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Digital History Seminar
21 November 2023

Women of Coal Revisited: Women's Unacknowledged Labors in Appalachian Coal Mining Strikes

Introduction

In 1996, Randall Norris and Jean-Phillipe Cypres published *Women of Coal*, utilizing oral history interviews of fifty-five Appalachian women from Kentucky, West Virginia, Virginia, and Tennessee. *Women of Coal*, while a fairly groundbreaking work in the field of Appalachian women's history, does not present an academic argument from its breadth of interviews– and indeed, this was not the goal. By analyzing the original audio recordings when available and the edited stories of the women whose original interviews are not archived, this project seeks to explore the broader historical context of these women's stories. By applying computational methods such as topic modeling and word vector analysis as well as painting a broader historical picture for the original interviews one can not only better understand the primary sources represented in *Women of Coal* but also the ways overarching American society has viewed and impacted regions such as Appalachia. Through digital textual analysis of these interviews and consideration of the historical context of the region, women's intimate labor in the coalfields becomes apparent.

This project will center its focus on beginning in the post-war period of the 20th century and extend through the 1980s. While the *Women of Coal* interviews and its accompanying archival data is not always incredibly specific regarding the time periods these women refer to, an analysis of the interviews and stories shows that they are speaking generally about nearly the whole of the 20th century. However, definitive descriptions of events pre-1950 are fairly rare. Similarly, coal strikes are mentioned throughout, but the 1989 Pittston Coal Strike is mentioned by name multiple times in the original record, likely due to its recency for those interviewed and

the strike's ultimate success. As the original interviews were conducted between 1992-1994, this historical context is crucial to understanding the moment from which those interviewed were speaking.

Additionally, the state of labor in general and specifically in Appalachia between the end of World War II through the end of the 1980s is essential to an understanding of this source base. Following World War II, the Cold War brought societal anxieties of communism and containment policies which were felt in arguably every American household, but as this project will detail, perhaps more so in Appalachian coalfields. Additionally, massive reductions in factory work and related fields had profound impacts on the coal industry. Alongside a traditional labor history lies a history of domestic, mental, and emotional labors known collectively as intimate labor; gendered labor relations as well as the concepts of waged vs. unwaged work will be examined in order to situate the *Women of Coal* narratives within the larger context.

While *Women of Coal* consists of 55 edited stories, the Louie B. Nunn Center for Oral History at the University of Kentucky has archived 40 interviews– not all of which appear in the final publication of *Women of Coal*. Additionally, 22 stories which *do* appear in *Women of Coal* are not accompanied by archived oral interviews. This is likely due to preservation issues, as the original interviews were recorded on cassette tapes. All available information surrounding the project has been entered into a .csv file, which attempts to bridge the gap between the women we have more information about versus those we have very little information about. It is an

imperfect, but workable solution to what is essentially an archival/preservation problem.[1]

Historical and Theoretical Methodology

Appalachian history as a whole has been a contested field, with much of its historiography focusing on what Robert Weise called "a history of the concept of Appalachia."[2] Much academic research about Appalachia has focused on national versus local perceptions of the region and has been an effort to debunk stereotypical views propagated by popular media. Other academic studies of the area focus on the effects of the coal industry; since Harry Caudill's 1963 publication of *Night Comes to the Cumberlands*, academics have nearly universally identified corporations as the source of the region's apparent deficiencies. This historiography often fails to showcase the people of the region in any personal sense, rather analyzing broadly the forces behind the culture. While it is certainly important for the field to understand how conceptions of Appalachia have shaped the academic and popular demonstrations of the region, this project seeks to instead highlight the voices of those who make up Appalachia– those whose lived experiences have both been molded by Appachian culture and in turn, create Appalachian culture.

Existing feminist methodology has been incredibly beneficial in shaping an Appalchian studies methodology. In a 2015 meta analysis of Appalachian studies, Barbara Ellen Smith calls on several foundational texts within the field of women's studies in order to provide a working methodology for Appalachian studies researchers. Calling on the pivotal 1997 article, "The

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[1] This complicated archival situation paired with a general lack of background information and metadata has understandably complicated the research process. In response to these complications, the 40 available Nunn Center interviews have been transcribed and used for topic modeling and word vector analysis/word embedding modeling. *Women of Coal* itself has been used as an additional, important source, but has not been considered in the digital methods of the project. Further research regarding the missing data would be incredibly beneficial, but outside the scope of this project.

[2] Weise, "Socially Relevant History: Appalachian Kentucky in the 20th Century," 323.

Impossibility of Women's Studies," Smith asserts that an essential problem within Appalachian studies is the competing needs to stabilize the subject "as a uniform and universal topic in order to establish academic legitimacy and coherence…" versus the understanding that doing so results in creating the primary subject of study one whose particular experiences are grounded in a way which makes one aspect of their identity "the foremost category of identity, source of oppression, and axis of resistance…"[3] Much like in the field of women's studies, where early scholars grappled with the tensions of multiple and indeed innumerous examples of "womanhood," the Appalachian studies researcher cannot fall into an idea that there is one identity which is "Appalachian," but rather that Appalachians are likewise multifaceted on both an individual and community level and that these differences do not somehow deregulate their Appalachian identity. Calling on theories of poststructuralism, Smith asserts "the theoretical premise that we are produced as social beings through relational processes involving operations of power… the point is that the particularistic, power-laden, and situated stories of *any* Appalachian should be interrogated and decentered if we are to explore the systemic operations of power (in the forms of race, gender, etc) as constitutive of the region."[4] Smith's chapter not only provides a case for intersectional Appalachian identity and study, but uses foundational feminist historiography to argue for an Appalachian Studies methodology rooted in intersectional feminist thought.[5] While this project's primary source base is made up of, quite literally, women of coal, it is important to recognize that within this corpus lies distinct voices and experiences. By grounding this work in Smith's Appalachian studies methodology and the feminist studies model on which it is based, care has been taken to ensure that the digital methods utilized in this project do not overshadow

[3] Smith, "Representing Appalachia: The Impossible Necessity of Appalachian Studies," 42.
[4] Smith, "Representing Appalachia: The Impossible Necessity of Appalachian Studies," 54.
[5] Smith calls on feminist scholars such as Joan Kelly-Gadol and Gerda Lerner to shape her Appalachian methodology.

the original interviewees' individual and intersectional Appalachian identities. Conscious effort has been focused on ensuring that instead of masking the women of coal interviews behind a screen of algorithmic generalization, this project will instead focus on the connections between the individuals interviewed and what these connections say about their communities, their lived experiences, and the history of their region.

