

Snake Oil, Silver Buckshot, and People Who Hate Us: Metaphors and Conventional Discourses of Wood-based Bioenergy in the Rural Southeastern United States

Sarah Hitchner, John Schelhas, and J. Peter Brosius

Multiple experiences and sources of information influence ideas about wood-based bioenergy, and people often use similar language to reference various discourses (e.g., energy independence, rural development, environmental sustainability). We collected data during ethnographic research in three primary and three secondary field sites in the southeastern United States in which wood-based bioenergy facilities are located and at regional bioenergy conferences, as well as from publications on bioenergy from various sources. We use qualitative content analysis to show how various stakeholders in this region frame issues related to bioenergy, which bioenergy narratives and metaphors they employ, and how recurring linguistic elements are shared among bioenergy stakeholders. We focus on several key metaphors that people reference when they talk about bioenergy in different contexts, including public media, policy and management discussions, bioenergy conferences, outreach programs, and among landowners and within communities: “snake oil,” “silver buckshot,” and “people who hate us” (i.e., terrorists). We explain how these metaphors employ multiple, overlapping, and sometimes conflicting conventional discourses (Strauss 2012) in order to appeal to emotions and cultural value systems, and we argue that uses of these metaphors act as “moments of influence” (Witter et al. 2015) on perceptions of bioenergy. While it is impossible to know what truly motivates or influences people, by combining these two forms of analysis, we can show how language both reflects and creates shared cultural understanding of developing technologies and their effects on different stakeholders.

Key words: bioenergy, narratives, discourses, southeastern United States, forests

Introduction

For centuries, the forests of the southeastern United States have provided economic and ecological benefits, and forests are an integral part of the cultural and social identity of many local communities in the region. Forest products industries, ranging from turpentine production to whole log export, have contributed significantly to changes in regional economies, communities, and landscapes. Within this dynamic context of ongoing change and regrowth, the emergence of wood-based bioenergy facilities in forest-dependent communities has led to both promises of new wood markets and disappointments that not all of these promises

have materialized. Concerns about the effects of wood-based bioenergy developments on established wood markets, local economies, and the health of both people and ecosystems have, in some cases, fueled skepticism about or even direct opposition to bioenergy development. Community members, citizen groups, non-governmental organizations, and forest industry representatives sometimes oppose construction of new bioenergy facilities in rural, forested areas. At the same time, new bioenergy developments are also heavily promoted by bioenergy industry representatives, local community leaders and development planners, and politicians and policymakers operating at different scales. Members of the general public hear messages from these different actors both directly and filtered through various media sources, and they also circulate opinions gleaned from these sources among themselves. In areas where bioenergy facilities have been built, the failure or success of these facilities, as well as the positive and negative impacts they have had on different members of the community, directly affect public perceptions of bioenergy. Understanding what people hear about bioenergy and from what sources is especially important because local support is often critical for both new industries and for local governments seeking to lure them to rural and often economically depressed communities.

Sarah Hitchner is a researcher with the Center for Integrative Conservation Research at the University of Georgia. John Schelhas is a researcher at the Southern Research Station of the USDA Forest Service. Peter Brosius is a Professor in the Department of Anthropology at the University of Georgia. We would like to gratefully acknowledge funding from USDA National Institute of Food and Agriculture - Agriculture and Food Research Initiative (NIFA-AFRI) Sustainable Bioenergy Challenge Area (USDA-NIFA Award No. 2012-67009-19711) that supported this research.

To achieve this understanding, it is necessary to evaluate the ways that different actors are talking about bioenergy in different contexts, their goals and motives in discussing bioenergy, and the narratives and rhetorical devices that they use to strategically influence people or pass on ideas and opinions to others. A number of scholars have discussed the role that discourses, narratives, metaphors, and imaginaries play in shaping the opinions of various stakeholders in energy politics (including international policymakers, bioenergy industry representatives, members of local communities affected by large or small-scale energy projects, and the general public), and several studies are specific to bioenergy development (Spartz et al. 2015; Miller et al. 2014; Trutnevyte 2014; Vel 2014; Levidow and Papaioannou 2013; Omer 2013; Curran 2012; Kirkels 2012; Kuchler and Linnér 2012; Gasparatos et al. 2011). Quinn (2005) argues that metaphor analysis is a particularly useful method of inquiry to elucidate shared cultural understandings of complex social institutions such as marriage because people frequently use metaphors in order to clarify the points they are trying to make, and others within the same cultural context readily understand the metaphors and the meanings behind them. We show how an analysis of metaphors complements a multi-sited ethnographic approach to understanding various actors' perceptions of wood-based bioenergy, as metaphors circulating among and between different actors crystallize key messages about the potential risks and benefits of bioenergy development.

Curran (2012:237) notes that "the force of storylines and narratives lies in their capacity to both simplify and organize discourses," and we believe that bioenergy metaphors similarly organize and simplify myriad discourses such as rural development, energy independence, national security, ecological sustainability, forest health, carbon sequestration, and government investment in technological innovation. These are often nested within larger discourses such as sustainable development or climate change and embedded in imaginaries or holistic visions of current and potential realities (Fairclough 2010; Jasanoff and Kim 2009). As Michael Jones (2014:644-5) notes: "The historical record is littered with examples where narratives have been strategically generated by governmental actors to shape beliefs or restricted and contained to prevent them from doing exactly that." We contend that people are much more likely to remember words and phrases that evoke specific images or passionate emotions such as fear, anger, pride, or betrayal than they are to remember abstract concepts or technical data, especially those articulated in academic or technical jargon, and that in the case of bioenergy development, certain metaphors are circulated among various actors in ways that elicit emotional reactions. Recognizing the difficulty of proving that these metaphors directly influence people, we draw from two approaches to analyzing influence: conventional discourse analysis (Strauss 2012) and the notion of "moments of influence" (Witter et al. 2015).

Conventional discourse analysis (Strauss 2012) is one way of analyzing the influence of discourses in the words

and phrases that people use in formal and informal speech. Strauss (2012:15) notes that people often plagiarize the words of others, and she defines a conventional discourse as an "oft-repeated, shared schema." Schemas, she states, are "holistic mental representations of objects, events, and relations... networks of strong mental associations" (Strauss 2012:17). She notes that ideas, words, and phrases are shared freely among people within fairly coherent "opinion communities," or groups of people who influence each other, often reinforcing previously held ideas. The core beliefs of opinion communities are often, but not always, heavily influenced by specific individuals who serve as "opinion leaders" (see Segev et al. 2012; Richins and Root-Shaffer 1988) or people that strategically position themselves as influencers of the general public or a targeted group. Shared words and phrases that circulate within opinion communities constitute conventional discourses, and use of them evokes a set of assumptions about what a speaker thinks and values. Everyone belongs to multiple opinion communities, and people often express multiple and contradictory viewpoints about the same subject when drawing ideas and even specific rhetoric from different opinion communities.

While Strauss (2012) focused on how opinion communities influence public perceptions of complex social issues such as immigration and welfare, Witter et al. (2015) examined the question of how to determine the level of influence that certain actors have on large-scale political processes. In observing the potential influence that indigenous actors had on negotiations at the 10th Conference of the Parties of the Convention on Biological Diversity (CBD COP10) in Nagoya, Japan, in October 2010, they draw a distinction between influence and outcomes, noting that influence can be both "spontaneous and elusive but nonetheless strategic and tactical" (Witter et al. 2015:3). In using the word "moments," they emphasize that much of the influence that actors have on policy is "situational and incremental, and thus might be invisible to those not observing the negotiations in real time" (Witter et al. 2015:2). In other words, even if the objectives of certain actors are not met in any one set of global policy negotiations, their actions over time can later have strong impacts in other arenas. Ethnographic attention to these "moments of influence," which may not have immediate consequences but that contribute to later changes, is one way to analyze long-term influence by observing behavior and interactions among various actors.

