IDENTITIES, OPINION LEADERSHIP, AND RISK INFORMATION SEEKING: A CASE

STUDY OF PROPOSED NATURAL GAS DRILLING IN NEW YORK'S MARCELLUS

SHALE

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Christopher E. Clarke

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STUDY OF PROPOSED NATURAL GAS DRILLING IN NEW YORK'S MARCELLUS

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Christopher E. Clarke, Ph.D.

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This dissertation proposes a theoretical connection involving identity theory, opinion leadership, and risk information seeking and sharing. Using this connection, it investigates the role identities (specifically, opinion leadership) play in motivating risk-related communication behavior about a controversial risk issue: proposed natural gas drilling in New York State's Marcellus Shale. In the process, it addresses two significant gaps in existing research. First, it elucidates how identities help people negotiate a potentially complex risk information environment. That is, people may encounter a variety of information about potential economic, health, social, and environmental impacts of gas development. How do they choose to become informed and seek and share information about specific impacts over others? Second, it elucidates how identities help determine whether and, if so, how people engage in such behavior over time, especially as development progresses through different stages and different impacts emerge and gain attention.

The central argument is that an opinion leader identity, emerging in group, role, and personality-based identity dimensions, functions as important determinant of communication behavior about gas drilling in the Marcellus Shale. Within these dimensions, opinion leadership (1) shapes identity meaning in terms of drilling-related impacts about which people perceive social and personal pressure to remain informed as well as perceptions of referent groups believed to hold these expectations; (2) motivates people to seek and inform others about specific impacts based

on this meaning; and (3) guides communication behavior over time based on one's ability to fulfill these expectations.

To further examine these arguments, 36 in-depth interviews were conducted with opinion leaders in three upstate New York counties. Opinion leadership, as an identity, emerged as a function of group affiliation (i.e., membership in a landowner coalition); role-based positions (i.e., elected official); and personality characteristics (i.e., being the type of person who is knowledgeable about issues like gas drilling). Interestingly, while these identity dimensions were associated with specific impacts of drilling about which people perceived social and personal pressure to remain informed, in many instances interviewees endeavored to remain as knowledgeable about as many impacts as possible. This sentiment was prominent in situations where they felt that being an opinion leader was simultaneously related to multiple group, role, and personality-based identity dimensions. Over time, however, some interviewees felt difficulty fulfilling identity-related expectations related to remaining informed and saw themselves less as leaders.

Theoretical and practical implications of this research are discussed in regard to identity theory, opinion leadership, and communication behavior. Areas of emphasis include (1) measuring how people look for and exchange information about complex, multi-faceted, and dynamic risk issues and (2) further harnessing the power of opinion leaders to encourage communication behavior about contentious risk issues as part of public participatory processes.

BIOGRAPHICAL SKETCH

Christopher E. Clarke was born in Rahway, New Jersey, in 1983 and was raised nearby in Iselin, New Jersey. He attended John F. Kennedy Memorial High School where he participated in the National and Spanish Honors Societies; cross-country; track; and marching band. He graduated from Rutgers University in 2005 with a degree in Health and Environmental Policy. During the graduation ceremony, his father, Bruce, a fellow Rutgers graduate and current faulty member, handed Chris his diploma - a true honor. He then attended Cornell University from 2005 to 2012 to pursue his growing interest in health and environmental risk communication – an area of research to which he first became exposed while working with Dr. Caron Chess at Rutgers. He earned an M.S. (2007) and Ph.D. in Communication (2012) and grew as a researcher, teacher, and person. During his time at Cornell, he served on the Graduate and Professional Students Assembly (GPSA) and could often be seen running outside despite the unpredictable Ithaca weather. Throughout life – whether professionally or personally – what keeps him moving is the desire never to stop moving.

To Friends and Family, for sharing the journey thus far and for their support

To my hummingbird – and the memories that will last a lifetime.

In memory of my grandparents – always an inspiration

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PREFACE

"Never before have more disciplines or more minds converged more rapidly on a single phenomenon: information and its patterning, processing, and communication as central to culture, cognition, and behavior"

- Beniger, 1993, p. 18.

