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### **Bust Amidst the Boom: The Creation of New Insecurities and Inequalities within Pennsylvania's Shale Gas Boomtowns**

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Welcome. You're listening to the UC Davis Center for Poverty Research Conference podcast. I'm Lisa Pruitt, a center faculty affiliate and the organizer of our November 2014 Poverty and Place Conference. This conference brought together scholars from across the social sciences to present and discuss new work on how space and place inflect various dimensions of poverty.

In this presentation, Kai Schafft discusses his work on the Creation of Inequality in Pennsylvania's Shale Gas Boomtowns. Schafft is an Associate Professor of Education in the College of Education at Pennsylvania State University. He also directs the Penn State Center on Rural Education and Communities.

>> I have a lot of thanks to give out first.

First of all, I really appreciate being invited to this workshop. This is just great, and it's been really interesting and really enjoyable, and I'm really excited to present this work. This is absolutely hot off the press. I sent my paper late to Jonathan because I literally couldn't write it because I was in the field doing the work.

And so a lot of the stuff that I'm going to be talking about is based on conversations and data gathering that happens as a week ago or less, although I've been doing work in this area for the last couple of years. I'd also like to acknowledge contributors to this work.

This is part of much larger project that I've been working on with colleagues from the Department of Rural Sociology at Penn State. And it's been funded through the Center for Rural Pennsylvania with institutional support from Penn State, so that's all been very important in this work. Jen Sherman has been someone who has been an important sounding board for a lot of this work.

And some of her research on constructions of morality and work have directly sort of influenced my thinking around these issues. So what I'd like to do is, first of all give an overview of the talk, and I'm gonna provide some background on unconventional shale gas development or as it's more commonly known fracking and the Pennsylvania context.

I assume that most people in this room have some background or have some knowledge about what this is. So I'm gonna run through that fairly quickly, but I think it is important just to set this work up. I'm gonna talk then, about the framing, the discursive framing of Marcellus Shale development, in terms of both risk and opportunity.

And this framing that takes place as sort of in public discourse, but also the way we can rethink that framing in ways to better understand the production and reproduction of poverty and inequality in the midst of boomtown development. And so that's what I'm gonna end up with is some presentation of data on what I've been doing looking at poverty creation amidst this shale gas boom in Pennsylvania.

All right, so first of all, unconventional gas production and fracking, it refers to gas reserves that are held within unconventional reserves, which means that instead of being trapped by a geology. And so what

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you do is drill down into that geology and there's your deposit. It's sort of contained throughout a geology like a shale layer.

So in a way, you can kind of think about, the analogy that helps me to think about this is, imagine you took a can of Coke, and you shook it up, and then you flash froze it. So you have all those little bubbles that are contained throughout that frozen Coca-Cola.

And that's sort of the same situation with unconventional gas deposits. And so in Pennsylvania we have what's called the Marcellus Shale. And the Marcellus Shale is a shale layer that is between 20 and 200 feet thick and is between one and two miles beneath the surface. And so, in the last ten years or so, a combination of existing technologies were developed and refined in order to access the gas within the shale plates, and the technologies combine horizontal drilling and hydraulic fracturing.

So what happens is that you have this surface of the land up here, and then the shale layer down here about a mile, mile and a half down. And the drillers drill the wellbore down, and then drill it out horizontally along the shale layer. And then ultimately, they pump between 2 and 10 million gallons of water, including a small proppence, usually pieces of sand or ceramic and lubricants and biocides and other chemicals down into the shale layer where it fractures the shale and releases the gas, and the gas flows back up through the well.

So although these technologies both horizontal drilling and hydraulic fracturing have been around for decades, in order to extract gas from reserves like from the Marcellus Shale, they really have had to have been developed. And the result of this is that the industrial scale of extraction activity has really expanded exponentially.

Drill pads of several acres in size, each well uses 10 to 12 million gallons of water, of which as much as a third returns to the surface, and has to be disposed of in one way or another. And of course, it returns to the surface, not only with the chemicals that were put into it, to pump it down into the well, but also with brines and heavy metals and naturally occurring radioactive material that's in the shale layer.

So this represents some pretty tricky issues as far as both the pumping of water and then the disposal of the water. In total, a well pad like this can require as many as 5 or 6,000 heavy equipment trips. So you're really talking about huge impacts on local roads, damages to local roads, lots of significant questions about environmental impacts.