Some academics interested in Appalachian studies have begun to argue for an understanding of Appalachia via a postcolonial lens. Works such as *Colonialism in Modern America: The Appalachian Case*and *Appalachia on Our Mind* position the region as one which has been exploited by and is distinct from the national culture.[6] [7] James Eric Ensley draws on these works in his essay, "Subalterns in the Hollers," and compares the Appalachian experience to Edward Said's discussion of Orientalism, explaining that "the cultural abstraction that is Appalachia is reduced to an unchanging entity based on notions of imperial cultural superiority."[8] G. Sue Kasun draws on postcolonial theory and Homi Bhabha's notions of hybridity to discuss her own experience of being raised in and then moving away from Appalachia, calling herself "a fragmented creation of a not-wanted, not-recognized place that nevertheless exists for the people who live there and in the imaginations of those who recognize its existence in their imaginations."[9] In *Bringing Down the Mountains*, Shirley Stewart Burns speaks specifically about West Virginia, explaining that the state exists as a so-called "peripheral region within the American and global market system… Like a colony, the periphery supplies raw materials cheaply so that the core can benefit from the production of goods and services for the national and global market. Any attempt to alter this relationship leads to mobilization by the

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[6] Lewis et al, *Colonialism in Modern America: The Appalachian Case.*
[7] Shapiro, *Appalachia on our Mind.*
[8] Ensley, "Subalterns in the Hollers," 220.
[9] Kasun, "Polluted Postcolonialism of a White West Virginian, or, A Transversal Gaze toward Transnationalism,", 52.

powerful core against the weaker periphery as the core seeks to maintain its control."[10] Smith likewise references an "internal colony perspective" in "Representing Appalachia," though she does not necessarily argue for this lens, but rather presents how others have used the framework in Appalachian studies, as well as other economic frameworks such as "world systems theory," Marxism, and "path dependency" theory; Smith argues that utilizing any such economic framework to theorize the region results in an "invisibility of noncapitalist economic relations and the tendency to overlook the activities of the majority of the population, which is female."[11] This project recognizes and attempts to utilize the postcolonial lens in relation to Appalachian studies while remaining mindful of the core subject, Appalachian women; rather than understanding the subjects of study via their economic circumstances, this constitutes just one of many aspects of their multifaceted identities. However, considering Burns' definition of peripheral regions, an understanding of Appalachia and its inhabitants as an inner American colony is important to the historical analysis of the region.

Oral history was an appropriate starting point for this project. Notable oral historian Paul Thompson explained that "[oral history] can be used to change the focus of history itself… it can give back to the people who made and experienced history, through their own words, a central place."[12] This is the guiding principle behind both this project and the original *Women of Coal* project. Seeking to steer the conversation surrounding Appalachian studies away from discourse about its conception, perception, or actuality as a region and culture, this project would instead focus on the voices of those participating in that region and culture. In doing so, it is intended to be a force which helps to change the focus of Appalachian history.

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[10] Burns, *Bringing Down the Mountains,* 2.
[11] Smith, "Representing Appalachia: The Impossible Necessity of Appalachian Studies," 47-48.
[12] (Perks and Thomson, *Oral History Reader*, 26.

Conversely, however, there are oral historians who would possibly contest the use of transcription as it has been utilized in this project. Michael Frisch's "Oral History and the Digital Revolution," argues against transcriptions of oral history, pushing instead for a return to aurality. He explains his position, pointing to the universal knowledge that "there are worlds of meaning that lie beyond words… Meaning inheres in context and setting, in gesture, in tone, in body language, in expression, in pauses, in performed skills and movements. To the extent that we are restricted to text and transcription, we will never locate such moments and meaning, much less have the chance to study, reflect on, learn from, and share them."[13] This assessment is not incorrect. It is these drawbacks to traditional static transcription that drove the decision to push beyond simply creating a written document to accompany each interview. Instead, the project will utilize what Frisch referred to in the same essay as "meaning-mapping" and "relational database approaches to organization and navigation."[14] In short, this project utilizes transcription in order to create a broad sense of the *Women of Coal* collection, draw connections between individual interviews, and relate them to each other topically

Digital Methodology

The digital methods utilized in this project include topic modeling, word vector analysis and speech-recognition transcription. These methods, especially topic modeling and word vector analysis, have been utilized in a number of previous projects and have been considered methodologically by a number of researchers both for the humanities field as a whole and for individual projects. A literature review of these methods is outlined here, as well as a note regarding the open-source transcription model, "Whisper," and the commercially available transcription software, OtterAI.

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[13] Perks and Thomson, *The Oral History Reader,* 103.
[14] Perks and Thomson, *The Oral History Reader,* 109.

Transcription:

This project is rooted in a collection of Appalachian oral history interviews housed at the University of Kentucky's Nunn Center for Oral History. As Tagherlini and Leonard state, "...for any given research question, there exist far too many works in the target corpus to be able to read them all carefully."[15] In this case, while substantially edited versions of the original interviews are available in *Women of Coal*, the original interviews (which were on average about 45 minutes long) were not transcribed. Due to time constraints and other issues, the commercially available software *OtterAI* was utilized to transcribe the audio files.[16]

Textual Analysis via Topic Modeling and Word Vectors

Textual analysis is an incredibly common method of humanities research, and may be conducted by human researchers or by computational methods. Indeed, many computational analysis methods have historically been conducted by humans. In *The Shape of Digital Humanities*, edited by Julia Flanders and Fotis Jannidis, it is argued that while specific terms such as 'data' and 'modeling' are relatively new in humanities research, the concepts behind them are not. Indeed, researchers have been creating models for centuries, as outlined in their chapter, "Data Modeling in a Digital Humanities Context." They argue here that "debates about method are ultimately debates about our models" and "reference works such as dictionaries, bibliographies, concordances, and catalogues represent another long tradition of strongly modeled information." Thus, while specific digital methods are fairly new, they are based on a long history of humanities research. Kalev Leetaru provides an overview of why, then, computational methods can be more beneficial than "long-established tradition."[17] Among these

[15] Tangherlini and Leonard, "Trawling in the Sea of the Great Unread," 726.
[16] Originally, I attempted to utilize *OpenAI*'s"Whisper" package for the transcription step of the project, as it is an open source product. However, multiple bugs within the package produced transcripts which were not viable for the later textual analysis to be utilized.
[17] Leetaru, *Data Mining Methods for the Content Analyst*, 2.

benefits are reliability, reproducibility, and scale.[18] Leetaru argues that computers are able to follow set precedents over time, while human researchers may deviate both from their own precedents or differ from precedents set by other human researchers, thus their results are likely to be less reliable than those which are computer-generated. Similarly, an algorithm can reproduce its results much more effectively than human researchers, as well as handle significantly larger corpuses than human researchers.

Both topic modeling and word vector analysis are forms of textual analysis known as correlation and co-occurrence analysis. Leetaru defines correlation and co-occurrence analysis as "a class of techniques that explore relationships among how words are used in a body of text. Words commonly appearing near each other are known as collocates and represent concepts which have some form of semantic connection within the body of text being analyzed."[19] These techniques are intrinsically linked to the work of linguist Zelling Harris, whose theory of word embeddings or distributional semantics states that "a word is characterized by its context formed by the words around it. Therefore, words that share similar contexts also share the same meanings."[20] David Blei described topic modeling algorithms as " statistical methods that analyze the words of the original texts to discover the themes that run through them, how those themes are connected to each other, and how they change over time."[21] Likewise, the authors of *Text Mining with R* describe topic modeling as "a method for unsupervised classification of…documents, similar to clustering on numeric data, which finds natural groups of items even when we're not sure what we're looking for."[22] Two words could exhibit a correlation by frequently appearing together within a text, or these words may never directly combine but

[18] See Leetaru's "Introduction" for full explanations of these benefits.
[19] Leetaru, *Data Mining Methods for the Content Analyst*, 36.
[20] Mohamed et al., "Effect of Word Embedding Vector Dimensionality…" 823.
[21] Blei,"Probabilistic Topic Models," 77.
[22] Silge and Robinson, *Text Mining with R,* 89.

consistently share the same context with surrounding words, implying common themes and contextual relevance.