Our research on perceptions of bioenergy in the southeastern United States is rooted in comparative ethnography, which we conducted in field sites in Georgia, Mississippi, Louisiana, and Alabama where different types of bioenergy facilities are located and at bioenergy conferences and workshops. In this paper, we use conventional discourse analysis to analyze the major biofuels-related discourses circulating in the public sphere (see Hitchner et al. 2014) and link these to specific opinion communities. We then identify and explain several recurring metaphors which act as emotional triggers of conventional discourses and narratives about bioenergy:

(1) “snake oil,” (2) “silver buckshot,” and (3) “people that hate us” (i.e., “terrorists”).

We contend that the use of these metaphors by different actors in different settings (written and on-line media, in speeches and presentations at bioenergy conferences, and in casual use among members of the general public), act as “moments of influence” that reinforce cultural values such as national sovereignty, environmental protection, and economic success, regardless of whether actors use them intentionally and strategically or simply pass them on without intention or reflection. While we did not trace speakers’ use of these metaphors by asking them specifically about where they heard them and why they used them, we note their prevalence in discussions of bioenergy, particularly within and between certain influential opinion communities.

Public Opinion of Bioenergy

There is growing recognition among various stakeholders (e.g., industry, researchers, policymakers) that public opinion about bioenergy matters. Public opposition can delay or derail specific bioenergy projects, and weak public demand for bioenergy products can limit the development of policies friendly to bioenergy development. However, positive public statements about bioenergy from trusted sources may increase customer demand and foster technological innovation, financial investment, and political support for bioenergy. People’s perceptions of wood energy development also vary greatly based on personal experience with the extant forestry industry and emerging bioenergy technologies.

Wright and Reid (2011) claim that perhaps the single greatest influence on members of the general public is the media in its myriad forms: on-line stories, print newspapers and magazines, radio shows, documentaries, and social media. Popular media stories about biofuels often focus on the adverse effects of biofuels on the global food supply and use of arable lands for energy crops, as well as on high-profile scandals and failures in renewable energy such as Solyndra and Range Fuels (Hitchner et al. 2014; Hitchner and Schelhas 2012). Wright and Reid (2011) and Sengers et al. (2010) note that shifts in the media framing of biofuels, from a positive focus on opportunities for economic and technological advancements to a more negative focus on environmental and social threats, have significantly contributed to public resistance to bioenergy. We have found that media coverage of bioenergy development in areas where new facilities will be located is generally positive, although failures are frequently cited in local media as well. Several recent media accounts with wide and diverse audiences have focused on the failures of bioenergy start-ups, including a December 2015 article in *Fortune Magazine* detailing the promise, then failure, of the KiOR cellulosic biocrude facility in Mississippi and the ongoing litigation following “the complex saga” of “how KiOR crashed so disastrously” (Fehrenbacher 2015).

Politicians and celebrities also speak publicly about renewable energy as an alternative to fossil fuels, reaching

wide audiences within the general public. In the United States, energy security and energy independence have long been part of the rhetoric of politicians, and this language has intensified in the United States since the terrorist attacks of September 11, 2001. The call for energy independence crosses party lines; in 2006, George W. Bush lamented the United States’ “addiction to oil,” while in 2007, Barack Obama called for the need for Americans to be free from the “tyranny of oil” (Bryce 2008). Celebrities such as Willie Nelson, Bonnie Raitt, Neil Young, Morgan Freeman, and Claudia Schiffer have also highlighted the ecological and social benefits of bioenergy, particularly of biodiesel and ethanol. Chuck Leavell, a keyboardist for the Rolling Stones, lives in the southeastern United States on a forest plantation and is an outspoken proponent of wood-based bioenergy. There have also been public awareness campaigns on bioenergy targeting specific groups of people. For example, National Association for Stock Car Auto Racing (NASCAR) facilitated a collaboration between American Ethanol and the Richard Childress Racing Team to educate race fans, conventionally a politically conservative group, about the positive aspects of corn-based ethanol, drawing largely on values and discourses related to the importance of family farms.

Environmental NGOs have expressed a range of positions, from staunchly opposing wood-based energy or expressing deep concerns about it (Dogwood Alliance, Natural Resources Defense Council, Sierra Club) to more measured views (National Wildlife Foundation) that see bioenergy as an energy option if appropriate measures are taken to ensure sustainable forest management. Meanwhile, several public health organizations, including the American Lung Association, American Academy of Family Physicians, and Physicians for Social Responsibility, have all publicly commented on the negative effects of wood-burning energy production facilities on human health. Other sources of information on wood energy within communities include local foresters and extension agents, industry representatives, friends, neighbors, landowners’ associations, civic clubs, city and county leaders, and community interest groups.

These individuals, organizations, and campaigns, regardless of their credibility, reflect and sometimes shape ways of talking about bioenergy. They thus serve as opinion communities (or opinion leaders), and people are likely to repeat phrases and metaphors gleaned from these trusted sources. The use and repetition of these phrases serve as moments of influence that, along with personal experiences, shape public opinion on bioenergy.

Research Methods

Using a complementary array of qualitative social science methods, we conducted ethnographic research in three communities in Georgia and Mississippi with different types of bioenergy facilities. We spent three months living in each of these three main field sites and interviewing many different stakeholders: landowners, community members,

local development board members, school board members, local politicians, cooperative extension agents, loggers and others employed in the forest industry, and employees of bioenergy facilities. For these interviews, we employed a mix of both structured and semi-structured interview methods, during which we took detailed notes on both questions and responses and immediately transcribed them. We also transcribed fieldnotes about the location of the interview, relevant observations about the interviewee, and our reflections on the interview. We conducted a total of about 175 interviews, lasting between thirty minutes and three hours (averaging about an hour) in our three primary sites and a total of about thirty in our secondary sites. We participated in community activities and temporarily joined local organizations such as churches, a book club, a garden club, a minority community organization, a running group, and a public service club. At these events we participated in ongoing group activities and introduced ourselves as researchers interested in interviewing community members; in this way, we met directly and were introduced to a number of interviewees. We kept field journals in which we recorded informal conversations with numerous other community members, as well as our personal reflections on people and events in the field sites. We also gave formal public presentations about our research project in each field site. We visited several additional sites with bioenergy facilities in Georgia, Louisiana, and Alabama and conducted interviews in these areas with extension agents, forest professionals, forest landowners, and employees of bioenergy facilities. Finally, we attended and participated in a series of regional bioenergy-related meetings, workshops, conferences, and webinars.