It's raised a lot of questions and concerns about ground and surface water contamination, the fragmentation and discussion of landscapes, concerns about the effects of roads and infrastructure. And of course, it's not just the well pads, but the building of the pipelines as well. So anyway, I've been working on these issues since about 2010 with several distinct research efforts.

The first one was a survey that was administered to educational administrators across Pennsylvania's Marcellus region, and I kinda argued that educators and educational administrators were particularly good observers of community change because Unlike certain people placed within communities like business owners, landlords, land owners, this kind of thing, they didn't have a particular dog in the fight.

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They also worked with a broad segment of the community because of the students and the parents that they worked with. So they were in a good position to see the kinds of changes that were happening within the community that other people may not have had a chance to see.

That was combined with a set of focus groups and key informant interviews, conducted with educators and key community stakeholders across the northern tier region, the northern part of Pennsylvania where a lot of this gas development had been taking place. Most recently, an extended four county case study of multiple community impacts of Marcellus development in both north central and southwest Pennsylvania.

This includes analyses of secondary data, focus groups, interviews, additional field work, and this has been ongoing since 2012. This is a three phase, six year project, and we're in the middle of the second phase right now, and this has looked at everything from health impacts, to educational impacts, housing.

What else? A whole number of different things but the piece that I've been really focused on in the last year or so has been the experiences of low-income individuals in low-income households. That's what, ultimately, I'm going to move towards in this talk. This is a map of Pennsylvania showing the geologic extent of the Marcellus Shale formation, the counties where we've done most of our most of our work.

Bradford and Cumming, in the northern tier, this is the northern two counties in this extended case study, and then Washington and Green. The data focused specifically on low income households, will come from mostly from those those counties. A number of publications have come out of this so far including work that's been published in Peabody Journal of Education, Society of Natural Resources, World Sociology, a forthcoming piece in Human Organization, as well as a number of reports and extension briefs.

We've really been quite productive with this work. Drilling has taken place mostly in Pennsylvania, although you can see the shale layer extends into Ohio and down into West Virginia and up into New York. Drilling has taken place in Ohio and West Virginia as well, although New York has a drilling moratorium in place pending an extensive, ongoing environmental review.

It's not clear exactly what's gonna happen with New York but I guess, the point is that this is not simply an issue for Pennsylvania. In fact, there are gas reserves, across the United States that are experiencing unconventional extraction, activity and indeed, globally, so this is really taking place all across the world.

In fact, I was in Spain, last July, and came across this graffiti here. What's going on here with Marcellus Shale? It's been really interesting to me as a sociologist being based in Pennsylvania. When I got to Penn State about ten years ago, no one knew anything about Marcellus Shale, or fracking, or any of this kind of stuff.

One of my colleagues at Cornell, I think, puts it really aptly, that few natural resource features have moved from obscurity to center stage in so dramatic a fashion and within such a short time frame. In 2003, the estimated recoverable amount of gas from the Marcellus Shale layer was about 1.93 trillion cubic feet and by 2009, that estimate had jumped to 489 trillion cubic feet or the equivalent of 20 years of domestic natural gas demand.

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The way that I think about this is it's like having a bank account and thinking that you have \$1.93 in your bank account, it's not even worth going to the bank to take it out because it's gonna hardly buy you a cup of coffee. And then waking up one morning realizing, wow, I don't have a \$1.93, I have almost \$500.

It's that sort of jump but the fact of the matter is these estimates are just that and they're based on incomplete information, and changing technology and estimates have jumped up and down quite a bit. A more recent estimate from the USGS is 84 trillion cubic feet, which still is an enormous amount of gas.

The Marcellus Shale Play is agreed to be the largest natural gas reserve within the U.S. and one of the largest in the world. It's often called a game changer for Pennsylvania, and I think that most people agree that it has been a game changer, for better or for worse and it's been particularly a game changer for rural and non metropolitan areas.

A lot of these areas are areas that have for a long time, experienced economic stagnation, net out migration, aging populations. In fact, I remember interviewing a school district superintendent, probably in 2005, in Bradford county, which really the epicenter of a lot of this drilling activity. In 2005, he said to me quite bluntly, my job is to provide our students with the skills and the knowledge that they need to get out here because frankly, there's no opportunity for them here.

