Landowners and the Marcellus Shale:

Money, Perceptions of Community Life, and the Natural Gas Industry

By

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Abstract

This paper explores the recent natural gas development in the northeastern Marcellus Shale region of Pennsylvania through interviews with landowners. Since 2007, the region has experienced both a boom and bust of the industry. Landowners played a key role in the rise of the industry and this paper explores their experiences throughout the boom-bust cycle. In particular, this examined whether the landowners experienced social disruptions during the cycle and whether their perceptions of the industry changed over time. This study found that the unequal distribution of benefits from the natural gas industry negatively impacted the region and led to disruptions in families, friendships, and neighborhoods. Regret and disillusion also emerged and emphasized the importance of industry, financial, and legal knowledge in order to successfully interact with the natural gas companies. Landowners who lacked the necessary knowledge became locked into situations that they deeply regretted but were unable to change. The social disruptions, regret, and disillusion left the landowners distrustful, isolated, and experiencing a sense of anomie.

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INTRODUCTION

Energy has become increasingly central to everyday life, not only in the United States but across the globe, as more and more facets of life require energy (EIA 2013). This has created a significant demand for energy from a variety of sources as consumption has expanded exponentially post-World War II, traditional reserves have run low, environmental concerns have arisen, and unfavorable political climates have emerged in energy-rich regions of the world (Waples 2012; McGlynn 2011; Nguyen 2015). The combination of these factors has encouraged the growth of the natural gas industry in the United States since research suggests that it burns considerably cleaner than other traditional energy sources, can be used to fill a variety of domestic and industrial needs, and has several large deposits in the United States (Nguyen 2015; Reed, Jr. 2015; API 2015).

Over the past two decades, several different regions in the United States – including Texas, Colorado, North Dakota, and Wyoming – have experienced natural resource booms (EIA 2013; BLS 2014). This paper examines the recent boom and subsequent bust of the natural gas industry in northeastern Pennsylvania by focusing on the experiences of landowners who have been asked to lease their property to a natural gas company. The primary question this paper asks is whether the industry has causes disruptions in the landowners' lives and how they have perceived the changes to their community. For this paper, the impact of money from natural gas leases, perceptions of the industry, and how perceptions and lease returns relate to the social disruptions that arise during the course of the development are particularly important.

BACKGROUND

The modern natural gas industry originated in the Appalachian region in the mid-19th century (Waples 2012:9-25). During the first century of development, the gas was not highly valued because companies lacked the necessary infrastructure to deliver the gas for consumption and more effort was placed on developing the oil that was found in the same region. The proximity of oil and natural gas created problems because most developers sought to extract the oil first. However, the dangerous nature of natural gas slowed efforts and oftentimes required the developers to extract it first. The result was an attempt to speed up oil production by burning off or venting the natural gas. This had long-term ramifications on the natural gas industry as several trillion cubic feet was wasted (McGlynn 2011; Theodori 2011; Anderson and Theodori 2009). By the 1980s and 1990s, these traditional reserves of the gas were exhausted and the industry shifted focus to develop nontraditional sources of natural gas.

The Marcellus Shale region, located in the central Appalachian Mountain Range, held one of the largest deposits of natural gas in the United States (EIA 2013). Since 2005, this region underwent considerable development as a result of the re-emergence and strengthening of the natural industry in the United States (Amico et al 2012). Pennsylvania, in particular, has drawn the interest of natural gas companies because the Marcellus Shale overlaps with the Utica Shale which is suspected to hold even more substantial deposits of natural gas and oil (EIA 2013). Technological developments[1] in the late 1990s and early 2000s encouraged the development of the Marcellus Shale as they significantly improved the current natural gas extraction methods and significantly decreased the costs of production (Waples 2012:226-285; McGlynn 2011). By the mid-2000s, rising gas prices and a favorable political climate[2] furthered the profitably of natural gas development. Since 2005, there have been over thirty different natural gas companies

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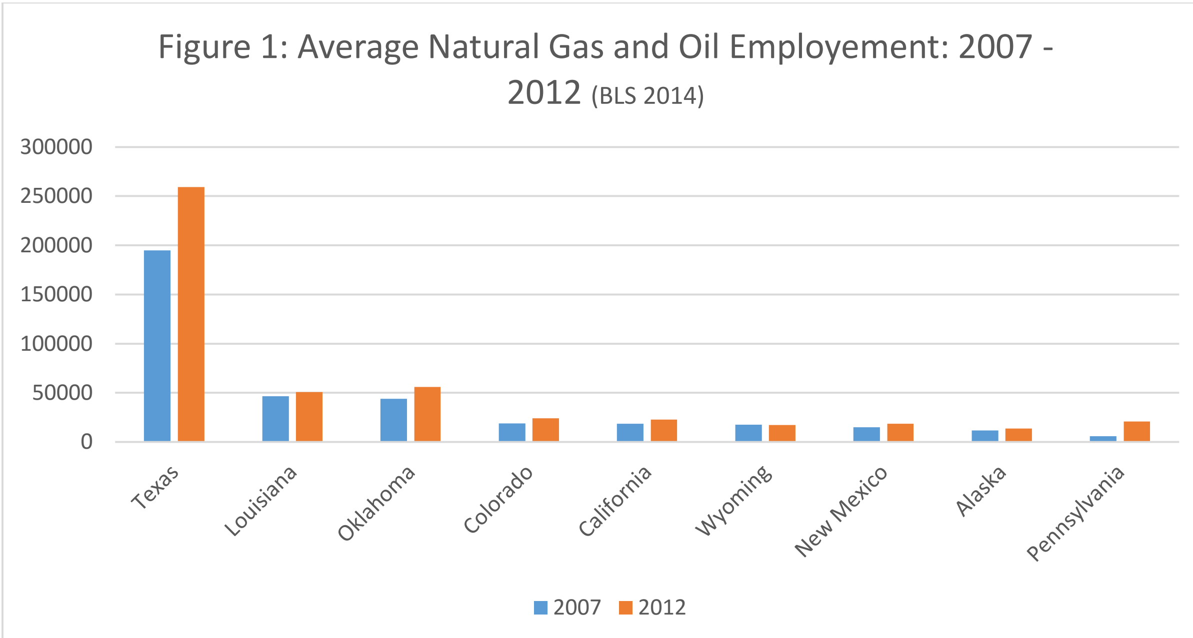
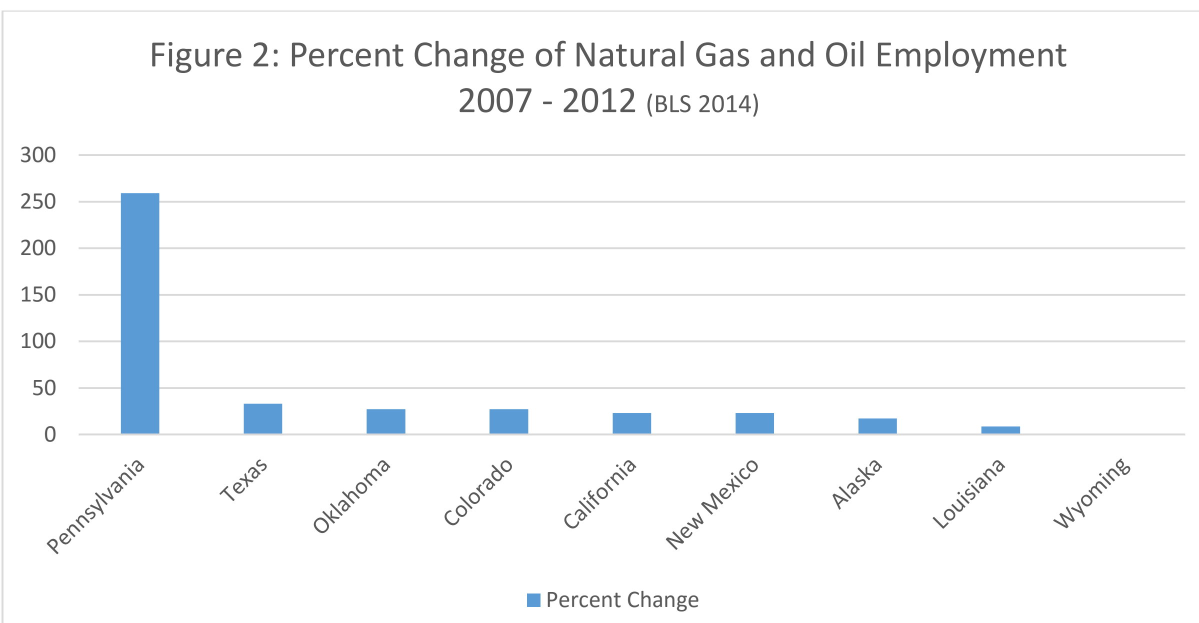
[1] In the early 1990s the first hydraulic-horizontal well was successfully drilled in Texas (McGlynn 2011; Waples 2012; API 2015). This was developed further over the next decade and allowed the wells to reach new depths at a considerably lower cost. Today, wells can extend horizontally for more than a mile because of the hydraulic-horizontal method. During this same time, hydraulic fracturing methods were improved by increasing the volume, pressure, and efficiency of the frack water mixture that is used to release the natural gas from the shale rock. These factors made the drilling and extracting process much more effective and significantly decreased the costs of development.