Specifically, this project utilizes *latent dirichlet allocation* (LDA), which Blei describes as "the simplest topic model."[23] LDA models assume that any given document or series of documents will contain multiple topics and that every word in the document will fall into one of those topic categories.[24] Or, as Silge and Robinson explain, LDA "treats each document as a mixture of topics, and each topic as a mixture of words. This allows documents to 'overlap' each other in terms of content, rather than being separated into discrete groups, in a way that mirrors typical use of natural language."[25] A number of topic categories is given to the model, which then reveals the so-called *hidden structure* of the document(s). R-packages "topicmodeling" and "tm" were both utilized in this project.

This is not to say that the researcher's individual expertise is unimportant and can be wholly replaced by digital methods such as topic modeling. Rather, "the computer algorithm is given the task of what it does best: counting words and calculating probabilities of term co-occurrence. The researcher is given the task of what he or she does best: applying domain expertise and experience for labeling and curating the topics."[26] In other words, topic modeling provides a kind of jumping off point for the researcher. By using algorithmic topic modeling to allow the corpus to "organize itself" into a predetermined number of topics, the researcher can begin their work from these topics, rather than wasting time attempting to draft a cohesive keyword list for a whole text search, a task which would be both time and labor intensive and

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[23] Blei,"Probabilistic Topic Models," 78..
[24] Those who use LDA modeling utilize "stop word" lists, or lists of low-context words which are generally removed from the document prior to running LDA topic modeling. See Blei, 78. Alternatively, one can restrain a corpus to only consider "especially relevant words… such as those that have a β greater than 1/1000 in at least one topic." See Silge and Robinson, 93.
[25] Silge and Robinson, *Text Mining with R,* 89.
[26] Tangherlini and Leonard, "Trawling in the Sea of the Great Unread," 728.

likely to miss key points within the corpus. Topic modeling is rarely, if ever, the end of a research project; rather, it serves as a beginning point from which researchers can build. This is also true in this project, as topic modeling was the second computational method utilized, after audio transcription.

In a similar vein, word vector analysis or word embedding models have been described as "a family of machine learning techniques able to extract information about words from their distribution in a given corpus of natural language."[27] The authors of "Dialects of Discord: Changing Vocabularies in the Dutch Cruise Missile Discussion" argue that word embedding models (WEM) allow researchers to not only identify words which appear physically near each other in a given corpus, but that "with WEMs we are able to identify associations and relations between words that are not self-evident but relevant."[28]Similarly, in a 2011 article, Stanford University researchers said that "vector-based models… encode continuous similarities between words as distance or angle between word vectors in a high-dimensional space."[29] While the Stanford study focused on utilizing word vector analysis in order to understand sentiment analysis, a method which is problematic in historical research, their technical discussion of word vectors is relevant to this discussion, as their base model does not engage in sentiment analysis but semantic analysis. This article should be consulted if one is curious about the technical side of word vector embeddings, alongside Ben Schmidt's blog post titled "Word Embeddings for the Digital Humanities," which describes word embedding models "a spatial analogy to relationships between words" and is the source from which this project's word vector analysis is modeled.[30]

[27] Futselaar, R., & Van Lange, M. "Dialects of Discord," np.
[28] Futselaar, R., & Van Lange, M. "Dialects of Discord," np.
[29] Maas, et al., "Learning Word Vectors for Sentiment Analysis," 142.
[30] Schmidt, "Word Embeddings for the Digital Humanities."

The Data

Topic models of the forty audio interviews archived from the original *Women of Coal* project revealed that the women in this study largely do not separate issues of home and family from issues of the workplace (their own or others') or from issues of the community. R packages "tm" and "topicmodels" were utilized to create topic models from the corpus. Variations of this code were experimented with in order to see what number of topics would best represent the corpus– 5, 15, or 40. Perhaps because of the nature of the corpus– women from a specific geographic region asked to speak about their experiences with a specific industry– the resulting topics, no matter the amount, did not seem to represent entirely different subjects within the corpus. Several keywords were repeated throughout the majority of topics– such as "year(s)," "school," "work(ing)(ed)," "mine(s)," "coal," and "kids/children."[31] Less popular, but still numerous, keywords included "county," "community," "church," and familial titles. What this suggests is that despite an algorithmic attempt to do so, the women interviewed in the original project's words cannot be neatly divided into subject specific topics because their lives and experiences have not been divided as such. This makes sense historically, and though the topic models do not necessarily plainly tell us what topics this corpus can be divided into, it does point us in a general direction of what seems to have been the most important subjects to those interviewed– and where to start our word vector analysis.

[31] See attached visuals, "Topic Models 5," "Topic Models 15, "Topic Models 40."