Field Sites

1. *Soperton, Georgia (Range Fuels/LanzaTech)*: Construction began on Range Fuels in November 2007, after securing over \$400 million in public and private funds. Range Fuels was expected to produce 40 million gallons per year of cellulosic ethanol using gasification technology and yellow pine as a feedstock but only produced one batch of methanol. In rural and economically depressed Treutlen County, the initial announcement of the plant was met with great enthusiasm, as it would bring many jobs and a new market for wood products, and the groundbreaking was attended by high-ranking government officials including the Secretary of Energy. The local and national implications of Range Fuels' bankruptcy and closure in 2011 have been profound, leading to public anger over what is seen as a waste of taxpayer money. In 2012, LanzaTech purchased the facility at auction for \$5.1 million and renamed it the Freedom Pines Biorefinery. LanzaTech is currently retrofitting the facility for use as a research and development facility that will focus mainly on chemicals produced using proprietary microbes and synthetic biology (Schill 2014). While many landowners, community members, and local development authorities in Soperton are cautiously optimistic that the facility will eventually employ more people, others expressed concerns over noise, effects on air quality, and potential safety threats to a nearby school due to increased truck traffic and the possibility of a fire or explosion.
2. *Waycross, Georgia (Georgia Biomass)*: Georgia Biomass, which began operation in 2011, has the capacity to produce 750,000 tons of pellets per year from local forests, which requires about 1.5 million metric tons of fresh wood per year (Gibson 2010). Georgia Biomass is a wholly-owned subsidiary of the German utility company RWE Innogy, and these pellets are shipped from the port in Savannah, Georgia, to supply biomass power plants and co-generation facilities in Europe. Waycross, while more developed than Soperton, is also rural, with an economy heavily dependent on the forest products industry; the Georgia Biomass plant directly employed over eighty people and created over 300 indirect jobs (Argus 2014). In June 2014, the facility was offered for sale as RWE shifted its focus on renewables to more emphasis on solar and wind power (Statkraft 2015). Reports indicated that RWE sought a sale that would keep wood procurement around the facility and pellet supplies steady. However, in January 2015, RWE announced that it would not sell the plant (Statkraft 2015), and as of early 2016, the Georgia Biomass facility continues to operate as a subsidiary of RWE. Extension agents from nearby counties said that while the plant has benefitted the communities, forest landowners have not yet made substantial changes to their forest management practices to supply it. Bioenergy harvests are similar to past harvests for pulp mills, which have declined. Some community members also expressed concerns about the over-harvesting of trees and impacts on air quality.
3. *Columbus, Mississippi (KiOR)*: After building a successful pilot plant in Pasadena, Texas in 2010, KiOR built a demonstration facility and then the world's first commercial-scale cellulosic biocrude plant in Columbus, Mississippi, which began production in 2012. It used a proprietary biomass fluid catalytic cracking (BFCC) technique to convert biomass feedstock, specifically southern yellow pine, into crude oil that could be refined into gasoline, diesel, and aviation fuels. KiOR received a twenty-year, no-interest \$75 million loan from the state of Mississippi as incentive to locate there, in addition to private investor funds. Promises by the company to provide over 1,000 jobs by the end of 2015 were not fulfilled, as the facility never reached full capacity and filed for bankruptcy in October 2013 (after our fieldwork there was completed). Following the Chapter 11 bankruptcy, there have been a series of class-action lawsuits by shareholders, accusing the company of deliberately misleading them about the chances of the company's success. In October 2015, the KiOR facility was sold to Georgia Renewable Power for \$2.1 million, and it is

likely that they will operate a small wood chip mill in that location (Smith and Hazzard 2015). It is important to note that Columbus, Mississippi, while still considered rural, has a much more developed and diversified economy than our other field sites with several major industrial plants.

Attendance at a series of eighteen regional conferences and workshops on bioenergy (e.g., Forest Bioenergy Conference in Forsyth, Georgia in 2011; Wood Bioenergy Symposium in Atlanta, Georgia in 2012; SunGrant Initiative National Conference in New Orleans, Louisiana in 2012; and Mississippi Biomass and Renewable Energy Council Annual Conference in Tunica, Mississippi in 2013) and participation in at least twenty-seven regional and national bioenergy-related webinars and conference calls was also a key part of our research methodology. At these events, we focused not only on the content presented during the sessions but also on the observable interactions between various actors. For example, we noted polite tension at times between representatives of environmental NGOs and bioenergy industry representatives, particularly when the former asked for clarification about potential negative impacts of burning biomass on human health and about ecological risks such as deforestation and damage to fragile ecosystems. We also noted how these meetings, which range from fully public to invitation-only, are utilized as venues for public announcements about new technological breakthroughs, biofuel facility openings, or developments in bioenergy policies. We view these events as an extension of community-based fieldwork in the primary and secondary sites; the network of actors that attend these regional workshops and conferences could also be considered a “community.” Lassiter (2005:93) claims that ethnography is now often conducted in an “ever-changing, shifting, and multi-sited field.” This is especially true of research on biofuels, which necessitates a multi-sited approach to studying the socioeconomic impacts of bioenergy development on a regional or even community scale. Speakers at these bioenergy-focused events strategically used metaphors and other literary devices which often prompted emotional reactions, while directly or indirectly evoking a number of energy-related conventional discourses. With very few exceptions, speakers at these events were either representatives of bioenergy industries or researchers sympathetic to industry; although there was some diversity of opinion represented at these events, we suggest that overall they serve as an opinion community reinforcing the belief of the majority of attendees that bioenergy is a promising pathway to energy independence through improved technology.

We used NVivo qualitative analysis software to conduct content analysis of ethnographic data collected in our three primary field sites (transcripts of interviews and fieldnotes) and at bioenergy events (transcripts of formal talks and fieldnotes) and also of public and media framings of bioenergy (on-line and print commercials, advertisements, news stories, editorials, and blogs), coding the conventional discourses. We noted how various actors use specific phrases

related to bioenergy strategically in order to evoke images and emotions, and we fleshed out this analysis with ethnographic notes that provide clues to opinion communities which perpetuated a specific metaphor or conventional discourse. Our examination of creative metaphors that reference specific conventional discourses can help us to identify some of the ways that these phrases and ideas travel within and between different opinion communities and act as moments of influence on public perceptions of bioenergy.

Bioenergy Definitions, Discourses, Imaginaries, and Metaphors

To begin this discussion, it is necessary to define bioenergy, and this immediately proves problematic, as it can be difficult to separate the physical bioenergy products from the discourses in which they are embedded. Kuchler and Linnér (2012:582) state that “bioenergy is perceived as a conceptual entity formed and advanced as a carrier of specific meanings for political and economic reasons.” Vel (2014:2816) applied the phrase “discursive commodities” (from Fairhead et al. 2012) to jatropha as a biofuel feedstock. She defines discursive commodities as “objects of trade that have obtained market value because of the narratives that science, technology, politics, and business have created about them, but do not exist yet in the real world.” Like jatropha, other bioenergy products and technologies do not yet exist or are not yet operable on a commercial scale, yet they acquire value when they reference discourses such as green development, rural employment, land tenure security, and renewable energy. Portz (2014) notes that pine in the southeastern United States is an established and sustainable tree crop that has multiple end uses and guaranteed markets, including pellets, for which there is an established market. Pine therefore may be considered a “conceptual entity,” or “discursive commodity” only when it is transformed into a hypothetical product—or one not yet produced at a commercial scale—such as cellulosic biocrude.

Both actual and discursive commodities are embedded in what theorists of Critical Discourse Analysis and Science and Technology Studies call “imaginaries,” or visions of the way the world ought to be and the way it ought to work. Fairclough (2010:480) states that: “Imaginaries produced in discourse are an integral part of strategies, and if strategies are successful, then associated imaginaries can become operationalized, transformed into practice, made real.” Eaton et al. (2014:227-228) note that bioenergy imaginaries “emanate from state actors who envision a future where energy and economic interests will be met with homegrown resources.” These imaginaries are driven by various discourses, and Levidow and Papaioannou (2013:36) argue that bioenergy innovations are a critical part of various “sociotechnical imaginaries” (see Jasanoff and Kim 2009) in which fuels and power sources are produced in an ecologically sustainable and socially just manner. Bringing attention to these imaginaries in which bioenergy is literally produced and socially enacted provides the context necessary to understand the

specific discourses circulating among various actors and the metaphors with which they discuss them.