[2] After the terrorist attacks on September 11, 2001, there was a notable rise in the rhetoric surrounding energy independence (McGlynn 2011; API 2015; Perry 2014). Several groups urged the development of energy resources in the United States so that the country would not have to rely on other nations for its energy needs.

– including well-known companies like Shell, Chesapeake Energy, and Chevron – that have developed more than 9,000 active natural gas wells in Pennsylvania with several thousand more permits granted for future wells (Marcellus Center 2015). This sudden increase of natural gas development over a relatively short period of time created a ‘boomtown effect’ with the economy and population temporarily experiencing rapid growth. In northeastern Pennsylvania specifically, rural communities experienced the highs of the boom as money from natural gas leases and industry jobs entered the local economies between 2007 and 2013 (DePillis 2015).

DePillis (2015) reported that over a four-year period, natural gas companies had paid over $164 million to landowners in Pennsylvania through signing bonuses and royalties. However, it should be noted that the majority of this went to landowners who lived outside the region. The Bureau of Labor Statistics (BLS 2014) reported that between 2007 and 2012, Pennsylvania experienced rapid growth in oil and natural gas employment. Figures 1 and 2 indicate that between 2007 and 2012, Pennsylvania experienced the highest percentage (259.3%) increase in industry jobs and that it was second only to Texas in the actual number of industry jobs created. During this time, wages also saw an increase as those within the oil and natural gas industry experienced a 36.3% increase. Both of these numbers stand out because the growth occurred at the same time as the 2008 recession.





Since 2013, however, the natural gas boom started to disappear as the price of natural gas dropped significantly and several of the companies had overproduced the resource (Carroll 2016; Chilton 2016; DePillis 2015; Frosch and Gold 2015; Warner 2014). Woodall (2016) noted that the low price of natural gas led to companies, such as Chevron and Shell, slowing production while smaller companies decided to sell their stakes in the Marcellus Shale. In 2016, the Labor

Department released a report that since 2012, oil and natural gas workers have had over $40 million in pay withheld primarily because of the extremely low prices of energy commodities (Neuhauser 2016). As a result of the bust, many individuals have lost their jobs or been transferred to other regions, companies have stopped new development and production, and landowners have received significantly smaller royalty checks from their leases (BLS 2014; Amico et al 2011; Warner 2014). When discussing their case study of the boom in Tioga County, Ward, Polson, and Price (2014) said, "Overall we found a community unprepared for the sudden overwhelming presence of the industry, with few tools to manage, let alone plan for, growth and change. One official argued that the industry 'parachuted in and we chased them around.'" (pg. 2)

LITERATURE

Extensive literature explores boomtowns, natural resource development, community integration, and social disruptions in the United States. One particularly prominent subset (Anderson and Theodori 2009 Brasier et al 2011; Brown, Dorious, and Krannich 2005; Ceresola and Crowe 2015; Jacquet 2011) of this literature examines how community members perceive the development over time, whether they approve the industry, how integrated communities are throughout the development, and whether communities encounter social disruptions because of the development. This literature is complemented with insights about money and the role it can play in shaping community member's attitudes (Baker and Jimerson 1992; Parsons and Smelser 1956; Weber 1922; Zelizer 1989; Wynveen 2011; Weigle 2011). The role of money is especially important to consider because the region studied experienced sudden economic growth because of the rapid rise in industry jobs and the large signing bonuses and royalties landowners received from their natural gas leases.

Money

The natural gas boom brought considerable monetary benefits to the Marcellus Shale. To better understand the impact that these benefits had on the communities, is important to examine the concept of money, the various ways it is used, and the impact it can have. It is also important to briefly discuss the overarching economic structure of capitalism alongside money as it is this structure that allowed and encouraged the boom.

The natural gas industry in the United States operates under a capitalist system where the industry seeks to maximize profits while minimizing costs (Ritzer 2014). A relatively small group of businesses own the necessary equipment, technology, monetary resources, and knowledge to extract and produce the natural gas. Access to these resources gives the companies power that they are able to use when negotiating with employees, landowners, and even governments. Ritzer (2008) notes that "Capitalism, then is not simply an economic system; it is at the same time a political system, a mode of exercising power, and a process for exploiting the workers." (pg. 168) In the case of boomtowns, it is not only the workers who are at risk but also the landowners and communities where development occurs. Exploitation, an inherent part of capitalism according to Marx, is closely tied to this (Ritzer and Stepnisky 2014). Exploitation within most capitalist societies, "is rarely naked force and is instead the worker's own needs, which can now be satisfied only through wage labor." (Ritzer and Stepnisky 2014:61) When thinking about boomtowns, the landowners are not exploited in quite the same way that the industry workers are. However, because many of the landowners are relatively poor or do not have access to adequate resources, they are at risk (McGlynn 2011; Considine, Watson, and Blumsack 2010). Companies offer lease terms that will allow them to profit and the landowners accept because they do not have the necessary means to produce the resource themselves. This gives the companies power and reduces the ability for landowners to negotiate better terms.

While there are conflicting views about the concept of money, one particularly relevant perspective sees money as being capable of driving social change (Carruthers 2010). Parsons and Smelser (1956) even emphasize that money itself is a source of power. Weber (1922:108) notes that "money prices are the product of conflicts of interest and of compromise; they thus result from power constellations… 'Money' is, rather, primarily a weapon in this struggle." Having access to economic capital, whether it is physical money or assets such as land, gives individuals power. In a capitalist society, more economic capital increases an individual's ability to provide for their needs and can even give them negotiating or buying power. Marx states that money is something that "structures and transforms social interactions." (Baker and Jimerson 1992:7) For Marx, it does this within the economic system as labor is commodified through the use of money and labors are exploited so that a select group can accumulate profit.

Wlodarczyk (2014:201) found that money "may lead to increased income inequalities as it facilitates capital accumulation and exploitation of labor force…Simultaneously, money plays an active role in transforming social values and relations, both in a creative…and in a destructive way." For Wlodarczyk, money itself is not a neutral or even a harmless concept but rather has a meaning that "is diverse, practical, and local but not completely malleable." It can even be used as a "weapon of social oppression used to produce and reproduce relations of social economic domination." (Baker and Jimerson 1992:7; Gansman 1988) Dodd (1994:13) states that since money is not neutral, it "has cultural and symbolic associations generated by its use as a form of wealth and as a foundation of power, its conceptualization in relation to freedom, happiness and morality, and its retention as a basis for confidence or simply for its own sake." Dodd (1994:159-160) further attempts to differentiate between the different meanings that money can have:

> A monetary income which barely meets the purchase of subsistence presents a starkly different set of choices to its holder than money held over and above this requisite level. Money acquired in the form of a windfall or gift can give rise to a series of possibilities

> which are markedly distinct from money routinely gained in the form of income, where most if not all of its potential uses may already have been accounted for by regular economic obligations or commitments.

Not all money is treated in the same way or put to the same use as Zelizer (1989:342) found that "culture and social structure mark the quality of money by institutionalizing controls, restrictions, and distinctions." Depending on its context, money takes on different meanings, can have different values, and can even be spent in very different ways. For this paper, it is important to keep in mind that windfall money is often treated very different from 'regular' money.

Money and capitalism are closely tied together. Each involve an unequal disruption of power or access to resources. By understanding both, there can be greater understanding of the underlying forces and power dynamics that are at play boomtown communities.

Boomtowns and Money

Various studies (Wynveen 2011; Weigle 2011; Jacquet and Stedman 2013; Jacquet 2012; Brasier et al 2011) have examined money and the impact it has on boomtown communities. Of particular importance in many of these studies is the money that landowners receive from their leases with the natural gas companies, the increase of relatively high-paying industry jobs, and the subsequent increased demand on the local housing market and service industry. Closely tied to money and capitalism are several studies (Merrifield 1984; Wilkinson et al 1982; Thompson and Blevins 1983; Okonta 2008; Okonta and Douglas 2003) and news articles (Fuller 2007; Frosch and Gold 2015; Carroll 2016; Chilton 2016) that have highlighted how money in its various forms as well as the overarching structure of capitalism have become important forces in boomtown communities. These pieces have examined the oil and natural gas booms in Wyoming, Texas, Alabama, and even Nigeria over the past few decades. Of particular importance are the returns that landowners get from their leases, the taxes and fees the state and local governments collect, the relatively well-paying industry jobs that are available, and the long-term negative impacts of the industry. To a lesser extent, the increased buying power of select local residents, the presence of temporary or migrant industry workers, and the increased demand on the service industry are important to take into account.

Comparisons between the Marcellus Shale and other boomtowns can be somewhat difficult because of the unique history of natural resource extraction in the Appalachian region. The Barnett Shale in Texas, while similar in some respects, highlights a few of the differences that emphasize the uniqueness of the Marcellus Shale. The Barnett Shale has been largely developed in or near urban areas (NGI 2016). The Natural Gas Intelligence (NGI 2016) indicates that most of the natural gas developments has occurred near the Dallas-Fort Worth area. Pennsylvania's development, however, has been primarily concentrated in rural regions. Both regions have experienced considerable economic growth with some estimates that the Barnett Shale "accounts for $8.2 billion in annual output…and 83,823" while the Marcellus Shale experienced $4.8 billion growth and increase of 57,357 jobs. (Economic 2016; Considine 2010) Since the Barnett Shale is located in an urban area, it becomes quite difficult to understand the full economic and environmental impacts that the industry has had. The size of the local economy is especially important for boomtowns because the preexisting economy infrastructure protected the Barnett Shale from many of the negative impacts of the natural gas bust.