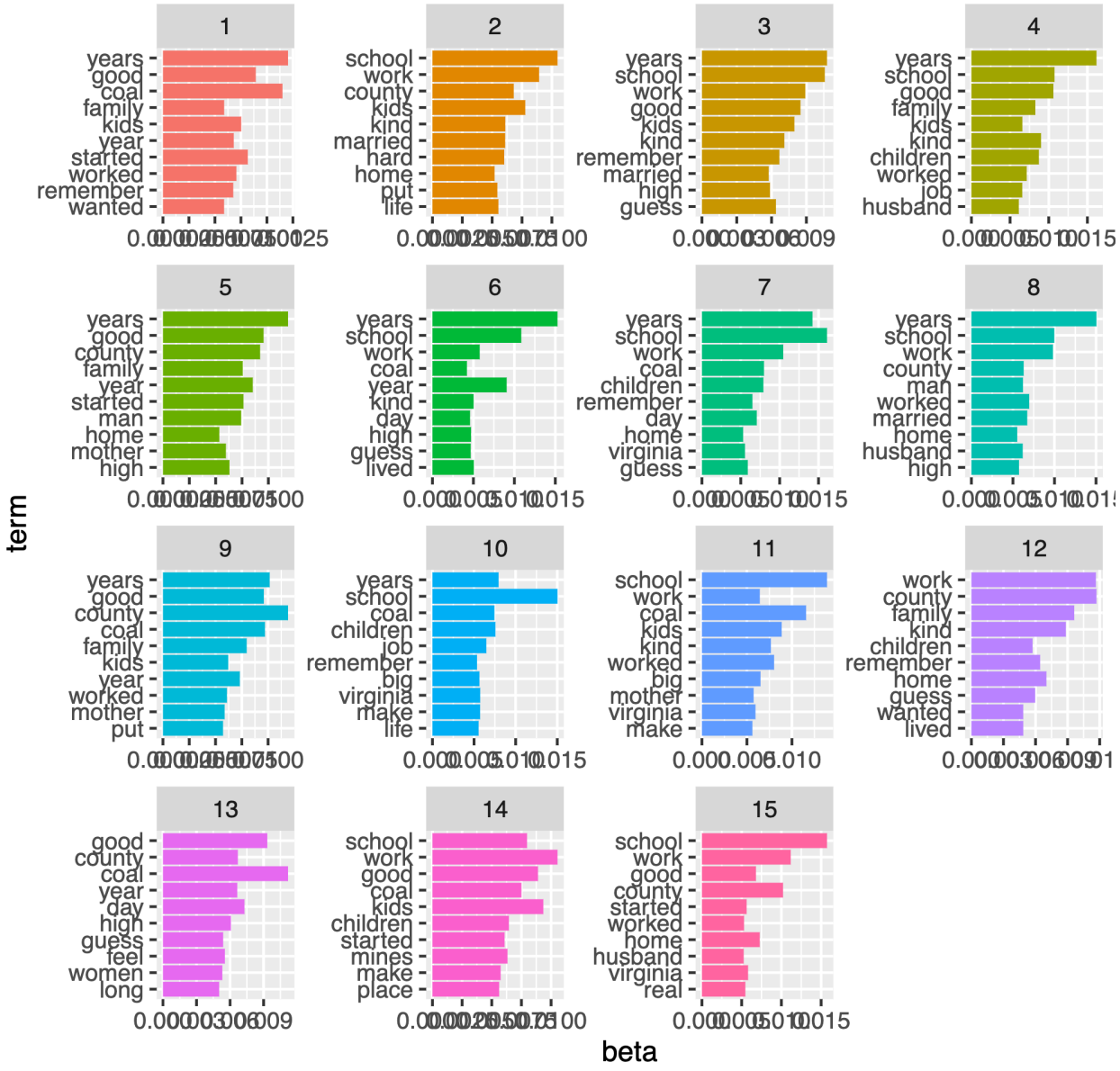

Figure 1: Topic Models Showing 15 Topics from the *Women of Coal* Corpus

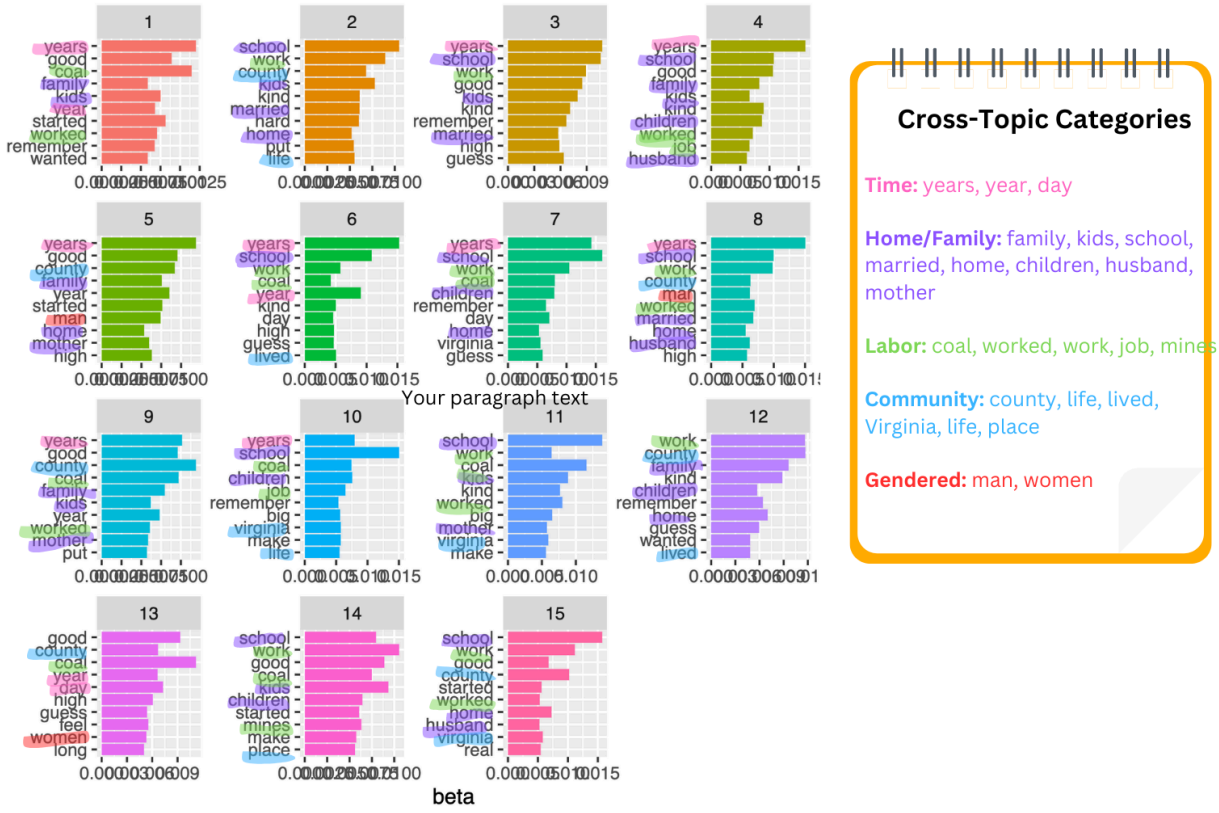

Figure 2: 15 Topics from the *Women of Coal* Corpus, Showcasing Cross-Topic Categories

Using "word2vec" for R, I first looked for word embeddings for those keywords that kept showing up in the topic models. The "word2vec" parameters included bigrams, which allowed the model to include terms such as *laid off,* an important term when considering union activity and labor strikes. Looking first at a model which grouped the words "kid," "kids," "child," and "children," some of the fifty resulting vectors include the words *raising, hard time, boys, girls, school, first marriage, student, husband,* and *abuse*. When looking at the model which grouped variations of the word "work," the resulting word vectors included *mines, coal miner, my husband, director, program, raising, my son, laid off,* and *contract.* The model that considered variations of the word "home," resulted in vectors which included words such as

cars, kids, elderly, build, encourage, shopping, cook, vocational, maintain, and *payday.* A model considering variations of the word "school," yielded words such as *integrated, segregated, education, taught,* and *summers.* I then considered what the gendered models might look like. A model utilizing "woman," "women," "girl", and "girls" yielded results such as *young, pregnant, projects, she works, children, birth, traditional, encouraged,* and *secretary.* The model which considered "men," "man," "boy," and "boys" yielded results such as *expected, aggressive, children, win, drunk, mad, basketball, and physical.* A complete list of the considered keywords and their respective word vectors can be found in the GitHub repository of this project.[32]

[insert visuals]

Perhaps some of these word embeddings are more surprising than others. Considering the nearly complete crossover of these words in the previously discussed topic models, it is curious that there is not as much crossover when examining word embeddings. However, there does seem to be considerable overlap (if not of exact words, then at least of themes) between the models which considered "home/family" and "work." For instance, familial terms, references to coal mines, terms such as "raising" and "taking care," and versions of the word "work" appear in both models. **[visualization]**

Considering this, alongside the gendered models, one can begin to consider a historical argument that is not necessarily explicitly stated within the individual interviews, but points to an underlying theme within the corpus– that for the *Women of Coal* interviewees, issues of home and work are intimately related.