However, despite the holism of bioenergy imaginaries, most research studies focus on specific aspects of bioenergy production and distribution, and there is ongoing debate about the applicability of studies about one region, feedstock, or production pathway to others. Just as conventional discourses are often culture or region specific, so too are the effects of bioenergy development on local places. Eaton et al. (2014) note that: “attempts to achieve specific imaginaries through technological projects become sites of contest and conflict,” especially in local communities in which bioenergy facilities are located. The dynamics of local resistance or acceptance of bioenergy are difficult to pinpoint (Devine-Wright 2007), though an analysis of sociotechnical imaginaries can help to fill in the gaps of this understanding (Eaton et al. 2014). Further, Vel (2014) argues that global discourses are framed on an international level, while localized discourses operate where feedstocks are actually produced in specific areas. There are complicated, sometimes conflicting, dynamics between actors making decisions based on these multiple discourses, and in these dynamics, the multi-scalar nature of discourses becomes clear (Scott et al. 2014; Kuchler and Linnér 2012).

Combining analysis of conventional discourses and metaphors reveals both cultural meanings and memorable ways of symbolically translating and transmitting these meanings among actors operating at different scales. We contend that metaphors are used in two ways in bioenergy discourse: (1) consciously and strategically, with the explicit intent to influence, and (2) unconsciously, as a means of passing along shared ideas. As stated by Lakoff and Johnson (2003:139), metaphors can “give new meaning to our pasts, to our daily activity, and to what we know and believe.” They note that metaphors, and interpretations of them, are specific to the cultures, life experiences, and physical environments of the people that use them. Building on these ideas, Quinn (2005:49) explains that people use metaphors as tools of clarification when speaking to others within their own cultural group (who will readily understand them) and that metaphors serve as “cultural exemplars,” or “particularly salient inter-subjectively shared examples of what they stand for.”

Results

In this article, we focus on three prominent and evocative metaphors that some actors use strategically within the southeastern United States, an area with a long history of economic and cultural reliance on forest-based industry, to influence public opinion on wood-based bioenergy:

1. “snake oil,” referring to the shady practices of some people promoting and presumably profiting from bioenergy development;
2. “silver buckshot,” referring to the idea that bioenergy is not a singular object or process and thus involves many different technologies; and

3. “people who hate us/want to harm us,” referring to the idea that companies and government agencies in the United States buy petroleum from countries that have initiated terrorist attacks against United States citizens.

We heard many other metaphors and phrases repeated throughout our fieldwork (examples include: “low-hanging fruit,” referring to easily obtainable renewable energy goals; “Holy Grail,” in reference to drop-in liquid fuels that do not require infrastructure changes for their widespread use; and “killing the goose that laid the golden egg,” referring to the fear that development of woody biomass as a bioenergy feedstock will harm well-established forest products industries such as lumber, pulp, and paper), but we have chosen to focus on these three because they encapsulate many ideas that drive the perceptions of people in the southeastern United States about bioenergy and are easily linked to some of the conventional discourses we have already discussed. They were also some of the most commonly repeated metaphors we encountered during fieldwork, and they symbolize the conflicting imaginaries perpetuated by different bioenergy stakeholders.

Snake Oil

The phrase “snake oil” refers to traveling salesmen in the 1800s selling elixirs that they claimed could cure any ailment. The phrase is commonly used today to refer to fake products or products that make false claims; people that sell or promote such products are called “snake oil salesmen.” People who realize that they have purchased snake oil feel embarrassment and shame for allowing themselves to be fooled, as well as anger at the salesman who betrayed their trust. This metaphor has been applied to a multiplicity of topics in many disparate academic disciplines, and it is similarly used in many contexts in popular media as well.

There have been many applications of this metaphor to bioenergy. While there have been historical shifts in the discourses about bioenergy, from panacea to highly problematic, many proponents of bioenergy continue to promote bioenergy as a “win-win” (or sometimes as a “win-win-win”) (Scott et al. 2014). Bioenergy development, for example, will contribute to national security, energy independence, rural development, restoration of “idle” or marginal landscapes, reduction of greenhouse gas emissions, and will spur technological innovation and create jobs in the United States that cannot be outsourced. Opponents or skeptics of bioenergy rebut each of these points, referring to the same conventional discourses. When bioenergy is touted as a win-win, it is comparable to the “cure-all elixirs” sold by traveling salesmen. When there are highly publicized bioenergy failures, especially involving government/taxpayer money, some people feel that the companies who promised—and then failed—to deliver a bioenergy product are “snake oil salesmen.” This implies that the companies (and often the government as well) were fundamentally dishonest, knowing that the product was

Table 1. A Sample of References to “Snake Oil” from Written Publications

Date	Author	Title	Type of Publication
2013	Captain T.A. “Ike” Keifer	“Twenty-first Century Snake Oil: Why the United States Should Reject Biofuels as Part of a Rational National Security Energy Strategy”	Book/report
2013	Nanalyze	“Is Solazyme Selling Investors Snake Oil?”	Blog/website
2010	Greg Scheurich	“Ethanol: The Latest Incarnation of Snake Oil”	Journal/website
2009	Arnold W. Reitze, Jr.	“Biofuels: Snake Oil for the Twenty-first Century”	Peer-reviewed article
2009	Ed Fenton	“Snake Oil or Climate Cure: The Effect of Public Funding on European Bioenergy”	NGO publication
2007	David Harsanyi	“Ethanol is Politicians' Snake Oil”	Newspaper column
2006	C. Scott Miller	“Cellulosic Ethanol – Snake Oil for the New Millennium?”	Bioenergy blog

fraudulent. Like the sellers of snake oil liniments that planned to be gone by morning and selling in another town the next day, some bioenergy companies are accused of being “fly by night” operations that never intended to create any product at all; they only planned to collect money from government subsidies, incentive programs, and investors, in addition to the “goodies” offered by hosting states and counties. We contend that this image and the emotions that it evokes, when applied to bioenergy, are linked to several conventional discourses such as government corruption, industry greed, waste of taxpayer money, and unfair policies that pick “winners and losers.”

In general, this metaphor calls attention to public perceptions of not only industries as potential snake oil salesmen but also to the fairness of bioenergy policy and the role of the government in supporting bioenergy producers. The question of who pays for, and who benefits from, bioenergy development is at the forefront of many people’s concerns; several studies have revealed how members of the public have expressed profound misgivings about how bioenergy policy shapes the development of bioenergy technologies and facilities. For example, Delshad et al. (2010:3420) found that study participants generally approved of government initiatives supporting bioenergy development, including subsidies and other incentives for producers who were at a disadvantage in the market and were taking financial risks that could benefit society, even while opposing government involvement, “which they saw as an unfair and unacceptable intrusion into the free market.” Taxpayer-funded subsidies given to developing industries to meet government mandates for renewable energy are sometimes perceived as closed-door deals between politicians, lobbyists, and CEOs. Bryce (2008:11) says that “ethanol is one of the biggest frauds ever perpetuated on United States taxpayers,” and our research results show that many people in the southeastern United States agree with him.