The Bakken formation in North Dakota has many more similarities to the Marcellus Shale as the development booms occurred at roughly the same time. During the boom in the Bakken, Williston's population rose by over 300% and saw "household incomes above $80K a year." Now that the bust has emerged, layoffs are common, a lack of economic infrastructure across the region complicates matters, and the population of towns like Williston are dropping.

While what has happened in the Bakken formation and Barnett Shale is important, Wyoming is an especially interesting case because it has a long history of several different boom-busts in low-income regions of the state (Fuller 2007; Merrifield 1984; Wilkinson et al 1982; Carroll 2016). In the state, the local residents continue to accept the industry because it brings monetary benefits into the community. Only the older residents who have witnessed multiple industry booms appear to hold back from accepting the industry. During the beginning stages of development, economic benefits, especially the well-paying jobs and income from leases, are emphasized to help sway any individuals who have doubts about the industry (Merrifield 1984; Wilkinson et al 1982). Fuller (2007) stated that “the truth is that no one can turn down the oil companies; the payoff is simply too high.” According to Fuller (2007), Wyoming has become a ‘carbontocracy,’ “indebted to minerals for its promise of an easy life, yet strangely impoverished by its own wealth” and much like Third World countries has “become trapped by the complicated gift of foreign aid.” The local governments have continued to allow the development companies to rip “the roots out of the very thing they say they care about: community values, family values, property rights…the whole soul of a place has been torn out, and for what? You don’t put a soul back into a place once it’s gone.” (Fuller 2007) In Wyoming, now that the boom ended and the oil money has left the region, many of the community members are left in a worse situation than when the boom started as the environment and local economy were damaged and local social services were still struggling to compensate for the boom (Jacquet 2014; Fuller 2007; Carroll 2016). Similar patterns can be found in other boomtowns across the United States (Ceresola and Crowe 2015; Anderson and Theodori 2009; Brasier et al 2011). These articles suggest that what has happened to Wyoming with rise of ‘carbontocracy’, could easily emerge in the Marcellus Shale if the price of natural gas fluctuates significantly.

These natural resource boomtowns are not isolated to the United States and can in fact be found in several regions across the globe. In particular, there are several similarities between what has occurred in the Marcellus Shale in the United States and the Niger Delta in Nigeria. One obvious similarity is the impact on communities living near the natural resource development (Okonta and Douglas 2003). While violence and obvious destruction without recompense is much more prevalent in the Niger Delta, both areas have experienced degradations to their water sources. Residents of the Niger Delta have experienced significant losses to their potable water. Oftentimes the infrastructures and methods the companies use cause the water to become contaminated. In the Marcellus Shale, the water used in fracking is highly toxic and there have been several recorded instances where this water has contaminated water wells (McGlynn 2011; McDermott-Levy, Kaktins, and Sattler 2013). Similarly, housing has become an issue. Both areas have not had enough housing for low-income families. This had led to families moving in with each other or moving out of the region altogether. Finally, one of the most important similarities between the two regions is that the oil and natural gas companies have been able to take advantage of the community members' lack of knowledge and access to resources. Okonta and Douglas (2003) and Brasier et al (2011) point out that many of the people living in the Niger Delta lack the necessary education, knowledge, and access to resources to successfully interact with the oil companies. This makes it very difficult for them to negotiate to better their situation.

The situation in the Niger Delta obviously is much more extreme than what has occurred in boomtowns in the United States. In recent years, violence has erupted in the region and corruption has been reported on all levels (Okonta 2008). However, these similarities are important to keep in mind because they highlight how boomtowns and natural resource extraction is not only a regional issue but has global connections.

Perceptions of the Industry

Over the past few decades, there have been several studies (Brasier et al 2011; Schafft, Bordu, and Glenna 2013; Shandro et al 2011; Wilkinson, Thompson, and Reynolds 1982) focusing on how communities have perceived and reacted to the rapid rise of a natural resource industry within a particular region. Generally, these studies found that residents perceive the industry's development as a way to improve their community. The promise of well-paying jobs, royalties for landowners, and the expected economic growth that would follow, caused many to view the development as a boon for their communities (Brasier et al 2011; Anderson and Theodori 2009). Over time, however, perceptions tend to change as the negative impacts of the industry become more pronounced (Lovejoy and Little 1979; Thompson and Blevins 1983). The shifting perceptions, as well as what prompted the transition, has been an important focus in the literature.

Several studies (Brasier et al 2011; Considine, Watson, and Blumsack 2010; Perry 2014; Warner 2014; Willits, Luloff, and Theodori 2013) have found that the primary reason behind support for the industry's development was the expected economic benefits the companies would bring into the region. Jacquet and Stedman (2013) and Jacquet (2012) studied rural communities in the Marcellus Shale and noted that landowners who believed that they would see considerable monetary benefits were much more positive towards natural gas development, even when they took into account the negative impacts of the industry. Even those who might not have received direct monetary benefits – such as lease royalties – were still positive about the development because they believed that the entire region would benefit.

Anderson and Theodori (2009) examined how local leaders in the Barnett Shale perceived the natural gas industry. The Barnett Shale development is located in an area of Texas that is considerably more populous than much of the Marcellus Shale development. In this instance, community leaders were still typically supportive of the development because of the expected economic benefits. Even those who were aware of the negative impacts of the development believed that the economy benefits sill outweighed the costs in the long-run. In a few of the cases, these communities accepted the industry because they believed that there would be sustained economic growth as a result (Brasier et al 2011; McGlynn 2011; McDermott-Levy, Kaktins, and Sattler 2013).

Several studies (Brasier et al 2011; Brown, Dorious, and Krannich 2005; Brown, Geertsen, and Krannch 1989) have found that rural boomtown communities experience four stages – enthusiasm, uncertainty, panic, and adaptation. The different stages indicate the changes reactions communities have over the course of the industry's development. Initially, community members were excited about leasing and new, relatively high-paying jobs. The potential to benefit from the industry was especially exciting because many of the communities had been experiencing economic downturns. Uncertainty arose when community members started to realize that the industry had negative impacts and that the communities were not receiving everything that the industry had promised (Lovejoy and Little 1979). This uncertainty can be highlighted by looking at who gets hired to fill industry jobs. Communities often assume that local individuals will fill the jobs that the industry creates. However, it is usually easier for companies to bring in their own workers or hire experienced workers from other oil and natural gas fields (Fuller 2007; Brasier et al 2011). A sense of panic can emerge once the residents stop believing that the industry is positive for the long-term economic wellbeing for the community. It becomes even more prominent when they become aware of the changes to their landscape, community traditions, and the local environment. Eventually, the residents adapt to the economic and environmental realities of their situation (Freudenberg 1981; Gilmore 1976; Smith, Krannich, and Hunter 2001).

While experiencing the four stages, community members undergo changes in community integration and the connections that they have to local social institutions. It should be noted that these stages do not necessarily align with the stages of development. Community members can experience all four stages before the industry starts to bust. In these cases, it is possible that communities will go through some of the steps again. Brasier et al (2011) point out that only after the residents have adapted or recovered from the social disruptions are they able to "create new interpretations of there are and of energy development, and form new relationships to their communities." (pg. 34)

Overall, the above mentioned literature indicates that residents of boomtowns are much more accepting of the natural gas industry during the beginning stages than they are during the later stages. This remains the same for boomtowns across the region. Jacquet and Stedman (2013), Jacquet (2012), and Brasier et al (2011) observed this in the Marcellus Shale boom, Brown, Dorious, and Krannich (2005) in Utah, Ladd (2013) in the Haynesville Shale, Anderson and Theodori (2009) in the Barnett Shale, Ceresola and Crowe (2015) in the New Albany Shale, and Freudenburg (1981) in Wyoming. Perspectives tend to change during the boom as community members notice negative impacts on their traditional way of life. These disruptions continue into the bust when the industry jobs disappear, production slows to a halt, and landowners receive diminishing royalty checks.

Social Disruption

Literature closely related to perceptions of the industry focuses on the social impacts of development that have led to disruptions in boomtown communities. Fuller (2007) remarked that in many boomtowns, "minerals are being extracted at such a rate that there is no time or tolerance for contemplation or debate." Several studies (Wynveen 2011; Anderson and Theodori 2009; Brown et al 2005; Kriesky et al 2013; Fuller 2007; Ladd 2013; Brasier et al 2011; Hunter, Krannich, and Smith 2002) suggest that serious disruptions emerge from rapid natural resource development and the negative impacts associated with the development. Crime rates, the housing market, and the availability of appropriate healthcare in boomtown communities are measures that have been used to examine social disruptions in boomtowns and the severity of these disruptions (Wynveen 2011; Anderson and Theodori 2009; Brown et al 2005; Kriesky et al 2013; Fuller 2007). Other studies (Ladd 2013; Brasier et al 2011) have included the increased traffic and road damage caused by the heavy trucks and drilling equipment as factors that can led to social disruptions in the communities. Ladd (2013) even remarked that "of key importance were concerns over the destruction of property values and scenery; the inconvenience of drilling noises and lights close to residential areas; and anticipated increase in crime, low-income families, traffic congestion, road damage, gas well accidents, and health hazards." (pg. 65) He suggests that relatively minor issues, such as road conditions, had the potential to create social disruptions in boomtowns.