That's sort of a context for a lot of these areas in which this drilling has taken place, and you can see this here. A comparison of the 50 wealthiest school districts versus the 50 poorest school districts and the school districts with Marcellus wells and the total number of wells.

This is really concentrated mostly, in rural areas and mostly, in very poor areas. Another issue here is the rapid pay scale and the unpredictability of development. As I said, not even ten years ago, this was just not on people's radar screen at all and now, it's really fundamentally changed the landscape.

This is a map that shows the development of the shale play over time and you can really see the ways in which it's developed unevenly. You have these concentrations up here in the northern tier, and then down in the southwest and then some drilling taking place in between with some localized areas of concentration.

Most of that has to do with the sweet spots of where most of the gas is within the shale play. By November 2014, nearly 9,000 wells have been drilled in Pennsylvania and with projections of as many as 60,000 or more wells to be drilled in the coming decades.

That said, well development has dropped off and this is partially a consequence of this technology and the extraction of natural gas, and the impacts on global gas markets. Basically, the gas market's getting glutted. With gas driving the price down, which in turn depresses the drilling activity. So we want to think about this in terms of boom, bust.

I wouldn't call this a bust yet, but especially if you go up into the northern tier of Pennsylvania, people will tell you that the activity has really slowed down. So a very contentious issue with significant debate over environmental impacts, community impacts, economic impacts. And the framing of Marcellus development in the popular discourse has tended to take one of two positions.

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It's either a massive opportunity, an enormous economic windfall or a massive risk. And the graffiti there says that hydro-frack won't taste so good in your beer, milk, and soup. So from the opportunity side, of course, you have the gas industry, state government, some academics, and Penn State actually has been sort of typecast as an institution that has been on the whole more friendly towards the gas industry.

This is from an industry group range resource, or I guess this is yeah, I guess it's Range Resources. Natural gas drilling by Range Resources is making a real difference in the lives of people throughout Pennsylvania, that's true. We know them, we know because we met them, talked with them, heard their stories firsthand about how their lives are changing for the better, thanks to Range Resources.

And a lot of the development was really pushed ahead by Tom Corbett, who in fact, just made Pennsylvania history by being the first governor not to be re-elected. And in part, that happened because of his massive cuts to education. Although, there is also a lot question about his stance on taxing the gas industry and he was adamantly opposed to that.

He had some great campaign advertisements, and I was gonna show you one of them, but they all got pulled two days ago. But there's this other piece from the Marcellus shale coalition that I think gives you a sense of this kind of discourse around shale gas. I'll play this for about two minutes.

>> It fundamentally changes the playing field in terms of energy balance both in the region and in the nation. We now have a natural gas surplus for the foreseeable future. That's enough for Pennsylvania to be warm in the winter for the next 212 years.

>> Gas from the Marcellus shale in Pennsylvania is estimated to produce more than 212,000 jobs by 2020.

>> Currently Cabot, through use of direct employees and contractors, has created more than 250 full time jobs.

>> A Penn State study predicts the industry will employ more than 110,000 people by 2011.

>> The unemployment rate is high. We know people are looking for jobs, but we do anticipate overall there'll be thousands of new jobs, created directly and indirectly.

The duration of the jobs could be from one decade to five decades.

>> We would like to see our young people have a place to stay in our area and have jobs.

>> Companies say their industry will have a ripple effect. An idea that is coined the the Marcellus Multiplier.

>> Every dollar that a Marcellus Shale producer invests, it spins out an additional \$1.90.

>> Money that could provide momentum.

>> You have whole communities essentially that won the lottery because of these lease payments. But this is a huge mineral resource. It's coming to market at a time the market is asking for more and more gas.

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>> It's a lot of things and-

>> Okay, so you get the sense of this. Let's see. All right and one of the studies that was cited in this was work by Considine that predicted these huge amounts of jobs, and that report was later debunked when it was found that it was funded by the Marcellus Shale coalition.

And one of my colleagues, Tim Kelsey, has done a lot of work looking at job creation. He's come up with much lower job creation numbers, and this is kind of a nice cartoon of him with a pin puncturing the Marcellus economic impact claims. Okay, so you have this framing of this incredible economic opportunity, where you have this framing of it as a massive risk.

