelcomed industrial development. They organized with neighbors, forming a group known as the Concerned Dovre Residents, attended countless town meetings, extensively researched the impacts of mining, and endeavored to become citizen experts about local regulatory tools. Their concern and involvement became
all-consuming and emotionally draining. As we talked, the conversation veered into technical details about local ordinances. Then suddenly Susan said, “See, this is what’s happened to our life.”

Susan: Instead of just coming home to try and concentrate on work and other things, it was obsession of this for two years. No movies, no nothing. You couldn’t miss the board meetings, you had to make sure when they were at the school [where public forums were held], trying to get a hold of one of the mines [company representatives] to try and talk to em, and every moment initially was... Michael: Consuming.

Susan: ...consuming, because you’re trying to nd out as much as you can, but nobody will tell you anything.

When I ask people such as Michael and Susan how they rst learned about frac sand mining, they often describe a mo- ment of shock. It’s one of those issues that usually has a clear “before and after” dimension. “It felt like there had been a death in the family,” explained another woman from Barron County. Like Michael and Susan, she articulated a speci c point at which life as she knew it shifted dramatically, a point at which her day to day routine was interrupted by a period of crisis or turmoil.

For many, the sense of shock feels all the more sudden, and underhanded, when they learn that mining interests had been working quietly behind the scenes, for months or years, to acquire land, to draw up engineering plans, and to initiate the early stages of permitting. Confusion and betrayal are common sentiments when people realize that their neigh- bors had been discreetly negotiating leases or sales. Some people recount rst hearing about proposed mines through rumors or when the notice for a public hearing was posted in the county paper, usually after the wheels for a project are already in motion. “They had sold without anybody know- ing,” explained Michael, “and no one was supposed to nd out, because it was supposed to be this secretive thing.” News of the sale eventually spread, however, perhaps originating with a landowner’s children. “The mine was already coming, and they weren’t supposed to tell anybody, that was a part of the agreement.” By “agreement,” he meant a con dentiality agreement signed by the landowner as part of the sale of their property to the mining company, a common practice that some residents deride as “gag orders.”

As we spoke, Susan and Michael eventually told me about their suspicions concerning a new mining operation that would use the busy haul route next to their home. They speculated about which neighbors were involved:

Susan: There is someone up on the hill, whether or not they’ve talked with the mines, and they’re gonna sell... I’m not sure.

Michael: We’re not sure if they’ve sold to the mines yet or not, or if they are...we’ve heard...

Susan: They’re still there [pointing in one direction]. They left [pointing toward a different home], not neces- sarily from the mine or the processing center across the street, but another mine leased their land apparently. This is all rumors.

Michael: We found this out from the [local business]. This is how you nd information. We nd it out from other sources, when we start talking, that they have family that know this and know that, and....

Everyone suddenly becomes suspect. As Michael and Susan’s exchange illuminates, neighbors constantly wonder about who might be cavorting with mining companies. Industry’s emphasis on con dentiality and nondisclosure adds to the pervasive sense of secrecy and what Button (2010) refers to as the “social production of uncertainty,” fueling suspicion and distrust.
In some cases, the uncertainty and sense of secrecy divide once close-knit communities. A longtime resident of Cooks Valley, who has a farm near a frac sand mine, stated:

I’m not anti-sand, per se, but it smells kind of shy when all of a sudden this company comes and wants to ram something through. The way I found out my neighbor was going to sell sand is when I read about it in the paper. It used to be that if somebody sneezed.... I mean, when my husband and I got engaged, three other people knew I was getting engaged before my close family! Because everybody knew everybody’s business.

In this case, “everybody knowing everybody’s business” indicates a deep level of social intimacy and mutual understanding. Learning about her neighbor’s involvement with frac sand mining from an article in the newspaper signaled a rupture to that sense of cohesion and trust. In other cases, people question the bonds and previously taken-for-granted expectations of reciprocal concern that had anchored friendships. A Dovre resident explained:

One of my best friends leased their property out down here and all of a sudden, you know, we’re not on speaking terms anymore. She used to be a really good friend. She has no remorse. She doesn’t feel sorry for us. She’s like, “Too bad.” You know, what she said to me, is, “Why can’t you be happy for me and my family?” It’s like, cuz, all I’m asking is maybe for a little support from you, and [for you] to realize that you’re chokin out my three-year-old son. Don’t you care about him? I’m supposed to be “yay for your millions of dollars” and you don’t care if I’m living here?