The housing market is one area where the social impacts of the natural gas industry can be observed. Rapid population growth during booms makes it very difficult for low-income households to find adequate housing (Ryser and Halseth 2011). Many landlords raise rental prices up to triple the original amount during the boom. This forces out many low-income households and creates a housing crisis because of a lack of affordable housing. Brasier et al (2011) noted that an overcrowded homeless shelter in the Marcellus Shale had to temporarily house individuals in a hotel. However, the program discovered that there was a four month waiting list for the next available hotel room. This was a first for the shelter. In response to the housing crisis, many households were forced to move outside the region while others moved in with family members (Fuller 2007; Brasier et al 2011). This created additional hardships and disrupted not only the lives of the low-income households but also their friends and families.

Rising crime rates are often found in boomtowns (Park and Stokowski 2009; Fuller 2007). In most cases the rising rates can be attributed to a rapidly rising population and a slow response from state and law enforcement officials. In most cases, the local government agencies are not prepared for the population growth and become quite slow in addressing the needs of the community. Insufficient police numbers contributed to the substantial rise of drug activity in these communities. This is especially common in rural communities that do not have large budgets for police forces or nearby officials to help with the rising crime rates. Instances of sexual assault, rape, and sexual harassment also tend to rise. In turn, this also negatively impacts the health of the communities as the local health systems struggle to treat victims of sex related crimes and drug overdose victims. Lack of medical personnel, equipment, appropriate medical facilities, and even social workers exacerbates the issue (Wilkinson et al 1982; Shandro et al 2011; Freudenburg 1981).

During the course of natural gas development, many boomtown communities have experienced rapid changes in a variety of areas. Wynveen (2011) and Theodori (2009) found that the majority of communities were unable to swiftly or adequately address the rapid changes and social disruptions that emerged. Sometimes, local governments did attempt to address the above mentioned issues but were generally unable to make afford the necessary changes or take quick action (Wynveen 2011; Brasier et al 2011). What makes this literature even more striking is that many times the residents were much more aware of and upset about the relatively minor issues while they ignored or barely gave mention to the larger systemic issues that emerged (Brasier et al 2011; Ladd 2013).

Contribution

My study contributes to the relevant literature on the Marcellus Shale and boomtowns in several important ways. First, it uses landowners who have had direct contact with the natural gas companies as the focus. Landowners are especially important to consider because Pennsylvania allows landowners to lease or sell their property's mineral rights. They can even sell their property but retain the mineral rights to the land. Without their participation, it is likely that the development would not have occurred on the scale that it has. Only a few have specifically sought landowners as most have focused their attention on local politicians, business leaders, social workers, school administrators, healthcare officials, or community members in general (Jacquet and Stedman 2011; Anderson and Theodori 2009; Brasier et al 2011; Ceresola and Crowe 2015; Shandro et al 2011). This study did not specifically seek out community leaders or business owners to include in the study. The majority of the participants did not hold positions of power within their communities and this lack of power has the potential to add new insights that Anderson and Theodori (2009) or Ceresola and Crowe (2015) might not have encountered. The three that did were included solely because they were landowners who had interacted with a natural gas company.

This also contributes to the literature because of how it measures social disruptions. This paper focuses on the exploring how the unequal distribution of resources can give rise to social disruptions in the community. In many ways it ties together studies such as Jacquet and Stedman (2012) who found that economics played a role in why people supported the industry and Brown, Dorius, and Krannich (2005) who reported that communities experienced social disruptions during the development.

The time and location of this study are important contributions. Since the bust stage started only a few years ago, there is currently a lack of published research on the post-boom Marcellus Shale communities. Most of the published Marcellus Shale literature has only covered the boom stage (Brasier et al 2011; Jacquet and Stedman 2013; Jacquet 2012). Additionally, the majority of available literature is focused on boomtowns in the western United States (Brown, Dorious, and Krannich 2005; Anderson and Theodori 2009; Freudenburg 1981). By looking at boomtowns in the eastern United States, it will be possible later compare experiences across the different boomtown regions.

The above mentioned contributions work together to create space for this study in existing literature. By themselves, each has been addressed in some manner by previous literature. It is through the combination of all three contributions that this study has strength, contributes to the overall literature, and highlights the potential uniqueness of the Marcellus Shale.

METHODS

Semi-structured qualitative interviews[3] were used to gather the data for this study (Warren and Karner 2015). Twenty-six interviews were conducted in Tioga[4], Bradford, and Lycoming counties in northeastern Pennsylvania between May 2015 and August 2015[5]. These particular counties were selected in part because I had prior community contacts in the region. Though similar in many respects, there are distinct differences in population levels and natural gas activity. Bradford County has been one of the most active counties in Pennsylvania. Over the past decade, the Pennsylvania Department of Environmental Protection (DEP) has recorded[6] approximately 3,740 distinct drilling activities in the county (2016). Lycoming County, with a population almost twice that of Bradford County and three times that of Tioga, has had significantly less drilling activity with only 1,861 different activities reported. Tioga County, significantly less populous than the other two counties, reported 1,951 different drilling activities since 2008. The majority of the participants lived in Tioga County with only seven living in

[3] See Appendix B for the interview guide
[4] It should be noted that I grew up in Tioga County and my family has lived in the area for several generations. It is likely that my position as a community insider significantly helped with my research.
[5] See Appendix C for a map of Pennsylvania
[6] It should be noted that Pennsylvania does not require natural gas companies to report many of their activities. These numbers represent only what has been voluntarily reported.

Bradford or Lycoming. Those seven individuals' properties were less than 15 minutes from Tioga County. This is important to keep in mind because of how rural Tioga County is in comparison to the other two. Ward, Polson, and Price (2014) reported that the population in Pennsylvania in 2010 was 284 people per square mile while Tioga County was only 37.

Prior community contacts with a variety of local organizations were used alongside the snowballing method to recruit potential participants (Warren and Karner 2015). Announcements about the study were sent out via social media and flyers were posted on community bulletin boards[7]. I was interested in those who owned property in Lycoming, Tioga, or Bradford counties, though they were not required to have their primary residence in any of the counties. Additionally, the landowners needed to have been approached by a natural gas company to sign or extend a lease since 2005. Whether they signed the lease was not a requirement because the reason why landowners refused could be potentially significant in understanding how some landowners perceived the industry.

Approval was received from the Institutional Review Board at the University of Kansas prior to contacting participants and gathering data[8]. The majority of the interviews were conducted in participants' homes while the rest were completed at churches the participants attended and several took place at a park and coffee shop. The interviews were taped using an audio recorder. Afterwards, I transcribed the interviews, assigned pseudonyms to every participant, and coded the interviews for analysis.

Initially, open coding was used to analyze the date (Warren and Karner 2015). Since I coded the interviews myself and wanted to ensure reliability, I coded each interview a second

[7] See Appendix D for flyer.
[8] The Institutional Review Board at the University of Kansas can be contacted at 785-864-7429.

time using selective coding that was developed from the original open codes. Themes discussed in the analysis – perceptions of the natural gas industry, exploitation, distrust, disbelief, and conflicts over money with friends, families, and neighbors – reflect what the participants reported experiencing or perceiving. Codes used include social conflict, economic inequality, regret, distrust, community change, community stability, local social institutions, education, lack of knowledge, and social relations.

Data

The thirty-five interviewees, including nine joint landowners, participated in the 26 interviews. The other seventeen interviewees were individual landowners or were landowners whose partner did not participate. The nine couples were interviewed together and I observed that in a few cases, one partner interacted with natural gas companies considerably more than the other. By being interviewed together, the partners were able to fill gaps in their knowledge and were able to remind each other of pertinent events that the other forgot to mention. All but one of the participants signed or renewed a lease since 2005. The landlord that refused explained that because he had worked for a natural gas company, he had observed the environmental damage that occurred. It was very important to him that his land remain undamaged. Most of the other landlords did mention concerns about the environmental impact of the industry.

The average age of the participants was 60.5 years old. Few of the participants were younger than 50, while the majority were in their 60s and 70s. Men and women were represented fairly equally as there were 19 women and 16 men. Twenty-five were married, 8 were single, and 2 were in a domestic partnership. Of the 8 that were single, 4 were widowed between the time that they initially signed the lease and when the interviews took place. Less than five participants had college degrees. Of the five, two had a masters' degree and another a law degree (though they did not practice). That vast majority of participants had either dropped out of school or had a high school diploma. Additionally, twelve of the twenty-six interviews (eighteen of the thirty-five participants) were conducted with landowners who used their property for a variety of farming activities. Finally, it is important to note that the majority of the participants lived well outside the nearest town. Only a handful live inside or close to a town. The general area itself was quite rural. In Tioga County, for example, towns ranged in size from about 100 to 3,500 people. This simultaneously kept many of the communities close-knit and isolated landowners living outside town when problems emerged.