Data Analysis and Historical Context:

The *Women of Coal* interviews took place in a precarious period of Appalachian history. As discussed in *Appalachia in the Sixties*, overall coal mining employment diminished 50%

[32] Knipp, "Women of Coal Revisited," https://github.com/Hmknipp/Women-of-Coal-Revisited.

between 1950 and 1971.[33] The reasons for this were numerous, the most pressing of which was the automatization of several processes alongside a decreased need in the market for bituminous coal. The results of this decrease heavily impacted the Appalachian region overall, sendings several small coal towns into economic crisis. Many left the area due to unemployment (between 1950 and 1960, West Virginia was the only state in the nation which experienced a decrease in its population), but many more were unable or unwilling to do so.[34] Writing of Appalachian migration to nearby cities such as Dayton and Cincinnati, Harry W. Ernst and Charles S. Drake explain, "Many economists believe migration from the Appalachian South will continue even if the region becomes more industrialized. With mechanization increasingly eliminating coal miners and marginal farmers, enough new jobs won't be created to satisfy the demands of a traditionally high birth rate."[35]

In *The Dangerous Art of Text Mining,* Jo Guldi posits that every term uncovered in digital textual analysis is deserving of further analysis. Though these are but a handful of words within a 200,000+ word corpus, Guldi argues that "abstractions and reductions, while only partial views of the whole, can nevertheless shed light on cultural experience and historical change."[36] So, while these terms are a small portion of the *Women of Coal* corpus, their indications have the potential to reveal a larger truth about not just the corpus at hand but Appalachian history in general. Critically analyzing these terms and their relationships to each other provides a window from this specific corpus– these specific interviews, these specific women– to the underlying history of the Appalchian region, coal mining, and women's relationship to each.

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[33] Walls, et al. *Appalachia in the Sixties : Decade of Reawakening*, 6.
[34] Bradford, "John F. Kennedy and the 1960 Presidential Primary in West Virginia," 162.
[35] Walls and Stephenson, *Appalachia in the Sixties*, 8.
[36] Guldi, *The Dangerous Art of Text Mining,* 127,

An analysis of the gendered relationships between home and work is necessitated by the results of the word embeddings. Let us first consider some terms related to work: *coal miner, my husband, my son, raising, laid off*. These suggest that when discussing the topic of work, the women interviewed for the *Women of Coal* project often spoke of the men in their household (my husband, my son) and the stresses related to these familial relationships. For example, speaking specifically about the tragedy of black lung disease cases she'd witnessed, Edith Crabtree stated, "My father was killed by black lung. I lost four brothers to black lung. My first husband had black lung when he died, and my second husband died from black lung… Once Jessie got black lung… I lived it for ten solid years."[37] Black lung disease, sometimes called coal miners' pneumoconiosis, is "inflammation (swelling and irritation) and fibrosis (thickening or scarring) in lung tissue brought about by inhaling dust particles in and around coal mines."[38] Between 1968 and 2014, the Department of Labor estimated that "more than 76,000 miners … have died at least in part because of black lung."[39] For Crabtree, the men in her family did not only work in coal mines, they were killed by that work via black lung disease; and she was responsible for caring for them during the slow and painful decline caused by the disease. Similarly, Alta Whitaker described her husband Arnold's leg amputation and the resulting fall out, saying "He was coming down the incline at the tipple, and he fell and lost his leg. [The mine] offered us eight hundred dollars and we took it. After that he wasn't able to work, and it was up to me to take care of the kids. I was a mother and father to all three boys, and it was rough." Whitaker goes on to explain the work she did in order to care for her family, such as becoming a janitor at a local schoolhouse and selling bootleg whiskey and beer.[40] When Nina P. Bolling's husband,

[37] Norris and Cypres, *Women of Coal*, 21.
[38] "Black Lung Disease: Casuses, Symptoms & Treatment."
[39] "MSHA News Release: MSHA Issues final rule on lowering miners' exposure to respirable coal dust."
[40] Norris and Cypres, *Women of Coal*, 25.

Glen, experienced a debilitating accident in the mines, she took it upon herself to begin advocating for disability insurance and handicap accessibility. She says, "I discovered it was easier to make a law than to change a law, but I didn't give up… By the time I got the compensation law changed, I found out it wouldn't help Glen, but that was all right because it helped other people… We kept working on things close to home… It was tough on me, because I thought I was Superwoman, and when I found out I couldn't fix everything, I got real bitter, and that made it tough on our girls… but we've survived."[41] Numerous other anecdotes from the *Women of Coal* corpus tell similar stories; paired with the digital text analysis this indicates that often, a spouse, father, or other relative's waged work and the physical toll of that labor resulted in additional labor taken up by the women in their lives.

Some terms related to home– *kids, elderly, encourage, shopping, cook, maintain, payday*– point to the intimate, domestic, and mental labor related to women's position in the home. Sarah J. Barton describes her experience growing up in Vansant, Virginia, describing her work on her parents' farm. She explains, "I raised potatoes, onions, peas, beans, parsnips, beets, and carrots. And I took care of the orchard… and we raised chickens and turkeys and cattle and hogs… We milked and kept five hundred hens and sold the eggs to the hospital. Seven cases a week, thirty dozen a case, fifty cents a dozen."[42] Barton, technically unemployed, describes hard days of agricultural labor in order to maintain the family farm. Dameta J. Brown describes her mother's work following her father's death, saying "My mom was a homemaker; she also did day work and worked at a restaurant when I was growing up. One time, when I was small, she went to New York and worked, but she didn't stay long before she returned."[43] In contrast to Barton, Brown describes her mother as a homemaker and then goes on to immediately describe

[41] Norris and Cypres, *Women of Coal,* 45.
[42] Norris and Cypres, *Women of Coal,* 39.
[43] Norris and Cypres, *Women of Coal,* 51.

the waged labor her mother partook in. In each case, it is clear that women's labor was intricately woven within the home.

The gendered models relate terms such as *children, birth, traditional,* and e*ncouraged* to women, while terms such as *aggressive, win, drunk, mad,* and *physical* are related to men, revealing a stark contrast between men and women in the corpus. Dameta J. Brown speaks to the indication of alcoholism, saying "My father died from a cerebral hemorrhage… Now they would say he was an alcoholic, but then they just said he had a drinking problem, or they didn't say anything at all. To me, he was a wonderful dad. He didn't hit us. Sometimes he came home drunk and he fussed, but nothing major."[44] Gwendolyn Jackson alludes to the issue as well, saying "Women around here are very strong…If we had to depend on the men around here, we wouldn't have anything… It's part of a vicious cycle, and it's so sad–the alcohol, the drugs, and the violence."[45] Similarly, in an interview recounted in *Appalachia in the Sixties*, Robert Coles describes the body language of former coal miner Hugh McCaslin, who had to leave the mines following a serious back injury:

> He will take a beer or two and then get increasingly angry. His hair seems to look wilder, perhaps because he puts his hands through it as he talks. His wife becomes nervous and tries to give him some bread or crackers, and he becomes sullen or embarrassingly direct with her. She is trying to "soak up" his beer. She won't even let it hit his stomach and stay there a while. She wants it back. He tells her, "Why don't you keep your beer, if you won't let it do a thing for me?"[46]

Considering both the digital analysis and these examples from *Women of Coal* and elsewhere, distinctions between men and women in the coalfiends becomes apparent.