Distrust and suspicion often extend to town or county officials, undermining confidence in local government and basic community structures. In Dovre, several residents I spoke with raised questions about the integrity of the town board. They speculated that members of the town board had connections to the frac sand industry, some having sold their land to mining companies. The town’s lawyer also worked for a law firm that represents frac sand interests. While these circumstances don’t constitute a conflict of interest as narrowly defined by law, people see these connections and question the motives of local decision makers. As Susan recalled, “I felt like there was an open door for the mining companies.” She explained that town board members would comment about how they had met with the mining companies to address resident concerns, which some residents perceived as indicating a cozy relationship between the town board and the mining representatives. When the concerned citizens approached the board, however, they felt ignored or dismissed:

Whenever we tried to approach [the board], it seemed like [from their perspective] we’re just the “obnoxious, liberal, eco-maniac neighbors,” or whatever, “tree hugging neighbors” that “don’t know what they are talkin’ about.” They didn’t really want to hear anything we had to say. That’s personally how I felt. I didn't feel like we had an ear.... I never felt real comfortable that we were actually being heard. Just by their body language, by their response, you knew that they were meeting with mining companies on the side. Well, of course they were.

Susan had never been involved in local politics prior to the arrival of frac sand mining, but her experience left her disheartened and questioning the reliability of local institutions. She reflected on her experiences: “I guess, ever since I learned about local government and public officials [in grade school many years ago], so to speak, they are supposed to be for the people and for the majority of the people. And I certainly don’t have that perspective with our town board.” Lack of information and the perception of secrecy fuel suspicion, leading people to distrust their neighbors and in some cases their local elected officials. People begin to doubt basic social structures such as the organization of their community and the function of local government. “We just came to realize that this is a trust issue,” said one man. “They lied to us over and over and over again. We don’t trust anybody anymore.”
Faced with a proposal for a mining operation, communities must quickly grapple with a multidimensional issue that brings complex impacts, both positive and negative. Threats to air quality, changes to landscape, or the nuisance of truck traffic, noise, and light pollution will not affect everyone equally. Some will reap the nancial bene ts, others will shoulder the social and environmental costs, and still others will remain unaffected and indifferent. It is challenging, however, to address this complexity and unevenness in a nuanced and open manner. Pro-mining interests couch their projects in a tantalizing yet simple narrative of job creation and are highly motivated to convince local decision makers to support their interests. Detractors, for their own part, weave their own moral narrative, framing mining as an outside threat to the community. As debate escalates, the contention around mining becomes extremely polarizing, fueling new forms of community discord.

Alec, a forty-year-old college professor who was born in the region but moved to Dovre after graduate school, had spent two years opposing multiple mining operations as part of the Concerned Dovre Citizens when we spoke in February of 2014:

What frustrates me is that they pit people against each other. I’m not necessarily anti-mining, but I think it needs to be done right. And if you ask a question, you are automatically [accused of being] “anti-mining,” and then you cannot associate with the pro-mining people. Don’t ask questions, you know, because then you’re “anti-”, you’re a “tree-hugging, anti-American, job-hater.” And that’s how they portray you, they divide and separate everybody.

He felt as if pro-mining interests painted him and others as a group of “tree-hugging environmentalists,” a label evoking ideas about privileged outsiders. In this case, such efforts relied on constructing symbolic boundaries between “found- ers” and “transplants,” people with ties to the land going back generations versus people who have recently settled into the community. The notion of “transplants” also carries perceptions of status and encodes class-based resentment. So-called transplants are perceived as upper- or middle-class professionals who typically buy a parcel of land to build a new, modern house. Lured by picturesque landscapes, they connect to the land on an aesthetic level. “We’re all transplants,” said Alec in reference to his group. “We came to this area, and now we want a better quality of life. I could live anywhere, and I chose to move here because I like the community, I like the ruralness, the cows, the farm, the farmers...and now the farmers are leaving and all we have are giant pits of sand.” When others labeled him a transplant, his right to speak on behalf of the community became suspect. “I was a person in the community that was looked up to,” he explained. “And now, because I ask a question, now I’m a ‘crazy person.’” He feels ostracized, and when we spoke, he alternated between romantic portrayals of small town life and disparaging comments about uneducated, closed-minded country folk, underscoring the symbolic divisions that have taken shape around frac sand mining. “If you don’t hunt and you don’t sh and you don’t drink beer on the weekends, then you probably aren’t gonna t into this community.”