ANALYSIS

While several themes emerged from the interviews, this paper will focus on two somewhat interconnected themes and how they relate to social disruption. The first, the leases and the returns the landowners received by leasing, was the most prevalent as it was discussed in some manner in every interview. Participants spent a considerable amount of time discussing how the influx of money into their lives through their natural gas leases caused disruptions in their lives. Disillusion, the other major theme, was also mentioned in a majority of the interviews. It connects with the themes of social disruption and lease returns because many of the participants expressed disillusion when they discussed how they felt taken advantage of by the natural gas companies. Their discussion about this revealed how unprepared they were for the industry's development, the various impacts it had, and the importance of knowledge.

Leasing and Disruption

Four distinct areas emerged within the discussion on disruptions and the money received from leasing. These areas include natural gas companies, families, friends and neighbors, and local businesses. The royalties that the landowners received from their leases, the potential for the natural gas companies to profit, the increased demand for goods and services, and the unequal distribution of natural gas benefits shaped the experiences of the landowners and led to disruptions in their lives.

Leasing and natural gas companies

Many of the participants discussed at length the business practices of the natural gas companies and the unequal distribution of lease returns amongst landowners. One common theme was that several felt taken advantage of by the gas companies or that they had observed the gas companies taking advantage of landowners they knew. Before the natural gas boom, the region studied had experienced several years of economic downturn with job losses and closing businesses (DePillis 2015; Warner 2014; United States 2015). Many accepted the industry because they believed that the development would not occur and saw the signing bonuses as "free money." Gus reasoned that "I'm gonna get free money. I got that one already down. I don't have to do a bit of work. Hey, that's great. I love it." Gus, like many of the other respondents, did not realize that the money he received by signing the lease was not actually free and that there were costs associated with leasing. The sentiment expressed by Gus was repeated several times throughout most of the interviews and some landowners even invoked religious overtones when they talked about it being a blessing and an answer to prayer.

Once the development started, the majority of the respondents became concerned over the business practices that the natural gas companies employed and believed that the companies put profit ahead of other considerations. Several respondents discussed a leasing agent who moved into the region right before the natural gas boom started. He worked for one of the companies and personally profited from every landowner he convinced to sign a lease within a specific area. Don and Angie, retired farmers who rented their eighty-eight acres to a nearby farmer, mentioned that this particular agent approached them and offered them five dollars an acre if they signed a lease. They signed the lease almost immediately as they believed it to be a significant amount of money. Within weeks of signing, Betty and Martin, who lived less than two miles down the road, were offered approximately a thousand dollars an acre. They happened to sign right after the boom started and were able to profit from emerging competition between the gas companies. Both couples mentioned that they felt taken advantage of and that the gas companies exploited their lack of knowledge about the industry. Don mentioned that even though it was too late to do anything, he went to a couple informational meetings held a local fire department after he signed his lease. He wanted some sort of reassurance that he had not made a mistake. When asked if they would do anything different if given a chance, Don and Angie said that they would have waited longer before signing, would have sought more information about the industry beforehand, and would have negotiated more with the company. This was echoed in every interview.

Once the natural gas boom took off, the leasing market became extremely competitive. Companies competed with each other to lease as many properties as possible in a short period of time. This resulted in exponentially higher signing bonuses. Landowners who hesitated to sign or those who were offered leases during the height of the boom benefited significantly. Those who quickly signed a lease or were amongst the first to sign, had significantly less negotiating power. Even those who did not consciously negotiate, they were still able to use the market competition to their advantage during the boom.

In some cases, once a landowner's property was leased, he or she had to contend with natural gas companies employing manipulative language in the lease to take advantage of the landowners. Steve expressed frustration over his two properties and dealing with multiple companies:

> They [the gas company] had the property and just before the lease ran out, they drilled a well. Started to drill a well, and if they start operating on it that kills the deal. And they

> had it $5 an acre and they just capped it and they just have to let it sit there. There's actually some lawsuits going with it. They aren’t doing anything with it. They only did that in order to lock the lease in at that rate. They wouldn't have to renegotiate it because they already started drilling. They got people complaining because they aren't doing anything with it. They just did that in order to lock the lease.

The gas companies are not required to renew leases once any operation or development begins on leased property. They no longer have to worry about convincing the landowner to sign a new lease. In Steve’s case, the company started to develop a well just as his lease was about to run out on one of his properties. However, not long after they started the development, they stopped working on the well. When talking about his situation, he was quite suspicious over their motives and suspected that they started development just so that they could lock in the lease. By the end of the interview, however, he blamed what happened on the government taxing the industry and the fact that Brazil did not switch their vehicles over to natural gas. Another landowner, Sandy, was also frustrated because the company started to drill a well near the end of her lease term. They did not complete the well which left Sandy and her neighbors in a state of uncertainty - they cannot renew their lease, end it, or lease with another company yet they are not receiving any royalty money from the well. She justified their actions by repeatedly talking about the fact that she lived less than two miles from New York. She assumed that because New York had banned fracking since she signed her lease and her proximity to New York would prevent development. Instead of consciously recognizing that the natural gas companies were using the lease to their advantage to essentially trap the landowners, they blamed other factors. The natural gas companies’ efforts were helped by the landowners themselves as less than five participants involved lawyers during the leasing process. In retrospect, many wished that they had had more experience and knowledge to consult individuals who had knowledge about the industry and leasing.

This lack of awareness was especially apparent when they talked about the quality of their water. Gus, Joey, Rachel, Sean, and Julie all mentioned that the quality of their water worsened not long after the natural gas companies finished a nearby well. While all three were aware of the issue, they were unwilling to confront the industry about their problem. This is especially surprising considering that Joey and Rachel were able to light a match near a running faucet and make it appear that their water was on fire They had to start buying their water from the store and used a laundromat since the water started to change the color of their clothes. Gus believed that the water quality change was the result of his spring eroding over time rather than being connected to any natural gas activity. Julie even went so far as to mention that they were going to die of something anyway so there was no point in complaining about their water.

Only a few people interviewed were willing to openly discuss how they were being taken advantage of. Most of the other participants would mention something bad that had happened and almost immediately shifted the topic to say something good the company had done. They appeared embarrassed and even apologetic over their lack of knowledge that had led to their situation. Emma was one of the few who seemed willing to acknowledge the harms the industry has caused. Her family had sued the gas company over crop damage and is now struggling to get clean water for their farm. She said:

> I mean we had problems with getting our crop damage paid. Some of the people we had to deal with through that were not the most polite, congenial…even to the point of like coming to our house during dinner time and like being very confrontational in front of the kids which is upsetting… or like sending people like continuously like come to our door to harass us. Then with the water issue with our water not being like…we can't drink it. That's been pretty...we haven't had to directly deal with anyone lately. When it initially came out, it was pretty shady the way they handled things. So that was pretty negative. That was a big negative!

At one point, the well that supplied water to Emma's house, dairy farm, and migrant farm workers was tested after the well went dry and they had to dig deeper. They found lethal levels of methane at the wellhead, the DEP got involved, and the gas company ran several tests on the water with the promise that they would get back to Emma with the results.

> They were like ok. We'll get back to you. Well a month went by. Longer than a month went by. All of our neighbors were getting their water samples and we didn't. We didn't get any information back. And my husband tried to call and we kind of got the run… the guy, the water specialist for the company came out and talked to us. And…he, he did a lot of beating around the bush at first…because he wanted people. He wanted basically to make it sound like this... as they put the stars and the moon line up just perfectly, that you know our water samples just didn't get back to us. And then he let it slip that the reason we didn't get our water samples 'cause the legal department took them because they were concerned about a lawsuit. And we were pretty upset at this point because it was like their concern about a lawsuit trumped the fact that we have…you know, we have you know, a family and kids living there and employees. If someone had gone and lit up a cigarette in the side yard we would have been exploded. Like what if something in the milk house had exploded? We have machinery in there. So it's like their concern for their own, you know, their back…trumped our safety. But the truth is really upsetting.

Emma was not the only landowner with reasons to distrust the gas companies. Some of the landowners mentioned that they suspected that the gas companies had changed the wording of their leases to their advantage between the time the lease was signed and official copies were mailed to the landowner. When asked, they could not provide any proof but were firmly convinced that something had happened. Gary became suspicious when he had a question about what the company could do on his property and noticed a section that he did not remember reading when he signed the lease. While he was not able to get proof of this, he became much more suspicious when dealing with gas company workers. Another farmer who filed a lawsuit against a natural gas company said, "They really know how to work the legal system" to their advantage. It is unclear whether these landowners had any proof of manipulation by the natural gas companies or if they were shifting blame to cover their own mistakes and embarrassment.

The business practices of the natural gas companies played a role in the disruptions that the landowners faced. Many were much more suspicious and distrustful than they were before the development. Only after the landowners started to have negative interactions with the natural gas companies did many of them begin to approach lawyers and other landowners to understand the industry, its practices, and whether they could better their situation. Most no longer felt secure taking the natural gas companies at their word. In retrospect, the landowners felt that the natural gas companies did not offer them enough money for their lease and used somewhat misleading practices to convince them to sign. This is especially true for those who signed at the beginning of the boom. Additionally, the gas companies were able to use the landowner's lack of knowledge to their advantage. Several leasing agents were able to offer underpriced leases to those who were not aware of the emerging industry. Overall, this created a situation where the natural gas companies were able to profit considerably at the expense of the landowners.