Here, we present examples of references to bioenergy as “snake oil” in written documents available to the public (Table 1) and also specific references to “snake oil” from our ethnographic fieldwork (Table 2). In addition, we provide several quotes from our fieldwork that do not use the metaphor “snake oil” but carry essentially the same meaning and evoke similar emotions. The metaphor “snake oil,” and the ways that we have observed various actors in the southeastern United States apply it to bioenergy, encapsulates several traditional American values and conventional discourses such as policy fairness, honesty and trust, and governmental support for both entrepreneurs and “the little guy.”

Silver Buckshot

The phrase “silver buckshot” conjures the image of a werewolf, which, according to popular folklore, can only be killed by a bullet made of silver. There are several possible origins for the legend of the werewolf. The first is rooted in Greek mythology, where the Arcadian king Lycaon was turned into a wolf by the god Zeus after Lycaon tried to serve him a meal of human flesh. A second popular origin story dates to the mid-1760s, when the Beast of Gévaudan, a giant wolf-like creature, terrorized the rural French countryside, feasting on shepherds, with a special appetite for the fat of children (Smith 2011). Jean Chastel, the hunter credited with killing this beast, claimed to have used a bullet made from a molten silver chalice that had held the blood of Christ and had been blessed by a priest (Steiger 2012). The producer of the 1941 film “The Wolf Man” claimed to add many details to the werewolf myth, including the fact that they can only be killed by silver bullets (Steiger 2012). In any case, as with many myths and legends, stories were embellished and woven together over time by different storytellers, and werewolves

Table 2. A Sample of References to “Snake Oil” from Ethnographic Fieldwork

Location	Speaker	Quote
Near Waycross, GA	Forester	“People see it [bioenergy] as snake oil; they’re wary of it. You have to show them it’ll work.”
Near Soperton, GA	NRCS	Response to question on energy grass: “People see miscanthus as snake oil.”
Near Soperton, GA	RC&D	On Range Fuels: “It never did happen. They hoodwinked us all on that one.”
Near Soperton, GA	County leader	“I have seen reports after the failure of Range Fuels. I heard that it was a scam.”
Near Soperton, GA	Community member	On county investment in Range Fuels: “They got left holding the bag.”
Near Soperton, GA	Forester	“Range Fuels sold us a bill of goods. They had all the technology, just had to use it. They didn’t have as much as they said they had.”
Near Soperton, GA	Forester	“One man in Hancock County expressed interest in biofuels 4-5 years ago, when biofuels were all over the news.... There was a plant in Warren County, but it went away, like Soperton. Now people don’t want to hear about it – they think it’s a scam.... What happened in Soperton soured a lot of people.”
Near Soperton, GA	Farmer	“The government doesn’t need to be in that business [bioenergy]. There’s a lot of shady deals, people stuffing their own back pockets.... If it was going to work, private investment should take care of it.”
Online [Speakers in Washington, DC]	Commenter at public DoE webinar	“If you want public support, it will only be maintained if there are real benefits being delivered. Not just a public perception thing – there must be actual benefits. You can only pull the wool over their eyes for so long.”
Near Columbus, MS	Community member	On KiOR: “So really this whole thing was a \$75 million experiment funded by the state of Mississippi.”
Near Columbus, MS	Community leader	“We call it a ‘house in a box.’ One of those bullshit projects that is never intended to do anything but make someone rich. You know when there’s a storm and people are homeless and someone promises to build them a house in a box, and it’s nothing, you know, nothing. It’s too good to be true. So shit like this [KiOR], we call it a house in a box. Too good to be true. They say they’re weaving straw into gold and you know they can’t.”

remain a prominent figure in popular literature, cinema, and folklore around the world.

The idea that there is no “silver bullet,” or singular solution, to solve a complex problem has been applied to many issues; the term is probably most commonly applied in academic literature regarding climate change. Gun metaphors are pervasive in American culture in general (Landon Jones 2014), and Gerhart (2010) provides numerous examples of politicians using the phrase “silver bullet” in reference to a number of societal issues, noting that during his presidential campaign, Barack Obama used the phrase over sixty times. The metaphor “silver buckshot,” an extension of the “silver bullet” metaphor, is commonly used by people in the bioenergy sector to express the idea that meeting global or national energy needs will require energy from many sources, including fossil fuels, and from many types of renewable energy sources, including woody biomass, wind, solar, hydroelectric,

geothermal, and wave/tidal energy. Woody biomass is one piece of silver buckshot that will help to kill the metaphorical werewolf (which could be dependence on fossil fuels or an inadequate supply of energy), but it will not be the silver bullet that can take it down alone.

In the bioenergy world, the phrase “silver buckshot” also refers to the idea that there is no one particular technology, conversion process, or feedstock that will be the salvation of using biomass as an energy source. Different technologies, processes, and feedstocks are likely to work better (or worse) in different places and at different scales, and failure of some emerging technologies is often a necessary part of eventual success. People working within the bioenergy sector also refer to their processes as being “technology or feedstock agnostic,” meaning that the technology can use different feedstocks, or that the policies do not choose “winners and losers,” but instead offer a “level playing field” to different actors. Again,

Table 3. A Sample of References to “Silver Buckshot” from Written Publications

Date	Author	Title	Type of Publication
2014	Institute for Building Efficiency	“Silver Buckshot: A Variety of Renewable Energy Technologies to Reach the Net Zero Energy Building Vision”	Website
2013	Mindy Long	“Carriers Use ‘Silver Buckshot’ to Shoot Down Fuel Costs”	Trade journal (transport)
2012	Alexander George	“A ‘Silver Buckshot’ will Mend our Fuelish Ways”	Popular magazine
2012	Matthew Eisler	“Science, Silver Buckshot, and ‘All of the Above’: Negotiating Energy R&D Policy at ARPA-E Energy Summit 2012”	Science/policy Blog/website
2012	Tim Portz	“Biomass’ Own Silver Buckshot” [article title, referring to wood pellets]	Bioenergy magazine

the idea is that there is no one solution to the problem of how to effectively, efficiently, and equitably supply the world (or the nation) with enough energy, particularly renewable energy. Here, we apply the metaphor “silver buckshot” to the variety of energy sources (real and potential), technological pathways to produce bioenergy, and levels of bioenergy regulation. Tables 3 and 4 provide examples from written publications and our ethnographic interviews.

People Who Hate Us

For many Americans, the expression “people who hate us,” or variations of it, evokes the image of terrorists who hate the United States and want to harm or kill Americans. With

this image, usually of Muslims of Middle Eastern descent flying planes into the World Trade Center and the Pentagon on September 11, 2001, comes the idea that the dependence of the United States on foreign sources of petroleum makes the country vulnerable. There is much talk of the “United States’ addiction to foreign oil” and the desire to be free from this dependence and therefore from people who want to harm the country and its people. This “culture of fear” (and accompanying xenophobia) is also perpetuated by mainstream media, particularly politically conservative media outlets such as Fox News and right-wing radio shows.