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[44] Norris and Cypres, *Women of Coal*, 51.
[45] Norris and Cypres, *Women of Coal*, 43.
[46] Walls and Stephenson, *Appalachia in the Sixties*, 49.

Historically, women's waged labor has been both metaphorically and practically cheapened in comparison to men's waged labor; this is showcased in the *Women of Coal* interviews as well. Though nearly all of the women interviewed were traditionally employed (33 of 55) or involved in some sort of local activism or organizing (9 of 55), the word2vec algorithm revealed that when discussing the subject of work, they often spoke of their husbands or their sons. They also spoke about coal mining, perhaps predictably, and the terms *raising* and *laid off*. Six of the women interviewed were themselves employed as coal miners and all of the women interviewed had some relationship to coal mining– so their discussion of the trade is not surprising. What is interesting is that despite often holding jobs of their own, discussions of work seem to center on the labor of others– the labor of men. Within the broader historical context of the United States in the Cold War period, this showcases a continuation of the Victorian era ideal of seperate spheres, within which it was understood that a woman's proper realm was within the home or in private and men were to care for public matters. Despite early 20th century societal movement away from seperate spheres ideaology, mid-century Americans found themselves pushed back to the model as fears of communism spread throughout the country; so-called traditional values such as the (new) nuclear family unit promoted American capitalism and were therefor prioritized again within society. McCarthyism promoted a breadwinner and homemaker model of the family unit, despite the reality that many families could not actually afford to live on a single income. Women's labor became twofold, as they produced wages outside the home and continued their domestic and intimate labors within the home. In order to more closely resemble the breadwinner/homemaker nuclear family model which had become the symbol for American capitalism and patriotism, women's waged labor was viewed as lesser than men's waged labor, a trend which continued through the new millennium.

Specific terms highlighted by the word2vec models further emphasize the capitalistic model of the family unit. The term *laid off* indicates that work or employment is seen as a precarious thing, susceptible to the whims and needs of others; the labor of men is an unstable subject, one which is perhaps likely to change– a fear that is not historically or practically unfounded. This term also points to a certain mental and emotional labor associated with the stress of possible job loss in the family unit. The term *raising*, which when considered as its own word2vec model reveals links to the words *chickens, gardens, corn,* and *kids*, invites a discussion of domestic labor– not only of the literal work involved in home-based agricultural pursuits but of the labor involved in raising children. Interestingly, the terms associated with home in the corpus– *kids, elderly, encourage, shopping, cook, maintain, payday*– also point to domestic, mental, and emotional labor; caring for children or elderly relatives, encouraging family members, shopping, cooking, maintaining a household, and being dependent on a weekly paycheck–their own or their spouse's– all involve these types of labor. To unpack the terms we see associated with "work" and "home" in this corpus, one must have an understanding of what Eileen Boris refers to as intimate labor.

Intimate labor is described as "tending to the intimate needs of individuals inside and outside their home…[including] not just sexual gratification but also our bodily upkeep, care for loved ones, creating and sustaining social and emotional ties, and health and hygiene maintenance."[47] The editors of *Intimate Labors: Cultures, Technologies, and the Politics of Care* point out that varied types of labor fall under this umbrella– paid and unpaid, external and domestic. Understanding that many of the women interviewed refer to their husbands, a sexualized intimate labor is implied, alongside the daily work of maintaining a household which allows him to return to his waged labor and practice his trade productively. The care of children

[47]Parreñas and Boris, *Intimate Labors*, 5.

and elderly relatives, the emotional labor of encouragement, the domestic labor of shopping and cooking, and the implication that when payday arrives, the woman of the house will manage the direction of cash flow in order to continue maintenance of the household all fall under the umbrella of intimate labor. Yet, intimate labor– especially unwaged, domestic intimate labor performed by women– is often discounted as something other than work, yet it is certainly not leisure.

Comparing the relationship between mid-century coal mining mechanization to Industrial Revolution era factory mechanization may be helpful in understanding the gender dynamics at play. The authors of "Invisible Women: A Psycho-Economic Exploration of Domestic and Reproductive Labor" posit that during the British Industrial Revolution, when new machinery threatened male factory jobs and the remaining positions likewise reduced man to machine, men faced a kind of identity crisis– an identity crisis that women did not face. The article explores the changing role of men and women in the context of industrialization and raises the question of whether men, when reduced to less-efficient machines in factories, still retained the same necessity and identity as before. In contrast, women, especially pregnant women, became increasingly visible as indispensable in their reproductive and domestic roles. The argument suggests that women, due to their reproductive capacity, maintained a more integral identity amid the transformations brought about by the Industrial Revolution. The authors go on to explain that, when facing annihilation anxiety, the men of this period revolted– first against the machines, which proved immovable objects, and then against "women and their maternal and domestic labor." By identifying *with* the machines rather than opposing them, "it became a man's purview to 'provide for the home,' further negating the female labor increasingly confined there. As maternal facticity was pushed out of collective consciousness, women, through a massive

male projection, were the ones who became the extraneous, the unnecessary and the unimportant –burdensome ornaments of successful manhood. Thus, male worker identity was re-established through the negation of the female body."[48] While Jain and Zarghamee's analysis focuses on turn of the century industrial workers, the crisis of manhood and its effects are not unknown to other periods. Appalachian coal workers in the late 20th century arguably faced a very similar situation.

Considering the situation in the coalfields post-World War II, one can draw connections to the gender dynamics discussed in "Invisible Women: A Psycho-Economic Exploration of Domestic and Reproductive Labor." In *Women of Coal*, Gwendolyn D. Jackson speaks to the early 1990s repercussions of this, saying that

> I'm not willing to say Appalachian men are more violent than other men, but they've lost their sense of pride. Along with missing their goal in life, I think they were also raised with the idea that things should stay the way they were in the old coal mining days, when Daddy went off to work and Momma stayed home and raised a houseful of kids. They haven't figured out it's not that way today. Women are more educated, and men fear them because they think they're a threat to their masculinity.[49]

As Leslie J. Reagan asserts, following World War II there was a societal push to return to a pre-World War I society. During the World Wars and the Great Depression, the fertility rates of American women had diminished, signaling a shift away from traditional domestic and motherhood roles towards active participation in the workforce. While society may have tolerated women's industrial contributions and higher wages "for the duration," few were willing to accept these gender role transformations as permanent changes. In the 1940s, "women faced

[48] Jain & Zarghamee, "Invisible Women," 4.
[49] Norris and Cypres, *Women of Coal*, 42.

intense social and ideological pressure to bear children… [and] influential Freudian psychologists equated maternity with female sexual gratification."[50] The societal push toward motherhood and the repression of abortion rights in this period reflect the nation's desire to diminish women's capacity for independence from men and the new nuclear family unit. These post-war ideals, coupled with a significant lack of employment opportunities for women *or* men in the Appalachian region by the 1960s were likely to have placed Appalachian women squarely in the domestic sphere. Gwendolyn Jackson's view from the 1990s speaks to the ideals of the decades before, when men went to the mines and women stayed home to care for the home. However, this does not mean that Appalachian women did not *work*– rather, that they engaged in a kind of work that largely went (and still goes) unacknowledged: intimate labor.