Money and family

Problems arose when one or more family members received money from the natural gas companies while other family members did not. This fueled jealousy and assertions of self-interest that festered and ultimately changed or disrupted family networks. Gus commented that, "I did see that changed in the community…in the families especially the brother got it [the land]…you had a chance to buy the farm. You didn't buy it. Well that should be part mine. So it did create some problems that way." In a few cases, close family members stopped interacting with each other unless absolutely necessary. One grandmother even started crying during the interview while talking about how her son and daughter-in-law would no longer bring her grandchildren around now. She would offer to babysit and even resorted to begging but rarely would her son and daughter-in-law take her up on her offer. She blamed this situation on the money that her son had received from his natural gas lease and believed that receiving a large sum of money had changed her daughter-in-law into a mean and spiteful person.

In one instance, a family farm was leased that had been handed down from father to son for several generations. Multiple generations had worked on the farm together. Shortly before the boom, the landowner passed away and left the farm to his grandson, skipping his son who had worked on the farm for years and his other grandchildren. The grandson signed the lease when it was offered and within a few years had received near a million dollars in royalties and bonuses. The son, on the other hand, only received a few thousand from the land that he had bought himself years prior. The grandson kept the money and did not share it with the rest of the family. This created conflict within the family as the son felt betrayed by his father and it escalated to such a point that he stopped working on the farm. Hurt feelings on both sides became even more agitated and resulted in contact being cut off between himself and his son and grandchildren even though they lived less than a quarter of a mile away from each other. The father declared: "My dad passed away five six years ago. He turned the farm over to my son. That should have been me. I would've been the rich boy." His wife Julie added that,

> Now if you talk to my daughter, she does have hurt feelings. She has nothing coming in. Her brother's gettin' big money. And we gettin'…and she'll say to me, 'Well it must be nice.' But you got to realize that it's only 200 and some dollars. You're gettin' more in child support. But she don't see it that way.

She mentioned that it became very difficult to get her children together because of the deep resentment. Vicki mentioned that going through a divorce while under lease complicated issues within the family.

> We had a little touch of that [family problems]. A little touch of that...with the…it's because a mixed marriage. I married a person who was already married. And he had children. And then we married and we had a child. And yeah…everyone pretty much thought that the property was gonna go to them and they would benefit from the gas and oil. And that is not necessarily so. And now it's half and half because we're not together any more.

She thought that everyone was just going to be upset, there was nothing that she could do it fix it, and that she should not try to make everyone happy. In the end, Vicki resigned herself to the fact that her child and step-children would resent her because she refused to share the royalties.

Although not every landowner interviewed experienced such severe disruptions in their family life because of natural gas money, consequent resentment and tensions were a very common theme. Uneven distribution of natural gas money within an extended family disrupted family life. In the cases of Sean, Julie, and Vicki in particular, the excess money (and lack of distribution among family members) caused tension to the point that family members stopped interacting with each other. Family members treated the money from natural gas leases different than they would if it was money from a job. There was this expectation that since this was 'free money' or rather windfall money, it should be shared by the family. This was especially present in families where the land had been passed down for generations. Part of the reason why so many families struggled over the lease money is related to the idea of communal or family land. Several of the participants mentioned that their property had been in the family for several generations. Typically, the land had been passed from father to the oldest son and multiple generations worked the land together. Many times, this would include extended families that were not necessarily paid for their efforts. When the money from the natural gas leases arrived, there was an underlying assumption that the money was also communal and that it should be shared with the rest of the family. In the majority of the cases where the money was not shared, issues emerged within the families.

Now, some participants mentioned that they are careful not to talk about the industry around their family members so that they do not exacerbate tensions. A few landowners were especially upset with certain family members because their family assumed that they were receiving considerable money from the gas companies, which was not the case, and should spread the money around the family. Overall, the distribution of money and the assumptions about how much money landowners received created significant disruptions in how the landowners interacted with their extended family and generated distrust within the families.

Money, friends, and neighbors

The issue of money was also talked about within the context of friends and neighbors. In this instance, self-interest and jealousy emerged and disrupted the previous relationships that friends and neighbors had with the landowners. Some were jealous over the money that the landowners received while others created issues because they were against the natural gas industry and the extraction methods used. It became very difficult for many of the landowners to talk with their previously close neighbors once they signed their lease. In many cases, several of their neighbors started to make snide comments about the money they were receiving and that they were now rolling in "moneybags." Julie said, "They thought that we were makin' big money. And it's like no son at the time…me and Sean's seen none of it. We were only making off two [acres]…and they thought that we were rich. And it's like me and Sean ain't get…We only own two…We explained." Even though she had explained to her friends and co-workers that she was not receiving large amounts royalty money from her lease, Julie felt relieved when she was able to retire a year later and no longer had to deal with crude comments about her supposed wealth.

Sometimes, friends and neighbors would make fun of the landowners for not demanding more money from the gas company. Gus highlighted tensions that emerged with his neighbor when he talked about a conversation that they had. His neighbor asked, "Hey did you sign? Oh my gosh! I wouldn't have signed for that!" Gus responded, "Why not? Back then three bucks was a lot of money to me. I was broke. I could use the money and nobody perceived what was going to happen." He admitted that "there was a little friction there; it did create some problems" between himself and his neighbors. Other times, neighbors would be pitted against each other as one would receive the lease and royalty money while the other would not. Gus said, "I will say this one thing that I did see that changed in the community…sometimes a neighbor... one neighbor would get a gas lease, take the money coming in. The other neighbor wasn't signed, he wasn't in that, there was a little friction there.” Gary even got into several heated disagreements with his neighbor over the issue. It became much more difficult for him to go over and lend a hand as he had done in the past.

In a few instances, tensions have spilled over into the social events that respondents attended with friends and neighbors. Julie and Sean talked about observing two neighbors who were also landowners with leases. One of the neighbors had two gas wells on their property and had received close to a million dollars from signing bonuses and gas royalties while the other neighbor was receiving royalties from a nearby well. Since the well was not on the second neighbor’s property, they had received only a few thousand dollars in bonuses and royalties. During an event at a church all three attended, the neighbor who received less money from the gas company confronted the one who received more about not pulling their share of the weight when it came to donating to the church’s building fund. I interviewed the neighbor who initiated the confrontation and it was very apparent that they were jealous of, and even hostile towards, the landowner who had the two gas wells. Sean and Julie were caught between the other two families and issues emerged within the church they attended Since the confrontation, the three families were troubled by unease from eroded trust.

In other cases, participants reported being exasperated with neighbors who refused to sign leases. In one case, Carl was certain that the gas company did not develop on his property because his neighbor refused to sign the lease unless they received a million dollars. As a result, the gas company chose a different path to lay the natural gas pipeline. He felt that the decision of his neighbor cost him several thousand dollars. Tony mentioned:

> I have a friend of mine, one of his buddies was complaining. They wanted to come through his piece of property with a pipe. And…so they just went around him. He ain’t

> get nuttin' then. He did not have a lot of ground but what he would've got. But the next door neighbor they won't put up with that. They will just go around you. It's a big outfit.

Unlike western states, Pennsylvania has many more landowners on smaller plots of land (DePillis 2015) When one landowner refused a contract, the company was able to adjust their plans and go around the landowner who refused, oftentimes excluding the landowner's neighbors as well. Tension emerged because the refusal to sign by one neighbor kept the others from earning money. Dolly mentioned that because all of her neighbors signed a lease allowing a pipeline to run across their property, she reluctantly signed as well in order to avoid eminent domain issues. She was quite angry at the situation and feared that the state would step in ensure that the pipeline would be developed.

Landowners experienced disruptions in their social networks because of the perceived inequities of natural gas industry leases. A number of landowners remarked on new tensions between themselves and their neighbors since the development started. Sometimes these tensions erupted into arguments that caused rifts and other times the landowners were much more careful about what they shared with friends and neighbors in order to avoid fights from starting. Distrust became more common over time. Emma remarked, "You know who your friends are and who has been changed by the money." Since the majority of the landowners experienced problems with their neighbors because they were leased, many became careful to steer away from topics like leases to ensure that tensions did not get exacerbated. A sense of isolation has emerged because they no longer feel comfortable discussing money and issues surrounding their lease. They felt pressured into managing how they presented themselves to family and old friends and were much more guarded when talking to them. This created a sense of anomie where the landowners felt disconnected from the social networks that they had been a part of before they signed the lease.

Local businesses

Local businesses benefitted from the natural gas boom as it brought more money into the region through high-paying industry jobs and an increase in population. The increase in population created a greater demand for goods and services which allowed several local businesses to grow. The housing sector in particular benefitted from the natural gas industry because a housing crisis emerged during the height of the boom. Sandy said:

> Of course they brought businesses to the restaurants and motels, the rental properties…but then at the same time, the rental properties went up so high that local people had trouble finding something that they could afford. First they couldn't find anything available. If they did, they couldn't afford it. So that was a negative.