The table below (Table 5) gives a small sample of written publications whose titles include the phrase “people who hate us” or some variation (obtained through on-line searches and

Table 4. A Sample of References to “Silver Buckshot” from Ethnographic Fieldwork

Location	Speaker	Quote
Galax, VA	Biomass conference	“Biomass is not a silver bullet; it’s more like silver buckshot.”
Galax, VA	Biomass conference	“I’m a forester, and I see that biomass is often not utilized, and that landowners are not managing their hardwoods and pines. That’s what fueled this approach.... In 1997/98, fuel prices were high, and knew those high prices would come back. This solution is that one piece of silver buckshot we talked about yesterday.”
Tifton, GA	Bioenergy conference	“There is no silver bullet, we must develop a silver buckshot vision.”
Tunica, MS	Bioenergy conference	“Trees don’t grow fast enough to meet all energy demand. Need a portfolio. Does KiOR help? Yes.”
On-line (Speakers in Washington, DC)	DOE Webinar	“Finally, we need an all-of-the-above energy policy. We can’t rely solely on natural gas; that thinking is fundamentally flawed. We can still promote renewable energy sources even if it’s more expensive than natural gas.”
Tunica, MS	Tunica, MS (Lt. General)	“We’ve got markets, got veterans who need jobs. Regional bioproducts could do that. It’s not the full answer, but one part. It’s an ‘all-of-the-above’ situation.”

Table 5. A Sample of References to “People Who Hate Us” from Written Publications

Date	Author	Title	Type of Publication
2010	Rebecca Lefton and Daniel J. Weiss	“Oil Dependence is a Dangerous Habit”	Non-partisan educational NGO website
2008	James A. Wagner	“Buying Oil from People Who Hate Us”	Newspaper letter to the editor
2008	Anonymous	“Stop Giving Money to People who Hate Us: Anti-oil Mud Slinging Festival”	Thread on electric car website

flagged in print and on-line media during fieldwork), while Table 6 provides sample quotations from our ethnographic fieldwork that also employ these terms. This phrasing, and the underlying emotions it evokes, is commonly referenced when people discuss United States imports of petroleum from other countries. We contend that this metaphor demonstrates the power that fear-based politics has in the United States while evoking American values of national pride, independence, justice, resilience, and cultural sovereignty or national isolationism.

Discussion

As noted, people are more likely to remember words and phrases that evoke clear images and strong emotions than abstract concepts. People have been using these types of rhetorical devices for millennia as both mnemonic aids and as means to strategically influence others. It is logical that people are more likely to remember an image of a werewolf that is shot by a shotgun full of buckshot (instead of the usual single

Table 6. A Sample of References to “People Who Hate Us” from Ethnographic Fieldwork

Location	Speaker	Quote
Tunica, MS	Natural gas company representative	Natural gas is American made, and cheaper. It's come into our laps because of new technologies.... What we need is national security.... Before fracking, we were about to import all our natural gas. Natural gas cartels formed, like OPEC. Now we can buy less oil from people who don't care for us.”
Tunica, MS	Commenter at bioenergy conference	“...[W]e're using American resources to make American fuel instead of buying from people who want to kill Americans.”
Washington, DC [on-line DOE webinar]	Tom Vilsack, Secretary of Agriculture	“We've got to move away from our addiction to foreign oil.... We've already reduced our reliance by one third.... That supply of oil is not necessarily coming from reliable sources. The Gulf is not a reliable source; those countries are in turmoil.... We buy oil from people who would do us harm.... We have to tap our own resources.”
Washington, DC [on-line DOE webinar]	Jackalyn Pfannestiel: Secretary of the Navy	“Why is this energy mission critical to the Navy? The first reason is energy security; we need to stop buying fuel from unstable and hostile places. There's a risk for our military to transport gasoline; there are dangerous fuel convoys in Afghanistan and other places.”
Washington, DC [on-line DOE webinar]	Senator Amy Klobuchar	“Ignoring energy issues is undercutting US foreign policy.... Where could we have moved on this? First moment was after 9/11, when whole nation was horrified and united. It was the right decision to invade Afghanistan, but could have reduced our reliance on those countries that produce terrorism.”
Tupelo, MS	Speaker at bioenergy conference	“Why biofuel? Dependence on foreign oil.... 40% of US oil consumption comes from imports. There's much political unrest in supplying countries, especially the Persian Gulf.... Less energy security equals more vulnerability.”
Tupelo, MS	Speaker at bioenergy conference	“Sustainability means creating an environment for security and having the resources to do it.... Terrorist, failed and rogue states – we're more connected to them now; they'll always have global impact.”

Table 7. Framework for Linking Metaphors, Images, Emotions, Conventional Discourses, and Opinion Communities

Metaphor	Image	Associated Rhetoric	Emotions Evoked	Conventional Discourses	Potential Opinion Communities
“Snake oil”	Traveling salesman	Scammed, swindled, hoodwinked, taken to the cleaners, sold a bill of goods	Anger, betrayal, pride	Government corruption, industry greed, rural development, at taxpayers’ expense	Media, NGOs, local community leaders and members, landowners
“Silver buckshot”	Werewolf	All-of-the-above strategy, [no] one-size-fits-all, feedstock/technology agnosticism succeed	Hope, creativity, persistence, drive to as American value	Many problems need many solutions, no “one-size-fits-all” solution, persistence	Politicians, bioenergy industry, forest industry
“People who hate us”	Terrorists	People who want to kill /harm us, people who don’t like us/care for us, powder keg, clear and present danger, rogue states	Fear, anger, distrust, uncertainty, xenophobia, racism, self-reliance	National security, national independence, energy independence, self-reliance	Politicians, political pundits (usually right-wing), bioenergy industry

silver bullet from a rifle or pistol) than they are a lengthy, jargon-filled explanation of the multiplicity of manifestations of renewable energy alternatives (or complements) to fossil fuels and of bioenergy feedstocks and processing technologies. They are also more likely to be stirred by anger at being “hoodwinked” by corrupt companies or “swindled” by the government “at taxpayers’ expense” by “snake oil salesmen” (see Table 7) than to remember specific statistics about how much money is involved from what sources. And the images of people jumping from the collapsing Twin Towers or the burning hole in the Pentagon, the ultimate symbol of national security, are much more likely to resonate than a dispassionate discussion of the goal of attaining a more diversified national energy portfolio.

It is important to note that people just used these or similar phrases; they didn’t graphically describe these images. But the images are evoked, even if they’re not spelled out in detail; human imagination fills in the blanks. It is also important to recognize that some people are more creative and imaginative than others (and thus more likely to use and appreciate metaphors) and that many metaphors are highly culturally-specific, so metaphors are not universally relevant. Metaphors are also drastic oversimplifications of very complex issues, so reliance on such images strips much of the nuance and critical analysis relevant to a comprehensive discussion of a complicated topic such as alternative energy. We contend that when actors use such metaphors intentionally, they do so strategically in order to not only condense meaning but also to promote a normative slant that reinforces a specific imaginary in which wood energy does or does not act as a solution to current problems. However, the way that such

images and emotions are evoked in particular geographic and cultural contexts is an important question for cultural, as well as cognitive and linguistic, anthropologists. The table above (Table 7) presents a framework for connecting metaphors and colloquial expressions with images and emotions and then links these to conventional discourses that are passed on through different opinion communities.

Conclusion

The power of rhetorical devices to influence people has been understudied, and perhaps even underestimated, in research focused on how information, narratives, imaginaries, and metaphors related to energy in general, and bioenergy specifically, are circulated among people. This article presents a conceptual model for organizing the major conventional discourses that appear in discussions of bioenergy in the southeastern United States and for linking them to widely-circulated metaphors and images that evoke clear images and trigger strong emotions. This model organizes and clarifies data obtained during multi-sited ethnographic research with communities in the southeastern United States experiencing the effects of bioenergy development and participant observation with bioenergy industry networks. It also illuminates broader patterns in wording related to renewable energy technologies and the normative implications of the circulation of these particular metaphors for members of the general public.