In her 1974 essay "Counterplanning from the Kichen." Silvia Federici argues that "housework and the family are the pillars of capitalist production."[51] While arguing for wages for housework, Federici posits that "Housework, in fact, is much more than housecleaning. It is servicing the wage-workers physically, emotionally, and sexually and getting them ready to work day after day for the wage. It is taking care of our children– the future workers–assisting them from birth through their school years and ensuring that they too perform in the ways expected of them in capitalism."[52] Federici's definition of housework, then, coincides nearly perfectly with what others would define as intimate labor within the home.

Moving into the post-war period, the coal industry largely moved away from the existing company town model; by the end of the 1950s, company towns were basically obsolete. Moving into the 1970s and 1980s, mountaintop removal mining (MTR), sometimes called strip mining, became a popular choice for coal company owners– as Shirley Stewart Burns explains, "with the

[50] Reagan, *When Abortion Was a Crime*, 163-163.
[51] Federici, *Patriarchy of the Wage*, 12.
[52] Federici, *Patriarchy of the Wage*, 11-12.

expansion of MTR, the coal companies no longer needed a substantial workforce. Instead they needed the hills and valleys where these people lived. The land was taken, mostly through coercion, for the 'greater good' by the coal interests."[53] In Rebecca Simpson's words, "After they strip-mine, they push all the dirt over the mountain. If you get a hard freeze and a warm rain, it washes off, and that's what happened here. We were devastated by the 1977 floods, but it took a long time to get settlements from the coal companies. The coal companies were ruthless. At that time there weren't any laws to make them put anything back."[54] Again, the people of the Appalachian coalfields faced mechanization and industrialization– now taking not only their jobs but their homes and land. As Hugh McCaslin stated in *Appalachia in the Sixties*, "We don't do anything here anymore; and so my boys, they'll all want to leave, and they will. But they'll want to come back, too-because this land, it's in their bones going way back, and you don't shake off your ancestors that easy, no sir."[55] In Appalachia, place is an integral part of one's identity, often going back generations. Many of the women interviewed in *Women of Coal* also cite generational connections to their homes– and the mines. For example, Angelene Harmon speaks of her father's immigration from Italy, eventually settling in West Virginia where he worked at the Amonate mine. Except for her factory work during World War II, Angelene and her husband, also a miner, have remained in West Virginia; at the time of her interview, her son was also mining at Amonate. She explains, "I think all [of my three] children would have stayed around here if they could have found jobs, like they did years ago, but whether it was economics or politics that caused them to leave, two of them are gone. I wish they could have stayed here. Things sure have changed."[56] Hugh, speaking in the early 1960s and Angelene, speaking in the

[53] Burns, *Bringing Down the Mountains*, 5.
[54] Norris and Cypres, *Women of Coal*, 79.
[55] Walls and Stephenson, *Appalachia in the Sixties,* 50.
[56] Norris and Cypres, *Women of Coal*, 116.

early 1990s, express the same idea: their familial connections to their homes are being broken by the loss of jobs in the coalfields; their children left, because they had to. From the corpus, this idea is connected to terms such as *laid off*. In this context, Jain & Zarghamee's argument linking male workers' loss of identity in their workplace to the devaluation of women's domestic labor becomes increasingly relevant. Coal miners in areas affected by MTR stood not only to lose their identities related to their labor but also their identities related to their homes, making the household labor of women further maligned and unappreciated.

Further complicating this story, union labor has a history of being accused of connections to communism, especially during the era of McCarthyism. This connection, whether or not it was unfounded, allowed those on the outside of unionized labor struggles to both distance themselves from it and villainize it. In his biography of Betty Friedan, Daniel Horowitz explains that in the 1930s and 1940s, "in an effort to undermine unions in the South, home-grown American fascists lumped together Jews, Communists, and the [Congress of Industrial Organization union] as their enemies."[57] At this time, the connection to Jewish people allowed anti-semites, which were numerous, an additional avenue, along with communism, to Other union members. In the years that followed, leadership in organizations such as the United Auto Workers worked to oust known Communists from their ranks, which caused a rift between the UAW and the Federated Press as well as strife within the organization.[58] Similarly, the women's movement in the mid century was also faced with red scare connections to Communists and the Soviet Union. In *Modern Women: The Lost Sex*, published in 1947, the authors accused the Women's International Democratic Federation, an international women's rights organization, of "[continuing] to promote the theories of feminism and what it can of neurotic disorder," and linked the group to

[57] Horowitz, *Betty Friedan and the Making of the Feminine Mystique*, 102.
[58] Horowitz, *Betty Freidan and the Making of the Feminine Mystique*, 118.

the Soviet Union as "the political agents of the Kremlin abroad [who] continue to beat the feminist drums in full awareness of its disruptive influence among the political enemies of the Soviet Union."[59] As both union activity and feminist activity were marked as anti-American, women's participation in the labor movement was doubly marked. In the Cold War era, this would have been a particularly pressing problem to the women of coal country. Despite this, Appalachian women did participate in the movement, which to those on the outside looking in would have likely painted them as doubly wrong.

The connections between intimate labor and the coal industry became remarkably apparent during a 1973 strike in Brookside, Kentucky. As Jessica Wilkerson argues, Minnie Lunsford's picket sign reading "Duke Energy Own the Brookside Mine, But They Don't Own Us" revealed an important connection between the families of coal miners and the companies which employed them. Wilkerson asserts that "in the hands of a woman who had never been employed in the mines, the declaration exposed the company's control over the above-ground world of mining communities, where women lived, worked, and cared for families."[60] During the Brookside strike, labor injunctions limited the number of striking miners on picket lines to three at a time. To combat this, the women of the community came to the picket lines themselves. To them, the union membership for which miners were striking would not only protect the miners themselves, but give their families a sense of comfort and stability while they were underground, as union mines would ensure stronger safety regulations; Hazel Nunn speaks to this in *Women of Coal*, explaining that "My husband worked in the coal mines for thirty-four years. He liked mining, but the rest of the family dreaded it because we never knew whether he was going to come home at night or not, and I was always worried. I never did get used to it… The longest

[59] qtd. in Horowitz, *Betty Freidan and the Making of the Feminine Mystique*, 128.
[60] Wilkerson, *To Live Here You Have to Fight*, 146.

strike we ever had lasted nine months. My husband never missed a picket line. I took care of the house and took care of the children. I got them up at four o'clock in the morning and took them down to the picket line."[61] Further, the women of Brookside had their own labor qualms with the company. From Wilkerson,

> Women's unpaid reproductive labor had for decades lent stability to the coal industry, as they took on the arduous work of caring for and reproducing a labor force… As the class struggle between miners and coal operators exploded, mothers, daughters, and wives of coalminers argued that the coal economy drained their communities of lifeblood and strained their ability to do the work of caring. For them, the politics of care could not be divorced from the politics of class… at the time and in years after the strike, they cast themselves as women kin and neighbors who sought vengeance against the industry that had caused destruction in their lives.[62]

Wilkerson's study of the Brookside strike reveals not only the presence of women on picket lines and their direct engagement with coal labor disputes but a recognition of their own intimate labors as necessary to the continuation of the coal industry. In *Women of Coal*, strikes are mentioned throughout, but only the 1989 Pittston Coal Company is explicitly named.