Many of the landowners became quite upset when they mentioned the spiking rental prices that forced low-income individuals out of their apartments. Some had friends and family members who were forced to move away because they were no longer able to afford to live in the area. Julie mentioned:

> I personally think myself that the people who are doing the bellyachin' are the people who live downtown and they no lease or nothin'. Just take the government put that taxes down on all the gas people. They're...they're greedy…Then they raised everybody's rent. They couldn't kick people out. That wasn't right. The greed of that was terrible. Yeah. That was the downfall…That was the sad part and what in like. Everybody wasn't gettin' the gas well money and the prices in the grocery store and all of them went up. And the people were only making minimum wage and our minimum wage is pretty low in PA. It hurt 'em…. Even the workers were complain'. They were chargin' so much in rent. Which yeah they made good money, but they had families downstate they had to support and everything else and... It was not right what happened. And it kicked low income people out. And it really hurt…The only change I noticed was the greed of the people who rented houses. And a lot of people couldn't afford them. That...that was about the only change is... You'd look at the paper and my rent $1500 for a 2-bedroom apt. is a little bit ridiculous in this area when minimum wage is only $7.25. Now who… even with 2 people working here couldn't afford them. So what they do, they get 5-6 gas workers together which in if they wanted to bring their family. I mean the greed, the only thing I noticed was the greed of the people.

Landlords doubled and even tripled the price of rent because housing was in such high demand. The housing crisis got to the point that a few of the companies bought hotels to turn into apartments for their temporary workers.

Even now that the area is experiencing the bust phase of the boomtown process, landlords are not lowering their rental prices. According to some of the participants, the landlords seem willing to allow the apartments to remain empty in the hopes that someone will come along who is willing to still pay the inflated prices. Gus added:

> It drove the price of property and rent up. There were people that…pretty soon all the gas company will pay any rent. That just drove the people who were living here previously and were making minimum wage or low salaries. Almost run them out of housing. Some people were literally…who were asked to leave…Couldn't and they kicked the rent up like three times what it was and had the gas company. But…the drawback was when the gas boom dropped, them people left and now these people are still saying I ought to get all that money. And guy said, I can't afford that.

The one exception to this, according to Julie, was an owner of a trailer park who did not raise her rental prices because "she is a good Christian lady."

While the rising rental prices might not have directly impact most of the landowners, it did cause issues with friends and family members. Several reported that someone they were quite close to was forced to move out of their apartment and out of the community altogether. Out of all of the issues discussed, landowners displayed the most distress over the rental prices. It is likely that this was the case because they felt that the landlords acted contrary to the traditional values of the community by explicitly exploiting others. The high rental rates, even after the bust started, highlights that while the natural gas companies were able to take advantage of the landowners, the landlords were able to exploit the temporary natural gas workers. In both cases, low-income families were most at risk and were most likely to experience social disruption.

Disillusion and Disruption

The theme of disillusion fits within the overarching context as it relates to how the natural gas companies benefited from the landowners lack of knowledge. None of the participants interviewed actually believed that the natural gas industry would develop in the region. They assumed that it was just the promise of money and jobs that came around every few years but never actually materialized. Several landowners, like Gus, signed because they were going to ‘get free money.’ However, once the development started, they expressed disillusion and shock that it was actually occurring. Within a year, most had regrets about their decision.

This disillusion worked to prevent the landowners from taking the industry as seriously as they should have, and in retrospect every landowner mentioned that they should have negotiated more before signing their lease. For several, because they did not believe that the production was going to occur, they did not seek out information about the industry or seek assistance from a lawyer during the process. Emma, who regretted signing her lease, said, “Like honestly, we were one of the first…like one of the earlier ones in our area…so we didn’t know a lot about it and it sounded pretty innocuous. It seemed like not a big deal.” She added that she did not research the industry and what it planned to do before she signed. “We didn’t. I am embarrassed to say we didn’t. I mean read through the stuff they gave us and like oh ok yeah.” When the information did come into the community, such as through town hall meetings, most had already signed their leases. Some, like Don, went to these meetings after they signed so they could prepare themselves for potential issues that they might encounter. Gus said, “To be honest I didn’t know anything about it anyways so…I was very naïve. Everybody else signed. I guess I’d better, too.” In retrospect, almost all of the respondents wished that they had educated themselves more about the industry and had the necessary knowledge to successfully negotiate for more money.

Education, especially about the industry and finances, played an important role in the regret that they expressed. Emma noted that:

> It’s hard to like see the false hope in the money. The false hope in getting all sorts of money. The good money…this free money. It doesn’t come and you see these people and they’ve gone out and spent all the money they got up front and didn’t save any because they did not know to do that…or we have people around us who didn’t know you are

> going to get taxed on that. So come tax time they're like 'Oh my gosh! I owe like $30,000 dollars in taxes…it's hard to watch and be like 'Oh, what are you going to do now?'

Emma and Dolly talked about how they observed several of their neighbors and friends waste the money that they received from their lease. Instead of saving and investing the money, many just blew through it under the assumption that the industry would be around for several years. Julie remarked:

> Some of the people [are] counting on that money. Well it's dropped. They're hurtin'. My son is one of them. I love him dearly, but…I kept telling him. We kept tellin' 'You cannot count on it. Do not buy a new pickup and countin' on this money to pay for it.' Yeah…they told…the gas well people told don't count on it.

It was hard for them not to expect a windfall, even though some of the gas companies warned them to moderate their expectations. Landowners who always had struggle to make ends meet often had overblown expectations from their contracts. After the bust many of the landowners were struggling. Julie said, "We're hurtin' for money." Tony added, "I am getting a fourth of what I was getting in the beginning. I got there where I shouldn't have depended on it but I was just like everybody else does." Even for those, such as Tony and Julie, who were aware that they should not count on the royalty money, it was difficult to resist the temptation. This was especially the case for the landowners who firmly believed that the industry was going to last for several more years.

Regret was expressed in almost every interview as a facet of disillusion. The respondents wished that they had known how to handle their money, that they had researched the gas industry more, and that they had negotiated with the gas companies over the lease. Their biggest regret in the end revolved around the lease money and that they did not believe the boom would happen. Gus, speaking about regret, stated that "People woke up to the fact that this isn't going to last forever." Tony, who had been receiving enough royalty money to put his daughter through college and is struggling to pay his bills now that the royalty checks have dropped significantly, said, "It'll pick back up again. It has to. It's a shame because it's down there and we could be making pretty good bucks with it if the situation warranted it. It'll come around. It's got to. It's got to come back. It's got to. Probably not in my lifetime."

Disruption has resulted from the disillusionment of the landowners. Many, if not all of the participants interviewed, were not prepared for the boom that occurred and the changes that came with it. In the past, several different natural resource industries had offered leases but the development did not actually occur. Many assumed that this situation would be just like all the others and that they would in essence get 'free money'. They were unprepared for the development that occurred. It left several feeling confused and upset once the development started. For the participants who signed in the latter half of the boom, many did not negotiate with the companies because they needed the money and had heard stories of the gas companies circumventing landowners who tried to negotiate. Now that few of the residents are even receiving royalties, disillusion has emerged again as many are clinging to the hope that production will start again in the near future. For now, some are trying to adapt to the economic realities of the bust while others refuse to acknowledge the situation entirely.

DISCUSSION AND CONCLUSION

Social disruptions emerged in this research in somewhat different ways than prior research might suggest. Contrary to several studies (Hunter, Krannich, and Smith 2012; McDermott-Levy et al 2013; Merrifield 1984), crime was only remarked upon a handful of times. In each of those instances participants only mentioned crime because it was something that they, or someone they were close to, had experienced. Additionally, even though the communities were experiencing the bust of the natural gas industry, only those who had firsthand experience with negative environmental impacts discussed the topic. This is contrary to prior work that has found that environmental issues typically become much more apparent by the time the bust emerges (Anderson and Theodori 2009; Brasier et al 2011). This suggests that further research should be conducted to explore why these residents were not as aware of these topics as residents in other boomtown communities were.

Like Wyoming, communities in the Marcellus Shale region of Pennsylvania have had a difficult time turning down or even successfully negotiating with the natural gas industry. The promise of jobs, signing bonuses, and royalties made the industry more appealing and influenced landowners to sign the leases. When asked, every participant responded that their primary reason for signing the lease was because of the money they were offered. Even in cases like Gus where he was not offered much money, it was enough to convince him to sign because he saw it 'free money' that would not cost him anything. This appears to confirm the findings of Brasier et al (2011), Considine, Watson, and Blumsack, (2010), Perry (2014), and Willits, Luloff, and Theodori (2013) where they suggest that economic benefits are one of the primary motivators in why community members approve of the industry. This study suggests that the signing bonuses and royalties landowners receive is so attractive that they will sign even when are not entirely aware of the industry and its potential negative impacts.