Not all residents who question mining are vulnerable to the “transplants” stigma, however. The people most passionately involved in this issue are those affected by it, whether longtime residents or newcomers. In many communities, longtime residents with roots in farming are pitted against each other. As one person put it, this issue sees local communities grappling with big business, “but it’s also the landowners versus the people who don’t have sand on their property.” In communities where some residents trace their family history back generations, extended kin may nd themselves on opposing sides of the issue. One woman I
interviewed in Dunn County pushed back tears as she told me about a cousin who, years later, still will not speak with her after she joined a community group that successfully stopped a proposed mining operation:

It was really difficult, actually. The land owner that was going to make this agreement with the sand mine, he just started talking to his rst cousin now [recently], and it’s been how many years now? [Several.] And he hasn’t started talking to me yet, and I’m his cousin, too. So, yea, it was very divisive.

Similarly, a family in Howard told me that they have the same great-great-grandparents as “the ones with the mine. We’re actually shirttail relatives.” The notion of “shirttail relatives” marks distant family ties, underscoring how longstanding social and kin-based networks have been strained or disrupted by frac sand mining. In one community, contention over frac sand mining resulted in a lawsuit led against the town. “One of the main plaintiffs was my husband’s best man,” said a longtime resident. “He still doesn’t speak to us. Nothing! Talk about pitting neighbor against neighbor. I mean, he has yet to sell a teaspoon of sand.... [Now] he is just so consumed with anger and resentment.”

As this suggests, significant tension surrounds proposed mining operations, which ignite passionate reactions and heated debate. Some residents eagerly champion the prospect of financial gain, while others ponder how the industry will impact their quality of life and the place they call home. Proposed operations may polarize communities, with residents feeling pressured to take sides. New divisions emerge that strain existing social networks and undermine people’s sense of connection to their community and their trust in local government. In this context, the formation of groups such as the Concerned Dovre Residents serve as an important source of solidarity and support for members but may also add to a “corrosive” atmosphere and “further the process of polarization” (Freudenburg 1997:31). Alec, for instance, explained how organizing with neighbors initially enhanced his sense of community involvement, as he found himself attending town meetings for the rst time and organizing with neighbors whom he had never met before. Their efforts, however, were largely fruitless and left him feeling exhausted and demoralized. “We separated from some neighbors after a while,” he said, “because it got too tough. They were getting too personal and too angry and storming out of meetings and doing things

that we just weren’t comfortable with. I said I can’t live like this. I said if we’re that unhappy, then we just need to move.” All of these forces create significant stress and anxiety in their own right. But living next to an unwelcomed frac sand mine or along a heavily used haul route is another story.

**Living with Unwanted Mining: Stress, Anxiety, Displacement**

When his company offered him early retirement, Joe and his wife Nancy sold their big-city home and bought an idyllic piece of property in Dovre. They’ve been here a little over a decade now. We spoke on a sunny afternoon in June of 2014, sitting around their kitchen table near a large window overlooking eleven acres of rolling countryside, thunderstorms brewing in the distance. A few years ago, a neighbor sold forty acres of land to a mining company. Now, a steady stream of dump trucks use a road near their house. The mining activity upended their world. It was like getting “smacked in the head with a two-by-four,” said Joe:

I think I have to have control of a situation, and I lost all control of everything [when the mining started]. I mean, human beings are a creature of habit—I am de nitely a creature of habit. These trucks weren’t a part of my habit, this lifestyle wasn’t, and it was just a drastic change.
No longer able to spend as much time outside, Joe became depressed and felt imprisoned in his own home. He sought refuge from the noise, truck traffic, and dust in the basement of his house:

The first year they were here, I’d go out and walk the dog in the morning...then I’d go sit in the basement. I felt like I was in solitary confinement, in jail. I mean, [after retirement] I gained weight anyhow, but I gained a hell of a lot more weight then. I didn’t want to go outside. I was sick. Your life is just turned upside down.