The 1980s, the period immediately preceding the *Women of Coal* interviews, were a particularly unstable time in coal country and for union mines. In 1982, Mingo County, West Virginia native Don Blankenship took a job as an office manager at a subsidiary company of Massey Energy, Rawl Sales & Processing. By 1984, Blankenship had become the president of Rawl; the same year, Massey moved to de-unionize its subsidiary mines and be considered a collection of companies rather than a common employer, prompting a United Mine Workers strike in West Virginia and Kentucky. A March 21, 1985 article explains, "If Massey is deemed to be a common employer, miners laid off at one subsidiary would have what are known as

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[61] Norris and Cypres, *Women of Coal*, 26.
[62] Wikerson, *To Live Here You Have to Fight*, 149.

'panel rights' at toher subsidiaries. Under the UMW contract, those miners would have the inside track on new jobs when openings occurred at other companies."[63] Blankenship, despite his roots in the community, quickly made an example at Rawl, bringing in armed security and raising fences around the facility. The strike lasted over a year, and the violence of it brought to mind early 20th century mine wars.[64] In December 1985, the strike ceased; a UMW spokesman was quoted in *The Winchester Sun* explaining, "The central issue to everything is the single employer issue, and that's been settled in our favor."[65] Further, the union's chief complaint of unfair labor practices was officially considered conceded by the company, but workers returning to the mines would not be protected by union contracts.[6667]

A few years later, in 1989, the Pittston Coal Company followed Massey's lead and informed their workers, members of the United Mine Workers of America, "that they were taking away retirement and health benefits. Considering the relative dangers of mine work, the workers rejected the changes, which meant they couldn't support their families if they were injured while working."[68] This strike is mentioned numerous times in the *Women of Coal* interviews, though unfortunately most of the allusions to it are not within the collection of archived audio recordings and therefor not part of the transcribed corpus used for digital text mining. Cecile Szucs speaks of the work– another intimate labor– she and her family did during this time, saying "During the Pittston strike, we cooked for the miners. We started out making

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[63] Dunlop, R.G. 1985. "Mine workers' 5-month-old strike with A.T. Massey far from over." *The Courier-Journal* (Winchester).
[64] See Savage, Lon. *Thunder In the Mountains: The West Virginia Mine War, 1920–21*. University of Pittsburgh Press, 1990. https://doi.org/10.2307/j.ctt6wrc1; Duafala, A. P. "The Historiography of the West Virginia Mine Wars." *West Virginia History: A Journal of Regional Studies* 12, no. 1 (2018): 71-89. https://doi.org/10.1353/wvh.2018.0005.
[65] Bryson Hodell, Martha. 1985. "UMW notifies Massey of intent to end strike." *The Winchester Sun* (Winchester).
[66] Baker, "Bitter Coal Strike Settled."
[67] Goodell, "Don Blankenship: The Dark Lord of Coal Country."
[68] Quinnell, "Pathway to Progress."

eighty ham sandwiches a day, but it really snowballed and we ended up serving two or three hundred people in two locations… That lasted for thirteen months, and the only reason we quit was because my mother was put in a nursing home. We do whatever we can to help the union."[69] Cecile Szucs was speaking of her involvement in a community-wide effort to support the striking miners. The AFL-CIO's blog post about the Pittston Strike explains that a key part of this strike was the efforts of community members and "Camp Solidarity," set up near the plant. Camp Solidarity "opened in June, with a gathering of more than 1,000 people, and it became a place to house and feed strikers and visitors. On many days, the camp would feed more than 2,000 people. As a symbol of community support and solidarity, the camp also boosted morale among strikers and raised money to support strike funds."[70] In other cases, women directly participated in company "takeovers." *The Ronoake Times* reported that "a group of roughly forty union wives, mothers and daughters calling themselves as 'The Daughters of Mother Jones,' [began] a two-day takeover of the lobby of the Pittston Coal Group headquarters" on April 18, 1989.[71] Catherine Tompa speaks to these events, saying "We struck Pittston because they'd taken health care away from pensioners. We worked fourteen months without a contract and finally struck on April 5, 1989. About two weeks later thirty-nine women took over Pittston's headquarters. We went in the front door at nine o'clock one morning and came out the same way at five o'clock the next day. They talked about using tear gas, but they were afraid of the crowd at the foot of the hill. In late February 1990, we won the strike and went back to work."[72] According to AFL-CIO, community activism during the Pittston strike was a key aspect to its ultimate success. What their

[69] Norris and Cypres, *Women of Coal*, 40.
[70] Quinnell, "Pathway to Progress."
[71] The Roanoke Times. 1990. "Anatomy of a Coal Strike: A Short History of Labor Law, Fines, Violence, and Sit-Down Demonstrations in the Virginia Coalfields." *The Roanoke Times* (Roanoke).
[72] Norris and Cypres, *Women of Coal*, 55.

article does not directly address is that community involvement implicates the activism of *women* in the community. Writing about the strike in 2010, the AFL-CIO took note of the restaurants and businesses who "refused to serve state troopers who were arresting strikers" and various student-lead protests in support of striking workers, but it does not directly address the labors of the women in the community who were behind efforts such as Camp Solidarity and the sit-in and were likely active on the picket lines, as they had been in previous strikes. While the women of coal fought against the Pittston Coal Company and ultimately were vital in a labor strike which lead to the passing of the Coal Industry Retiree Health Benefit Act of 1992 which gave insurance benefits to miners "whose employers were no longer in business," and while the AFL-CIO notes that without the Pittston strike, the CIRHBA would not have passed, the women involved in this success are not acknowledged.[73] In this way, one can see that when it comes to women's intimate labor, both the coal companies and the unions are reliant on it, and ignore it.

The interviews collected in the original *Women of Coal* project are a window into the ways in which women have supported and participated in various labor efforts in Appalachian coal towns. By utilizing digital methods, one can identify the intersections of labor related to the home and the workplace at play in early 1990s Appalachia, which in turn invite a lens of intimate labor as defined by Eileen Boris and capitalist-supporting housework as discussed by Silvia Federici. Considerations of men's identity crises in relation to the devaluation of their own labor, as discussed by Jain & Zarghamee, show up time and again in Appalachian labor history and directly affect women's domestic labors and the value or lack of it placed upon it. As Jessica Wilkerson and the *Women of Coal* interviews highlight, women in Appalachia have a historic connection to unionized labor strikes, despite larger societal pressures which might have deterred them. Despite evidence to the contrary, both the coal companies and the unions which represent

[73] Quinnell, "Pathway to Progress."

them and their families do not acknowledge the ways in which women have been a crucial part of both of their successes.

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