And most of this comes from the blogosphere, environmental organizations and activists, some academics. Here's a guy offering you a refreshing benzine spritzer from his well. But what about the creation of poverty amidst the boom? And I guess the link to Jen's work comes back from my initial experiences hearing people say to me again and again and again, anyone who wants a job around here can get a job.

And therefore, the people that didn't have jobs obviously didn't want them. But it was clear to me that this wasn't the economic miracle that the Marcellus Shale Coalition was presenting. So in the midst of this framing of Pennsylvania shale gas development as alternately an economic miracle or environmental catastrophe, I think what's really overlooked are the multiple risks and opportunities.

So this is not just massive opportunity or massive risk, it's both. And these opportunities are multiple, and the risks are multiple and they're unevenly distributed. Okay, so if we can change the conversation to acknowledging these multiple risks and multiple opportunities and how they're distributed, maybe we're in a better position to understand what's taking place and to possibly to manage it.

So, these risks and opportunities are unevenly distributed, not only across individuals and households but also across space and over time. And it's this uneven distribution of risks and opportunities that can create new and exacerbate existing economic insecurity. Even in the midst of boom town development. So, I'm not a natural resource sociologist.

And so I'm sorta vaguely new to this. But it seems to me pretty clear, that there are several distinct though complementary lines of boom town research, one is social disorganization studies. Which sort of came out of work beginning in the 1970s, which were largely descriptive studies focusing on the conflicts between old timers and newcomers, stresses on community institutions, increased crime, this kind of thing.

But not really any kind of focus on poverty creation. And then there were social psychological studies which sort of built off of the social disorganization studies. And most of these had to do with people's perceptions of community attachment, anomie, that kind of thing. A sense of personal safety and well-being, and then finally a major strand of boom town research has, with a nod to Willie Nelson, I call the phases and stages The social and economic affects across the stages of the boom bust recovery process.

And this is a real concern. This is a graph of workforce demand based on Wyoming data, but it applies equally well to the Marcellus gas fields. And it shows the demand for work across the development phase which is the building of the well pads, and the building of the pipelines, and the drilling.

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The production, where basically the gas is flowing and you're monitoring pipelines. And then reclamation. And you can really see this huge drop off. And so that's what people are talking about when they talk about the bust. And people in Pennsylvania communities know about this and they're concerned about this.

A survey respondent from the survey of educational leaders said what happens after the shale is depleted of natural gas? Does the industry leave us high and dry like the coal barons did? Another person said, I feel this can be the greatest discovery if handled with thought and care, and the biggest disaster if squandered.

Now this is a really interesting quote I think because it gets back to this issue of risks and opportunities and how to manage risks and opportunities. And shale gas development and fracking in general. If, you know, if you look at the public discourse, it seems like a very polarizing issue.

You're either really for it or you're really against it. There's no middle ground. In fact, with this work that we did, the survey work, we asked a number of questions assessing perception of risk and a number of questions assessing perception of opportunity. And, we also used GIF's to map out the concentration means of viewing activity.

And, what we found among these school district administrators was that the perception of risk was directly correlated to the perception of opportunity. The more risk you perceive, the more opportunity you're perceiving and vice-a-versa. And that, in turn, was directly correlated to the concentration of drilling activity. So, what does this uneven distribution of risk and opportunity look like at the individual and the household level?

What do we think about this? And how do we think about it in terms of the relationship to the creation of new poverty, displacement, and social exclusion. And so, I've been turning this over in my mind. And it seems to me we can think about this along several different dimensions.

One is kinda cross sectionally. In terms of the kinds of characteristics that may alternately expose people, to opportunity or vulnerability or risk. And clearly in the gas fields in Pennsylvania the people who stand to be most exposed to opportunity, cross sectionally, are landholders, especially those with large plots, homeowners, landlords, young adults, healthy adults, male adults, skilled with qualifications.

And here mostly I'm talking about things like welding, commercial driver's licences, this kind of thing, also people who have strong family networks. The people who are most at risk include landless, renters People who are middle aged, or older, or disabled, people on fixed income, people who are unskilled with no qualifications, female.