As Joe and Nancy have adapted to life with frac sand mining, one of their ongoing complaints is the dust and itch. Everything is dirty, all the time, they say. They can’t open their windows because of the dust, but even with the windows closed, they are constantly cleaning. “They say there is no fugitive sand, but I mean, you see it on the roads, you see it on our parked cars in the enclosed garage,” Joe complains. “The house, can’t keep this clean.” Nancy has asthma, which the dust aggravates. “When I am outside trying to garden and stuff,” she says, “a lot of the time I come in the house gasping. But according to them there is no fugitive sand in the air.”

The dust is both a nuisance and an unsettling reminder of an uncertain, invisible hazard. I visited Lisa on an unusually cold afternoon in January of 2014, a blanket of fresh snow covering the farm fields and nearby stockpiles of sand. She lives with her husband and children on an old farm in Dovre, though they are not farmers themselves. Within the last few years, two separate frac sand operations have opened within a mile of her home. Thousands of twenty-ton trucks drive past twelve hours a day, and a nearby processing plant runs non-stop, loading railcars by the thousands. Low-level vibrations gently pulse through Lisa’s house, tremors just strong enough to rattle her nerves and cause hairline cracks in a few walls. She deals with noise, constant vibration, interrupted sleep, and anxiety related to unknown health and environmental impacts for herself, her children, and her animals. “I’m told I’m exaggerating when I talk about the sheer dust that’s in this house. In the middle of summer, I can start on this end,” she said, pointing to an L-shaped countertop wrapping around the length of her kitchen, “and by the time I get to this end, there’s a layer of dust on that countertop. And I’m told that I’m lying, that I’m ridiculous, I’m exaggerating, I’m crazy.”

Also in January of 2014, I sat down with Karen and her friend Becky, who live in Howard and Cooks Valley. When I arrived, Karen’s husband had just finished plowing a foot of snow off the long driveway leading to the house on their farm. Along with their husbands, Karen and Becky each maintain small farms and work outside jobs. They are longtime residents of their communities, and in the past three years, each has seen a different frac-sand mine open up next door. Similar to Lisa, they worry about the impacts of mining on air and water quality, and Karen’s house vibrates when blasting occurs. One of the most disruptive changes has been the increase in truck traffic.

Becky: The first thought in my head when I wake up in the morning is, are the sand trucks here?
Karen: Right, exactly. People don’t quite get that! We think of it every day. The rst two or three years, there was not a night I wouldn’t wake up dreaming or thinking of the sand and stressing.

Becky’s house is close to the highway, and she states repeatedly that dump trucks now pass her house every forty-two seconds. They remark on rumbling diesel engines, squealing brakes, and the blaring headlights at night. Like many residents I interviewed, Karen and Becky were also stressed about what they perceived to be a lack of regulatory oversight. They worry that the Wisconsin Department of Natural Resources (DNR) lacks
the capacity to adequately oversee mining operations, and the absence of consistent air and water monitoring creates anxiety and uncertainty. Karen and Becky put it this way:

Karen: I think we’ve tried to show these neighbors [who lease to mining companies] that, I mean, let us at least know what’s in our air, let us regulate the water and let us do testing. I think we’ve also pushed that with the neighbors too. We’re not stopping you. We can’t stop you. Becky: But what we want...we want to be able to know what is going into and out of the mine. We want to know what kind of air we are breathing.

Uncertainty about potential hazards and feelings of vulnerability compound the everyday stress of living with industrial mining operations, but many people also feel uncertain about the future. Susan and Michael, first introduced above, worry about the seemingly endless expansion of frac sand mining operations near their home.

Susan: I think the part that’s worse for us is that it’s not stopping. We thought it was one mine at the end of the road. Well, now it’s the mine at the end of the road, with the processing plant back here, there [pointing another direction] is a processing plant, the dry and the wet plant over there, and now we hear there is another one going up right over on the other side of the road.

Michael: You don’t know until they come with the trucks and start building, and that part has been very traumatic for us.