After looking at the abovementioned data, it is also apparent that the four stages that Brasier et al (2011) Brown, Dorius, and Krannich (2005) Brown, Geertsen, and Krannich (1989) discuss are relevant to the findings of this study and are closely tied to the money that the landowners received from their leases. During the beginning stages of the natural gas development, most of the participants reported being happy about their lease because of the signing bonus they received. The majority indicated that they saw the leases as a good thing because it provided 'free money' to people who were struggling economically. Several of the landowners were especially happy at the beginning because it helped many struggling farmers without burdening them further. Uncertainty emerged in a variety of ways. Carl, Ross, and Will became uncertain about the industry because of the long delays they encountered in receiving their signing bonus check. Others experienced uncertainty when they became trapped in their lease but no production was occurring. Panic emerged for several, especially once the bust started. Steve, Sean, and Julie had to learn how to survive on shrinking royalty checks that had supplemented their income. Emma, Gus, Joey, and Rachel had to contend with water that was no longer safe to drink. Adaptation has mainly occurred for those who have not had many encounters with the natural gas industry or for those who already had economic resources before the boom. For others, like Emma, who are still going through lawsuits and have to get their water delivered on a regular basis, they have yet to adapt to their new realities. It is likely that it will take several more years before the majority of the respondents adapt to life after the bust.

Drawing off Zelizer (1989) and Dodd's (1994) conception of money, it is clear that meaning of money and how the landowners approached it changed depending on the context. The money that they received from their leases was widely viewed as a sort of 'free money' that would allow them to splurge on unnecessary items. Several admitted that instead of using the money on much needed items or saving it to help with their retirement, they used it for things they did not need. For instance, Martha bought all new appliances for her house with the signing bonus and first few royalty checks, even though the ones she had were still functioning properly. Now she is regretting that decision because the checks have all but disappeared and her family needs the money for health expenses. Family members and friends also treated this money differently. They expected the landowners to spread the money around instead of the keeping it for themselves. When the landowners did not, issues within the family arose and they reported changes in how their friends treated them. If this money had been earned through a job, it is unlikely that the landowners would have received pushback from their friends and family.

Finally, this study suggests that the unequal distribution of benefits allowed inequality to became more pronounced within these communities. Many of the landowners with mineral rights to their property were able to profit from the development. Those without property experienced few, if any, benefits. Inequality even emerged between landowners with leases. Those who signed leases after the boom started reported receiving considerably more money than those who were among the first to sign. Landowners who owned more property before the boom also experienced higher payoffs. Since Sean and Julie's son owned several hundred more acres of land than they did, he had the potential to accumulate significantly more wealth. Dolly, the only respondent whose income prior to the development was above $100,000, reported very few regrets and did not give much thought to the money that she received because she did not need it. The money was nice but to her was not necessary. This rising inequality increased social disruptions for the landowners. Hostility over the unequal distribution of natural gas leases, signing bonuses, and royalties resulted in fighting in family, friendship, and neighborhood networks. Many of the participants reported that they censored themselves around others who had not received money from the natural gas companies and it left many landowners feeling isolated from their social networks.

The findings of this study work to fill gaps in current literature. This study suggests that signing bonuses and royalties from leases as well as the jobs that the industry brought into the region have a much more substantial impact than just influencing how landowners perceive the industry. Only select members of the community receive the economic benefits. This not only increases inequality within the community but also creates and exacerbates disruptions in the landowners' social networks. It leaves many feeling isolated as many do not have others to confide in. Looking forward, it is important for research to explore this relationship further. More importantly, however, this region should be revisited in the future in order to discover whether these social disruptions are permanent or if the communities are able to eventually recover.

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Appendix A: Interview Guide

- How long have you owned the land?
- Do you live on this land? Why/Why not?
- Do you use your land for any hobbies/sources of income?
- Can you describe how and when you were contacted by the gas companies?
- Did you sign the lease?
- How did you come to the decision to sign/not sign your lease?
- What were your experiences in owning the land prior to being contacted by the gas companies?
- Has the gas company dug wells on your property? Have they used fracking?
- How would you describe your experiences with the gas company? Any positive moments? Any negative ones?
- Has leasing your land, changed any of your views about fracking?
- Has leasing your land changed how you interact with it? If you have hobbies or businesses that involve the land, how are they affected by the lease?
- How would you describe your community prior to the development?
- Did you participate in community activities? If so, which ones?
- Did you participate in volunteer activities? If so, which ones?
- Did you participate in any religious activities? If so, which ones?
- Do you still participate in these activities?
- Since the gas companies came into the region, are there any new community activities or volunteer activities that you participate in?
- Have you noticed any changes in your community since the gas companies came into the region?
- How would you describe these changes?
- If you signed the lease, have you told people in your community about it? Why/Why not?
- Have you felt pushback or isolation from the community because you signed the lease?
- Has signing the lease changed how you interact with others in your community? Such as your daily routine, religious activities, volunteer activities, etc.
- If given a chance to go back in time, would you sign the lease again?
- Would you change any of your experiences with the gas company?
- Would you change any of your community experiences?
- What is your age?
- Gender?
- What is your approximate income range?

Under $20,000	$20,000 to $30,000
$30,000 to $40,000	$40,000 to $50,000
$50,000 to $60,000	$60,000 to $75,000
$75,000 to $100,000	$100,000 to $150,000
$150,000 to $250,000	Over $250,000

Appendix B: Map of Pennsylvania

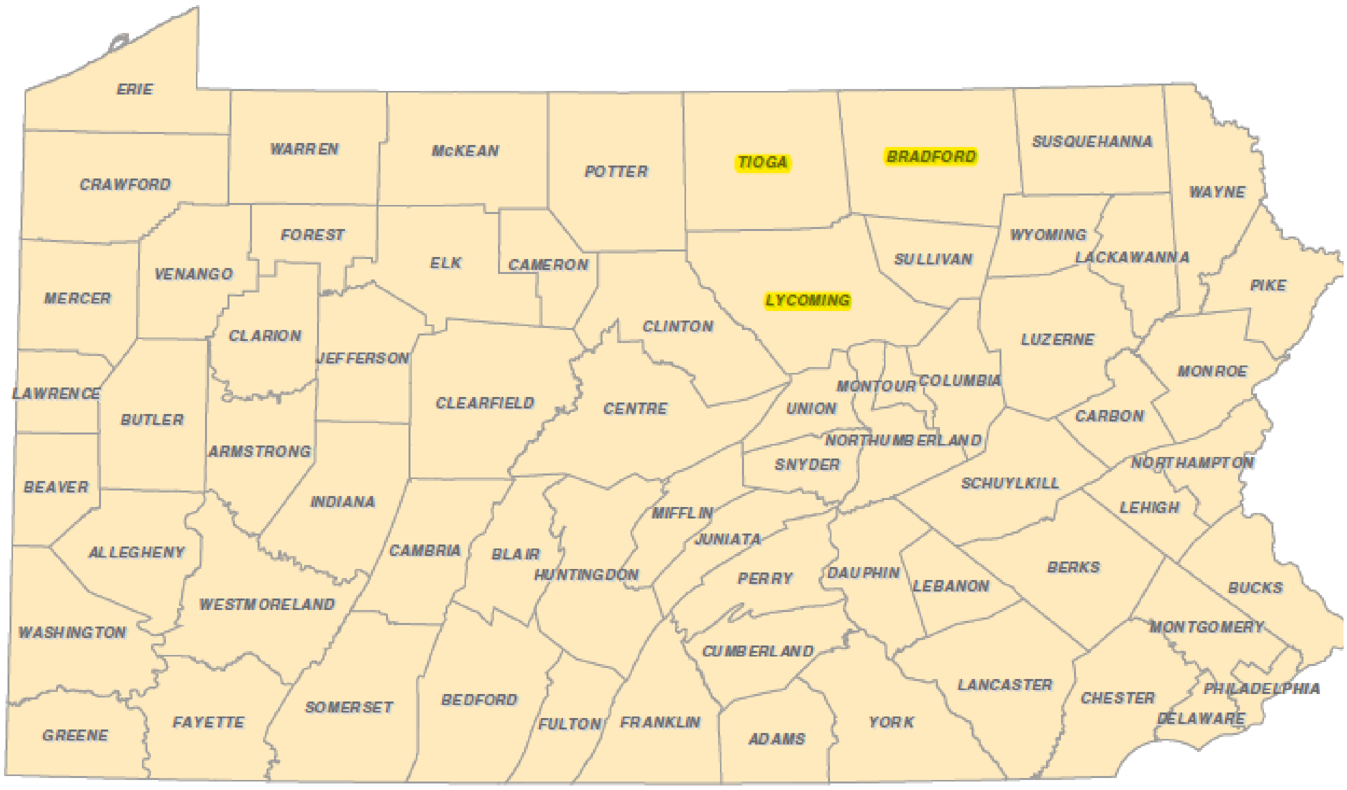

Figure 3: Map of Pennsylvania (PASDA 2016)
Note: Emphasis Added

Appendix C: Bulletin Board Announcement

Research Study Seeking Landowners:

University of Kansas Graduate Student seeking landowners who have had a lease or have been offered a lease from a gas company within the past 7 years for interviews. The interviews seek to understand how the landowners view energy development and how this development might have had an impact on their lives.

Contact:
Sarah Colegrove, University of Kansas
484-431-6320
S595C540@ku.edu

Interviews May Take Between 1 and 1.5 Hours

Requirements:

- Over 18 years old

- Own Land within Past 5 Years

- Signed a Lease or Have Been Offered a Lease from a Gas Company within the Past 7 Years