I should add in here also single parent households, and people who are socially isolated with weak kinship and friendship networks. So you can think about this sort of cross sectionally but you can also think, okay, well here. So here's a great quote. And this is a guy who I talked with last week.

And the quote is interesting because he really talks about this bifurcation of opportunity and risk. What, this, come on now.

>> I'd say it has created a lot of work, it created a lot of misery to I think because

>> Is that right?

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>> Yes because your people are out here looking for houses.

Everyday paper, a two bedroom house \$1200 a month. God, who could afford \$1200 a month on an income of maybe \$2000 a month? I mean, that'd take your whole check by the time you pay your bills and everything else. There goes your whole paycheck.

>> Right.

>> I mean, and then everybody wonder why people come to the food banks.

What are we supposed to do? I get \$150 on the first, do you think that will last me a whole month? I don't think so, I don't see it. They're just ruining the economy in my book. I don't see, they might be benefiting from it.

>> Yeah.

>> But we're not.

We're not gonna benefit from it. His only work benefit from it is growing poor or being poor or one of the two. I mean, the rich might be richer and the poor will get poorer.

>> So, that was a 56 year-old man, disabled who's, as he noted, is really scraping by.

And this next quote is really interesting as well because this person, who is a female resident of Bradford County, 52 years old, single. She actually worked for the industry for a short amount of time, and I was asking her about the gendered aspects of opportunity. And she talks about that, as well as a number of other things too, including that social isolation and a few other things.

It's interesting how gendered the industry is. I mean, you hear about man camps, roustabouts, roughnecks. Land men who come out and sign the leasing agreements, to get them signed. On the other hand, a lot of the pictures that you see of people working in the industry are people like this guy here, the guy with the hard hat.

On the other hand you have this business that was a start up that was certainly connected to the gas industry called Rigmates. And I don't know if you can see it but it has a pony tailed woman in a short dress with a feather duster dusting off the grilling rig.

>> As far as fracking goes, as far as like, oil wells goes, it's very much a man's world. Because, like I said, my friend said to me, oh come here. Right down the corner they are hiring for oil, it's not just beef it's chief, it's this it's that.

I'm trying to think of the other, there has been a bunch. And of course now the lease issues and all this other stuff. But somebody like myself who doesn't have a clan or a family that's lived here for years without that land, I don't have that extra money rolling in.

So it makes it really kind of hard to live around here.

>> Yeah.

>> I think if you're 18 years old and you've just graduated from high school. Or you're a young 21 year old and you're male. You can get a job like that.

>> Mmhmm.

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>> And if like, you're a female and you're very female and attractive to the guys, especially the bosses, you can get a job like that, maybe in the office.

But, usually more people with no experience. Or they take people that are older, that I would say older meaning in their 30s, that might have experience, or might have gotten a CDL or something like that.

>> Right.

>> Now, I can't get a CDL. And when I asked, when I inquired at Mountain Energy, can I get out of this position and maybe move into a driver position or something, no we don't do that.

>> Okay, so one thing to keep in mind as well is that, when the industry came in. Most of the jobs ended up going to people who came in from out of state, who had background, had experience doing unconventional gas drilling. And so there's a real sense among many people in these communities, that we got sold this bill of goods that this was going to be all this job creation.

In fact, there was a lot of job creation but it didn't go to us, it went to these other guys. Another way of thinking, a second dimension of thinking about this is how exposure to risk and opportunity may change over time. And we can think about this, for sure in terms of the boom-bust cycle, right.

And that graph that I showed you, what happens when you hit that downhill slope. So in other words, what's the longevity of opportunity here? But also in terms of things like fluctuations in global energy markets, the unpredictable cost and availability of housing, and this is a particular issue.

Here, I'm gonna talk more about that. The regulatory stands by state and federal governance. So for the last four years under corporate's administration, it's been much of a free for all. Under the new governor, we'll see what happens with that. Also, at the individual level, injury, burnout or locality of work.

I talked to a man last week, who was injured on the job site. He pulled a hose out of a well and the fluid from the hose splashed over his head and into his face, even though he was wearing a hard hat and goggles. It got down into the goggles, and swelled his face all up and he had to go to the hospital.

And, he was in the hospital for a couple days. And when he got out of the hospital, he found that he was no longer employed. And I asked him if he was able to collect workers' company. And he said no, he didn't know how to do that and if that was possible.