Susan: It’s just the constant unknown.

Michael and Susan remain, but others have sought to leave Dovre. I already introduced Lisa, who lives within a mile of multiple mining operations and along a heavily used haul route. After complaining about noise, vibration, truck traffic, dust, and her concerns about health hazards, her town board atly said her “only recourse is to move.”

Author: How does that feel, when people say that?

Lisa: Oh, it makes me angry, it makes me real angry. I mean, I’ve paid my taxes, I’ve obeyed the law, I’ve, you know, I’ve done my volunteer work, I, you know, I work my butt off.

Despite her claim to belong, suggested by the reference to property taxes and community involvement, she feels socially marginalized, even stigmatized, and will seek to sell her home. Many towns have included property value guarantees within new licensing ordinances or as part of development agreements negotiated directly with mining companies. Though they vary widely, such provisions commonly obligate the mining company to compensate adjacent property owners if they sell their home or property for less than market value or if they are unable to sell their home (Dirr 2014).

Lisa: I’m frustrated. I’m angry. I’m embarrassed to live here. I want out horribly, cuz I know they don’t want me here. The community doesn’t want me here anymore because I’m not pro sand.

Author: And you’re looking to leave?

Lisa: Yeah, [I feel] horrible about it, but I don’t want to be here.... I want out, and I guess I’ll sacrifice somebody for myself. You know, I feel bad. But, that’s my only way out.

Lisa is not alone. I spoke with Heidi nearly two years after she had relocated due to mining. Born and raised in the region, in the late 1990s she moved into an old farm house on a dozen acres in a rural township, where she raised her children, started a business, and built her life. When she learned that a neighbor had sold land to a mining company, she was devastated. She spoke out passionately against frac sand mining and organized against the proposed operation, straining her relationship with the neighbor who had sold. Within months,
However, it was clear that not only would they not stop the mining operation, but a second company was moving forward with another project, also next door. Her home and way of life would never again be the same. “It was very traumatizing to feel pushed out of our home,” she told me in June of 2014, “while, at the same time, I knew I was one of the lucky ones.”

She felt lucky that the mining company was interested in purchasing her property. They didn’t need her land, but it became clear that they were interested in buying her out. She initially insisted she would never sell to them, but, as her daughter put it, with multiple mining operations next door, “what you are fighting for isn’t going to be here anymore.” She decided her only option was to leave but still harbors guilt about the decision.

“Author: So how did you feel when you finally had signed those papers to sell to the mining company?

Heidi: Empty, totally empty. But, I mean, it is still kind of a torn decision, because I look there [at the site of her former home] and I think, quit being so stupid, you couldn’t have lived here, that’s just dumb. But I want [everyone] to get out. Which is their own choice, and they’re obviously qualified to make their own decisions. But...I did, I felt very empty. Very, very empty. To me, it was probably an unhealthy obsession with that property. To me, that was home. This, still, this [her current home] we’ll be going on [two years] now, and it still doesn’t feel like home to me.

Even though Heidi has “escaped,” she describes feeling forced to leave against her will:

I’m not trying to minimize anybody’s [suffering], but it feels like it would be different than if a tornado came and ripped you down, because it’s people doing it to you! I mean, it’s an industry doing it to you! Obviously, I would still mourn if it was an act of God or something. But, you felt almost, you just felt pushed out. The only other option was to grow old and be some pissy old women sitting in the middle of the driveway yelling at all the trucks going by. I would’ve lost everything else.

In her efforts to come to terms with her experience, she compared herself to victims of natural disaster, highlighting the involuntariness and human causality behind her displacement.