Forest-dependent communities in the southeastern United States have experienced a long history of boom and bust cycles in wood products and of failed promises to bring new economic development and employment opportunities

to rural communities. The metaphors of “people who hate us” and “silver buckshot” serve to rationalize and adjust expectations for the process of developing a new market by saying we need to do it and that we need to try many things to be successful. In applying this conceptual model linking conventional discourses and imaginative metaphors to our ethnographic research in this context, we can see how these images are applied to specific instances of failures of bioenergy projects (such as Range Fuels and KiOR). These failures have not only cost the states, counties, and towns in which these facilities are located millions of dollars in grants and loans; they have also shattered the confidence of local community members and landowners in bioenergy as a potential solution to rural poverty and have led rural people already wary of government intervention in industry to feel even more betrayed by government policies that seem to benefit a few at the expense of the public in general and local communities in particular. “Snake oil” crystallizes the opposition to bioenergy that has emerged out of these failures and a general distrust of government intervention in markets.

It is also important for policymakers, politicians, and local community leaders to recognize that these failures, widely publicized in print, online, and social media, also have reverberating effects on public opinion outside these forest-dependent communities, in addition to dire financial consequences for bioenergy investors and entrepreneurs. Many people with whom we spoke representing local governments and communities felt they were sold “snake oil” by traveling salesmen who did not have to suffer the consequences of these failures. However, bioenergy representatives and many local and national politicians are still optimistic about the potential role that wood-based bioenergy can play in a sociotechnical imaginary that brings together carbon-neutral, sustainably sourced energy and rural economic development. They talk about wood-based bioenergy in the southeastern United States as one piece of “silver buckshot” that can help slay the werewolf of dependence on “terrorist” nations full of people “who want to harm us.” The fundamental disconnect between the negative view of bioenergy as “snake oil” and the positive view of it as a piece of “silver buckshot” that can be used as a powerful weapon against “people who hate us” reveals the divergence of imaginaries in which wood-based bioenergy is, or is not, a potential solution to current and future energy problems. It also reveals differences in personal experiences with bioenergy in local contexts and policy arenas; for example, people promoting bioenergy through industry development or policy creation often do not live in rural communities in which bioenergy facilities are located and thus do not feel the effects of these facilities’ success or failure. Further content analysis of the texts we collected as part of this research, perhaps combined with social network analysis, will allow us to better document convergence, overlap, and divergence of the usage of conventional discourses and specific rhetorical devices such as metaphors across stakeholder groups and to more accurately trace these to particular opinion communities and to specific moments of influence on different actors.

Such analysis is critical to both enhancing the long-term social and economic sustainability of the bioenergy sector and to relieving the economic, environmental, and social burdens on local communities when bioenergy projects fail.

References Cited

- Anonymous
2008 Stop Giving Money to People Who Hate Us: Anti-Oil Mud Slinging Festival. DIY Electric Car Forum. URL:<<http://www.diyelectriccar.com/forums/showthread.php/stop-giving-money-people-hate-us-19762.html>> (March 12, 2014).
- Argus
2014 Argus: Georgia Biomass 750 000 T/Y Pellet Plant for Sale. URL:<<http://www.conbio.info/post/argus-georgia-biomass-750-000-ty-pellet-plant-for-sale/>> (February 3, 2015).
- Bryce, Robert
2008 A Gusher of Lies: The Dangerous Delusions of Energy Independence. New York: Public Affairs.
- Curran, Giorel
2012 Contested Energy Futures: Shaping Renewable Energy Narratives in Australia. *Global Environmental Change* 22(1):236-244.
- Delshad, Ashlie B., Leigh Raymond, Vanessa Sawicki, and Duane T. Wegener
2010 Public Attitudes Toward Political and Technological Options for Biofuels. *Energy Policy* 38(7):3414-3425.
- Devine-Wright, Patrick
2007 Reconsidering Public Attitudes and Public Acceptance of Renewable Energy Technologies: A Critical Review. URL:<http://geography.exeter.ac.uk/beyond_nimbyism/deliverables/bn_wp1_4.pdf> (January 14, 2015).
- Eaton, Weston M., Stephen P. Gasteyer, and Lawrence Busch
2014 Bioenergy Futures: Framing Sociotechnical Imaginaries in Local Places. *Rural Sociology* 79(2):227-256.
- Eisler, Matthew
2012 Science, Silver Buckshot, and “All of the Above”: Negotiating Energy R&D Policy at ARPA-E Energy Summit 2012. URL:<<http://scienceprogress.org/2012/04/science-silver-buckshot-and-%E2%80%99Call-of-the-above%E2%80%9D/>> (March 11, 2014).
- Fairclough, Norman
2010 Critical Discourse Analysis: The Critical Study of Language. 2nd ed. London, United Kingdom: Pearson.
- Fairhead, James, Melissa Leach, and Ian Scoones
2012 Green Grabbing: A New Appropriation of Nature? *Journal of Peasant Studies* 39(2):237-261.
- Fehrenbacher, Katie
2015 A Biofuel Dream Gone Bad. URL:<<http://fortune.com/kior-vinod-khosla-clean-tech/>> (December 8, 2015).
- Fenton, Ed
2009 Snake Oil or Climate Cure: The Effect of Public Funding on European Bioenergy. URL:<http://www.fern.org/sites/fern.org/files/snake%20oil%20or%20climate%20cure_0.pdf> (March 11, 2014).