Okay. This was a particularly interesting quote. And one of the dynamics here taking place in these counties especially in the Southwest, is that Pennsylvania of course, has already experienced a number of booms and busts in the past with lumber and with coal. And this person here talks about, so where the time dimension of vulnerability and opportunity.

>> So, I think people in our position have had an advantage from having an outside looking in perspective. There are a lot of people where life that come in here, I hear all these well back when the steel industry was this, and back when the whatever industry was this and this and that.

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In the particular area that we are in county. They've suffered these booms of industry. Yeah, there's this great opportunity for people to get these jobs, the high paying jobs. Maybe it'll lapse into the next generation, so they can bring their children on board, into that booming industry, and then it flops.

Or it moves on. Becomes outsourced somewhere else, or however you choose to look at it. But either way, what goes up must come down. And, so you have generations of people that have lived in this area. That lived here during the huge economic boom. And then a downfall.

Economic boom, and then a downfall. And in that downfall, depression raises high, crime rates raise high. Everything just seems to regress. And so when I see an industry like this, personally I've come into this particular area, wouldn't see history repeating itself.

>> This is a guy who is employed full time, and has some college education and has been homeless for a year, because of the housing markets.

So, yeah, so again, a third dimension, to understanding risk and opportunity, and how it can vary, is over space. And that spacial dimension interacts with time as well. And, of course, just by looking at this map, you can see the unevenness of development and by extension, the variability in impacts.

So the impacts here, right, are going to be very different than here. Of course, that's gonna change as the development proceeds. And, so from a spatial perspective, we can think about things like the density of infrastructure, including housing stock. Areas with larger housing markets are better able to absorb this new demand.

Health services industry. The sites of extraction versus the sites of industrial staging. So in the northern tier, a lot of that area is quite rural. But then you have Williamsport, which is a small, metropolitan area that's been used as a site of staging and activity for the industry.

Fluctuations in global gas markets. And this is sort of interesting, I showed you the picture of the drop off of gas production, earlier in the presentation. Well, here's a comparison of Bradford, Lycoming and Green and Washington county and Bradford, Lycoming. Are right here, going up like that, so you can see that this.

There's a very steep spike in production. And then a very steep drop off, as well. This is in the Northern part, while in the Southwest, Green and Washington County has been a pretty steady rise. And one of the things that happened here. Was that in the north counties, the gas was mostly methane.

So they call it dry gas, whereas down here, there's lots of propane and butane, wet gas, and the markets for methane were flooded. And the price had dropped, but that was not so much the case for propane and butane, and so these different areas sees some very different patterns in terms of development.

Long term environmental health consequences of unconventional gas extraction, unpredictable cost of building housing. These are all gonna vary over space and over time. So housing markets and displacement. I want to spend some particular time talking about the issue of housing, there were two dynamics at play. One was an influx of workers, from out of state.

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Mostly from Texas, Oklahoma, places like that. And this led to a radically increased demand for housing. Often in places that didn't have a whole lot housing stock to begin with, so there was a very, very intense pressure on housing. And then, secondly, these people coming in, oh, boy.

Okay, I'll try to wrap up. Had salaries that far exceeded what had existed previously. And so there was a demand plus an ability to pay top dollar, plus a precedent of others growing rich off the gas industry, notably leaseholders, Shell-ionaires, and the landlords wanted to get in on this.

I began to hear stories about Hummer homeless. That is a gas worker family's living in temporary circumstances, and the families who drive their kids to school in the Humvees. As a point of fact, most of these workers came in without families, but you would hear things like the hummer homeless.

Section 8 was unable to use vouchers because the fair market rent is retrospectively calculated, and it did not reflect price spikes in any kind of way. So housing authority workers found a radically increased demand, and vouchers that they were at risk of losing because they couldn't be used.

Okay. So I'm gonna play you this one. This is particularly interesting quote. And this is about the housing. >> So that in 2008 to 2010, okay? I mean this house, he starts seeing this money, money, money coming into the area. And he's thinking, now he needs to boot me out because he's only getting \$400.

That's all I can afford. So he says, I'd like to have more income in here to pay the expenses, pay the taxes. So then therefore, I say okay, I'll look for another place. I'm in college, working as much as I can work with the children. So then I'm out there looking for rent.