These stories, in which people express deep uncertainty about the safety of their home and their future, in which they are seeking to leave or have left Dovre, highlight how the experience of displacement may include both physical relocation and a sense of social dislocation. Still others, however, watch the landscape transform and feel alienated from a place that had once anchored their sense of belonging. In this regard, Marlene’s story is illustrative. An octogenarian, she has lived in Dovre her entire life, her grandparents having migrated from Norway. After arriving, her grandfather worked as a farmhand up the road. Just before getting married, he purchased the land where Marlene now lives to start his own dairy farm, which Marlene and her husband took over in the late 1940s. By the 1960s, they were no longer exclusively dairy farmers and worked jobs off the farm while cash-cropping portions of their land, common strategies in the face of changing economic conditions.
Despite the changing rural economy, Marlene describes an intense connection to her family’s land and other features of the surrounding landscape. The house she lives in today was built by her grandfather. The one-room schoolhouse where she attended grade school, and where her mother attended before her, still stands nearby. The Lutheran church she has attended her entire life, and the cemetery where her husband is now buried, are just up the hill. Today, however, the landscape is undergoing dramatic transformation. A few years ago, she would look out her front window at a pastoral landscape of gently sloping farmland and hills. Now, she scoffs at the “pyramids of sand,” as she calls them, the stockpiles maintained by a massive frac sand mine across the street from her home. “So how do you feel,” I asked her, “when you look out your window, and that’s what you see?”

“It’s sickening, just sickening,” she responded, pausing slightly to reflect. “I wish it was like a dream, and you wake up and it was a dream and it didn’t happen.” As we spoke, we could hear trucks rumble by. Sixty dump trucks pass her house every hour for twelve hours a day, six days a week, hauling loads of sand to a processing plant. A second mine now occupies the property where her grandfather first worked. “In fact,” she says, “the sand company just north over here has the farm that my grandfather grew up on. And I [had] always felt good about that, that I could go up there, and I was actually stepping on soil where my grandfather lived.” For Marlene, mining not only attenuates a pretty hill; it transforms a landscape saturated with meaning.

**Conclusion: Hanging On**

I am standing with Harlan and Edith Syverson on the precipice of the mine that consumed their farmland, the same soil once worked by Marlene’s grandfather, feeling as if we stare simultaneously into a quickly fading past and an uncertain future. Harlan and Edith must now decide whether to remain in a place surrounded by mining activity. “Well, let’s put it this way,” says Harlan, “everybody that I know around here that sold to the companies moved out, so that should tell you something. And right now, we’re surrounded, and it just makes you feel like they’re just squeezing you, too.” The mining companies have visited them several times, but they prefer to hold out for a few more years. “They keep coming over, and we’d both like to see it [remain] farmland, but how long can we hang on?”

Harlan and Edith’s story, as well as the stories of others in Dovre and surrounding communities, illuminate some of the social impacts of a rapidly growing extractive industry,
mining operations begin, residents report significant anxiety and stress as they cope with truck traffic, noise, light pollution, and uncertainty about environmental health impacts. These experiences exacerbate feelings of vulnerability. Drastic changes to long-familiar landscapes also induce distress, undermining some people’s sense of belonging. Ultimately, some residents are displaced, both physically and socially, and mourn the loss of their home or community.

Frac sand mining in Wisconsin, a state where fracking does not occur, now forms a significant if often unrecognized link in the larger commodity chain of unconventional energy development. The findings described in this article contribute to a growing discussion in anthropology about how fracking alters people’s relationship to the environment and how people experience rapid changes to place and landscape. Anthropology’s ethnographic research methods and focus on lived experience can also deepen policy discussions that ignore social questions or rely only on quantitative data. Although frac sand mining in western Wisconsin has been the subject of heated debate, local policy discussions tend to focus on environmental impacts, especially air and water issues and mining reclamation, or on economic impacts. When discussions of social dimensions do arise, they typically remain superficial remarks about how mining “pits neighbor against neighbor” or divides communities. Such conflicts are sometimes dismissed as isolated or as the outcome of individual personalities. I would argue, by contrast, that we view such conflicts as an outcome of larger social processes which shape the experience of a rapidly growing extractive industry. With dozens of communities hosting frac sand operations, I do not mean to suggest that every place in western Wisconsin experiences the same form of disruption or that all residents in a town such as Dovre experience the same levels of stress, vulnerability, or community discord. Clearly, this is not the case. However, the findings described above point to a pattern experienced by people who live in close proximity to mining operations and who did not elect to live under such circumstances. As local officials and policymakers evaluate the impacts of frac sand mining, they should pay closer attention to the uneven distribution of benefits and costs and should recognize that the costs go beyond quantifiable economic or environmental impacts.