- Gasparatos, Alexandros, Per Stromberg, and Kazuhiko Takeuchi
2011 Biofuels, Ecosystem Services and Human Wellbeing: Putting Biofuels in the Ecosystem Services Narrative. *Agriculture, Ecosystems and Environment* 142:111–128.
- George, Alexander
2012 A “Silver Buckshot” Will Mend Our Fuelish Ways. URL:<<http://www.wired.com/autopia/2012/01/future-cars/>> (March 11, 2014).
- Gerhart, Ann
2010 Obama Wants It Clear: “No Silver Bullet.” URL:<<http://www.washingtonpost.com/wp-dyn/content/article/2010/09/08/AR2010090805079.html>> (March 25, 2015).
- Gibson, Lisa
2010 Georgia Biomass Will Ship Pellets to Europe. *Biomass Magazine*. URL: < <http://biomassmagazine.com/articles/3546/georgia-biomass-will-ship-pellets-to-europe/>> (June 1, 2016).
- Harsanyi, David
2007 Ethanol is Politicians’ Snake Oil. URL:<http://www.denverpost.com/news/ci_5229294> (March 13, 2014).
- Hitchner, Sarah, and John Schelhas
2012 Social Acceptability of Biofuels among Small-scale Forest Landowners in the U.S. South. *In Proceedings of the IUFRO 3.08.00 2012 Small-scale Forestry Conference, University of Massachusetts, Amherst, September 24-27.*
- Hitchner, Sarah, John Schelhas, Teppo Hujala, and J. Peter Brosius
2014 Public Opinion on Wood-based Bioenergy. *In Wood Energy in Developed Economies: Resource Management, Economics, and Policy.* Francisco Aguilar, ed. Pp. 32-74. Oxford, United Kingdom: Earthscan.
- Institute for Building Efficiency
2014 Silver Buckshot: A Variety of Renewable Energy Technologies to Reach the Net Zero Energy Building Vision. URL:<<http://www.institutebe.com/Green-Net-Zero-Buildings/renewable-energy-technology.aspx>> (March 11, 2014).
- Jasanoff, Sheila, and Sang-Hyun Kim
2009 Containing the Atom: Sociotechnical Imaginaries and Nuclear Power in the United States and South Korea. *Minerva* 47(2):119-146.
- Jones, Landon Y.
2014 Loaded Language: The Gun Metaphors that Pervade our Everyday Slang. URL:<http://www.washingtonpost.com/opinions/loaded-language-the-gun-metaphors-that-pervade-our-everyday-slang/2014/04/18/40c4053c-c3ed-11e3-b574-f8748871856a_story.html> (March 25, 2015).
- Jones, Michael D.
2014 Communicating Climate Change: Are Stories Better Than “Just The Facts?” *Policy Studies Journal* 42(4):644-673.
- Keifer, Captain T. A. “Ike”
2013 Twenty-First Century Snake Oil: Why the United States Should Reject Biofuels as Part of a Rational National Security Energy Strategy. URL:<<http://wici.ca/new/wp-content/uploads/2013/04/Kiefer-Snake-Oil31.pdf>> (March 13, 2013).
- Kirkels, Arjan F.
2012 Discursive Shifts in Energy from Biomass: A 30-year European Overview. *Renewable and Sustainable Energy Reviews* 16(6):4105-4115.
- Kuchler, Magdalena, and Björn-Ola Linnér
2012 Challenging the Food vs. Fuel Dilemma: Genealogical Analysis of the Biofuel Discourse Pursued by International Organizations. *Food Policy* 37(5):581-588.
- Lakoff, George and Mark Johnsen
2003 *Metaphors We Live By*. Chicago: University of Chicago Press.
- Lassiter, Luke Eric
2005 Collaborative Ethnography and Public Anthropology. *Current Anthropology* 46(1):83-106.
- Lefton, Rebecca, and Daniel J. Weiss
2010 Oil dependence is a Dangerous Habit. URL:<<http://www.americanprogress.org/issues/green/report/2010/01/13/7200/oil-dependence-is-a-dangerous-habit/>> (March 12, 2014).
- Levidow, Les, and Theo Papaioannou
2013 State Imaginaries of the Public Good: Shaping UK Innovation Priorities for Bioenergy. *Environmental Science and Policy* 30(1):36-49.
- Long, Mindy
2013 Carriers Use “Silver Buckshot” to Shoot Down Fuel Costs. *Transport Topics* 4032:A1, A6-A7.
- Miller, Clark A., Jason O’Leary, Elisabeth Graffy, Ellen B. Stechel, and Gary Dirks
2014 Narrative Futures and the Governance of Energy Transitions. URL:<<http://www.sciencedirect.com/science/article/pii/S0016328714001955>> (May 13, 2015).
- Miller, Scott C.
2006 Cellulosic Ethanol—Snake Oil for the New Millennium? URL:<<http://bioconversion.blogspot.com/2006/11/cellulosic-ethanol-snake-oil-for-new.html>> (March 11, 2014).
- Omer, Abdeen Mustafa
2013 Recent Advances in Biomass and Biogas Development and Perspectives: Bringing Together Geographical and Sociological Imaginations. *Scientific Journal of Biological Sciences* 2(9):190-207.
- Portz, Tim
2012 Biomass’ Own Silver Buckshot. URL:<<http://biomassmagazine.com/articles/7967/biomassundefined-own-silver-buckshot>> (March 11, 2014).
2014 Considering the Counterfactuals. URL:<<http://biomassmagazine.com/blog/article/2014/08/considering-the-counterfactuals>> (May 19, 2015).
- Quinn, Naomi, ed.
2005 *Finding Culture in Talk: A Collection of Methods*. New York: Palgrave MacMillan.
- Reitze, Arnold W.
2009 Biofuels: Snake Oil for the Twenty-first Century. *Oregon Law Review* 87(4):1183-1258.
- Richins, Marsha L. and Teri Root-Shaffer
1998 The Role of Involvement and Opinion Leadership in Consumer Word-of-Mouth: An Implicit Model Made Explicit. *Advances in Consumer Research* 15(1):32-36.
- Scheurich, Greg
2010 Ethanol: The Latest Incarnation of Snake Oil. URL:<<http://oilprice.com/Alternative-Energy/Biofuels/Ethanol-The-Latest-Incarnation-Of-Snake-Oil.html>> (March 13, 2014).

- Schill, Suzanne Retka
2014 LanzaTech to Move Headquarters: Soperton Retrofit Ongoing. URL:<<http://ethanolproducer.com/articles/10934/lanzatech-to-move-headquarters-soperton-retrofit-ongoing>> (May 3, 2015).
- Scott, Deborah, Sarah Hitchner, Edward M. Maclin, and Juan Luis Dammert Bello
2014 Fuel for the Fire: Biofuels and the Problem of Translation at the Tenth Conference of the Parties to the Convention on Biological Diversity. *Global Environmental Politics* 14(3):84-101.
- Segev, Sigal, Maria Elena Villar, and Rosanna M. Fiske
2012 Understanding Opinion Leadership and Motivations to Blog: Implications for Public Relations. *Public Relations Journal* 6(5):1-31.
- Sengers, F., R. P. J. M. Raven, and A. Van Venrooij
2010 From Riches to Rags: Biofuels, Media Discourses, and Resistance to Sustainable Energy Technologies. *Energy Policy* 38(9):5013-5027.
- Smith, Jay M.
2011 *Monsters of the Gévaudan: The Making of a Beast*. Cambridge, MA: Harvard University Press.
- Smith, Slim, and Andrew Hazzard
2015 Columbus KiOR Facility Sold to Georgia Company. URL:<<http://www.cdispatch.com/news/article.asp?aid=45216>> (January 8, 2016).
- Spartz, James T., Mark Rickenbach, and Bret R. Shaw
2015 Public Perceptions of Bioenergy and Land Use Change: Comparing Narrative Frames of Agriculture and Forestry. *Biomass and Bioenergy* 75:1-10.
- Statkraft
2015 RWE Scraps Plan to Sell Georgia Biomass. URL:<<http://statkraftbiomass.blogspot.com/2015/01/rwe-scraps-plan-to-sell-georgia-biomass.html>> (December 2, 2015).
- Steiger, Brad
2012 *The Werewolf Book: The Encyclopedia of Shape-Shifting Beings*. Canton, MI: Visible Ink Press.
- Strauss, Claudia
2012 *Making Sense of Public Opinion: American Discourses about Immigration and Social Programs*. Cambridge, United Kingdom: Cambridge University Press.
- Trutnevyte, Evelina
2014 The Allure of Energy Visions: Are Some Visions Better Than Others? *Energy Strategy Reviews* 2:211-219.
- Vel, Jacqueline
2014 Trading in Discursive Commodities: Biofuel Brokers' Roles in Perpetuating the Jatropha Hype in Indonesia. *Sustainability* 6(5):2802-2821.
- Wagner, James A.
2008 Buying Oil from People Who Hate Us. URL:<<http://prev.dailyherald.com/story/?id=224758>> (March 12, 2014).
- Witter, Rebecca, Kimberly R. Marion Suissee, Rebecca L. Gruby, Sarah Hitchner, Edward M. Maclin, Maggie Bourque, and J. Peter Brosius
2015 Moments of Influence in Global Environmental Governance. *Environmental Politics* 24(6):894-912.
- Wright, Wynne and Taylor Reid
2011 Green Dreams or Pipe Dreams?: Media Framing of the U.S. Biofuels Movement. *Biomass and Bioenergy* 35(4):1390-1399.