All the sudden, the gas starts coming into this area, 2011, early 2011, it's starting to really boom in this area. People are saying rent is between 8 and 900 dollars. How can you afford this being a single parent with three children? Technically three because she was at college, but she would come home.

I just couldn't do it. So then everywhere you look, so this is when it was March. He calls up and says, since you won't get out, I'm going to sell the place. I have a buyer from the pipeline company, Atlas, I think it was at the time, who wants to buy my house.

And he wants to pay, and this thing was only valued at \$68,000. So you can't say that it was very much of a house. But I mean, it was my home. And he says, the guy wants to give me 189,000 cash to put his guys up into this house.

>> Wow.

>> Okay. So now you just knocked a family out onto the streets. I had nowhere to go. I was homeless. There was no place to go. No house, I mean, I couldn't afford those houses out there. And what you could afford, was like cockroach-infested places. I mean, it was low living, I don't want my children there.

So I have always, just to put this into perspective, had my children either homeschooled or private school. Paid for private school because I didn't want my children involved in what was in the area. I've always had a protection around them. So now I'm homeless and nowhere to go.

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>> Okay, so I'm gonna wrap up here. In Pennsylvania, advocates of shale gas development within the region have emphasized as windfall economic benefits of industrial development. In the meantime, they've simultaneously tended to frame local, social, and environmental risks as mere factors in a broader marketplace of costs and benefits.

Opponents of shale gas development have alternately emphasized unacceptable environmental risks and uncertainties. But this discourages of bifurcation however, misses the complexity of how these opportunities and risks are unevenly distributed across people, places, and over time. And given the ways that Boomtown development can paradoxically create new poverty, insecurity and equality, the situated specific economic circumstances of many residents in Pennsylvania's shale gas region reflect the broader ongoing conflicts between the well-being of rural communities and neoliberal logics that view rural and economically marginal places as a periphery whose role is to provide human and material resources to an increasingly urbanized core.

So I'd like to suggest a number of implications. First, the Boomtown Scholarship and its focus on the boom-bust cycle and the creation of economic insecurity in the bust has largely missed the ways in which uneven structures of opportunity and uneven exposures to risk create new poverty and security as a consequence of rapid economic expansion and development.

So more attention needs to be paid to the uneven consequences of Boomtown development across all stages of the boom-bust cycle. In particular, in the ways in which existing inequality and insecurity can be dramatically exacerbated in the midst of economic boom where anyone who wants to find a job can find one.

Second, the Boomtown literature rarely considers how differing spacial and institutional contexts may affect the ability of individuals and communities to adapt, adjust, and respond. So what are the consequences for those at the economic margins in these different places? So attention to the spatiality of Boomtown development enables us to think about Boomtown development and its impacts in a cross-sectional rather than a longitudinal way.

So, in other words, the variation in development intensity, you can think back to that map of Pennsylvania and the impacts at one time over space as opposed to the variation over time with regards to the boom-bust cycle. How are these peripheral areas affected? For example, do displaced residents, priced out of rental housing, find themselves moving to adjacent counties?

And if so, what are the impacts there? So Pennsylvania under the leadership of two governors has aggressively pushed shale gas development. Under Tom Corbett's administration in particular, state policies have been heavily pro-industry under the neoliberal assumption that the development of the Marcellus Shale will create critical economic growth and particularly in areas of the state that have long lagged behind in job creation.

So there's no question that economic development has occurred, but what has been largely overlooked are the ways in which many of Pennsylvania's most vulnerable residents have not only been largely excluded from the creation of new economic opportunities, but how they have also been most immediately exposed to new insecurities that are largely invisible amidst both the discursive framing of unconventional gas development as either an economic godsend or an environmental catastrophe.

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And Boomtown Scholarship that likewise overlooks processes of exclusion displacement in impoverishment. So thank you so much, and Jonathan, I'm really looking forward to hearing your comments.

>> I'm Ann Stevens, the Director of the Center for Poverty Research at UC Davis, and I want to thank you for listening.

The Center is one of three federally designated poverty research centers in the United States. Our mission is to facilitate nonpartisan academic research on domestic poverty to disseminate this research and to train the next generation of poverty scholars. Core funding comes from the U.S. Department of Health and Human Services.

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