Notes

1Due to a unique geological history, Wisconsin has abundant reserves of the type of sand coveted by the oil and gas industry for use in hydraulic fracturing. For a short geological discussion, see Bruce Brown’s (2012) “Hydrofrac Sand in Wisconsin.” A typical oil or gas well requires between 1,500 and 2,000 tons of sand, and hundreds of thousands of wells are active throughout the United States. Wisconsin has emerged as the nation’s top supplier of frac sand, with some estimating upwards of 50 million tons of sand leaving the state every year for use in fracking. For further background information about frac sand mining and links to other sources, see the Wisconsin Center for Investigative Journalism (2015) and Pearson (2013).

2Just prior to the downturn in oil and gas prices in late 2014, the Wall Street Journal boasted about one Texas-based private equity firm striking it rich with Wisconsin frac sand, scoring gains of $1.4 billion on a $91 million investment (see Zuckerman 2014).

3Highlighting the risks involved, the National Institute for Occupational Safety and Health (NIOSH) released a hazard alert in 2012 based on field studies which found that workers on drilling rigs are exposed to respirable airborne silica during hydraulic fracturing operations, which often generate clouds of dust at the drill site (see also Esswein et al. 2013).
The mining industry maintains that best practices for dust suppression are adequate to control the “fugitive dust” generated by mining activities. The WI DNR, generally siding with industry on this issue, has resisted calls to specifically monitor for airborne silica particulate. Many environmental health experts, however, worry that the level of risk in open air settings remains unknown. Exposure to silica particulates, as well as the best techniques for monitoring potential exposure, is currently the subject of ongoing research led by Crispin Pierce, a professor of environmental public health at the University of Wisconsin-Eau Claire, and he has begun reporting elevated levels of dangerous particulate matter near mining operations (see Walters et al. 2015). The nonprofit Environmental Working Group recently released a report criticizing inadequate exposure standards and the lack of monitoring. They estimate that 58,000 people live within a half mile of a frac sand operation and are exposed to potential health risks due to degraded air quality (Rundquist and Walker 2014).

For a more detailed overview of the potential environmental health and economic impacts of frac sand mining, see Pearson 2013.

My use of the phrase ontological displacement builds from Deborah Davis Jackson’s (2011) work on the experience of place at a First Nations reserve in Ontario contaminated by toxic fumes and from Anna Willow’s (2014) work on fracking in eastern Ohio (Willow et al. 2014). Willow draws from Anthony Giddens’ (1990) notion of “ontological security,” which suggests that one’s continuity of self relies on a relatively predictable social and material environment, an experience of sociopsychological stability undermined by environmental degradation. Also drawing on Giddens, Kroll-Smith, Couch, and Marshall (1997:2, 3) suggest that industrial hazards force people to confront “extreme environments” that “elude common or expert knowledge” in ways that undermine ontological security.

I began conducting eldwork on community responses to frac sand mining in 2012 when a mine was proposed near my hometown. This article draws on a dozen audio recorded interviews with residents in Dovre who live near mining operations, conducted in the winter and summer of 2014. These are supplemented by interviews with twenty-two other individuals who live in surrounding communities, conducted from 2013 to 2015. I have also attended dozens of town and county meetings and listened to countless hours of debate and public testimony given in those settings. All of the names used in this article are pseudonyms, and other personal details, including description of places, have been altered to protect people’s privacy.

At least one Town of Dovre board member admitted that he has financial ties to a frac sand company (as recorded in the Dovre town board minutes for the October 8, 2013 meeting). Another board member held a prominent position with a local economic development corporation in neighboring New Auburn that heavily promoted frac sand mining in the region. In broader western Wisconsin, dozens of instances of problematic ties between frac sand interests and elected or other public officials have been documented (see Kennedy 2012a, 2012b).

In addition to zoning, towns may adopt licensing ordinances that offer some regulatory control over the siting and operating conditions of mines. When the rst ordinances appeared in 2008, frac sand interests sued the Town of Cooks Valley, in Chippewa County. The Wisconsin Supreme Court upheld the right of town governments to develop licensing ordinances in February 2012 in Zwiefelhofer v. Town of Cooks Valley. Over the past two years, proposed laws have been considered at the state level that would remove local authority to create such ordinances.

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