"We do not see things as they are; we see things as we are"

– Talmud (ancient Jewish text)

"The time for thinkers has come"

- Eddy, 1875/2011, *Science and Health with Key to the Scriptures*

CHAPTER 1: INTRODUCTION

Communication researchers have long argued for "difference making research" (Timmerman, 2010, p. 295) that uses integrative theoretical frameworks to bridge inter-disciplinary perspectives; synthesize theoretical and applied foci; and have positive impacts on individuals and society (Beniger, 1993; McComas, 2006; Rosengren, 1983; Sherry, 2010). Risk communication scholars have argued for such approaches for understanding how people perceive and respond to risk and for providing an avenue for the "iterative exchange of information among individuals, groups, and institutions related to the assessment, characterization, and management of risk" that defines the communication process (McComas, 2006, p. 76).

Effective communication, in turn, depends in part on understanding processes through which people seek, avoid, and engage with risk messages; how such behavior influences risk-related attitude and behavior (Griffin, Dunwoody, & Neuwirth, 1999); and how to motivate people to become more informed about and engaged with such issues across various risk communication contexts (Kahlor, Dunwoody, Griffin, & Neuwirth, 2006; see also Chess & Purcell, 1999; Juanillo & Scherer, 1995). In developing models to address these areas (Griffin et al., 1999; Trumbo, 1999, 2002), scholars have drawn on frameworks within and outside the communication field and have incorporated communication, psychological, and sociological principles (Afifi & Weiner, 2004; Berger, 2002; Case, 2002; Johnson, 1997; Wilson, 1999). Such integrative frameworks allow researchers to explore the theoretical and practical implications of these phenomena (McComas, 2006).

Rationale for the Dissertation

This dissertation integrates literature on identity theory, opinion leadership, and communication behavior to explore the role identities - specifically, opinion leadership - play in motivating the process of risk-related information seeking and sharing about a controversial risk issue: natural gas drilling in New York State's Marcellus Shale. This research represents the first step in a larger program of inquiry, and the goal is not to create another information seeking model for its own sake. Rather, it takes an interdisciplinary approach to addressing important gaps in existing scholarship in the interest of advancing communication theory and practice. These gaps are described below and inform the research focus and goals.

First, the majority of risk information seeking research has studied particular kinds of information in isolation, with the goal of predicting communication behavior in absolute terms, such as seeking or avoiding information about 'cancer' (Shim, Kelly, & Hornik, 2006), energy (Griffin et al., 2005), and health risks (Griffin et al., 1999). Missing is an emphasis on how people negotiate a complex information environment in terms of seeking and avoiding certain risk messages over others. People may encounter a variety of information about potential economic, health, social, and environmental impacts of gas development, which, for various reasons, elicit strong reactions and garner significant attention among the public, media, and policymakers (see Kasperson et al., 1988; Slovic, 1987). Whether and, if so, how individuals choose to become informed and seek and share information– about what impacts and through which sources – is a question with important theoretical and practical implications.

Second, research has largely focused on seeking in the context of personal goals and benefits such as gaining knowledge and reducing uncertainty. Less attention has focused on interpersonal

information exchange or sharing and its social goals and benefits including interpersonal discussion and informing, educating, and/or persuading others (Atkin, 1972; Cho et al., 2009). Finally, in examining the relationship among predictors of information seeking and communication behavior, existing research has largely consisted of cross-sectional analyses. In addition to well-known limitations associated with causality claims, most studies cannot provide insight into the dynamic nature of these phenomena, including how and why individuals engage in such behavior over time in response to changing information needs (Niederdeppe, 2008), especially as gas development (should it begin) progresses through different stages and different impacts become salient (see Jacquet, 2009).

In the context of risk communication and information behavior about a dynamic risk issue – Marcellus Shale - there is an opportunity to synthesize inter-disciplinary perspectives to address the aforementioned gaps and elucidate theoretical and practical implications. In pursuit of this goal, this dissertation's central argument is that an opinion leader identity, emerging in group, role, and personality-based identity dimensions, functions as important determinant of communication behavior about gas drilling in the Marcellus Shale. Integrating literature on identity theory, opinion leadership, and information seeking and sharing inform two guiding research goals:

- To explore how identities shape how people negotiate a complex information environment in situations of uncertain and contested risk dimensions. Operating within role, group, and personality-based identity dimensions, opinion leadership (1) shapes identity meaning in terms of drilling-related impacts about which people perceive social and personal pressure to remain informed as well as perceptions of referent groups believed to hold these expectations

and (2) motivates information seeking and sharing about specific impacts based on this meaning (see Burke 2004, 2006; Burke & Stets, 2009);

- To understand how identities and opinion leadership influence communication behavior over time. It is suggested that individuals bring a variety of resources to bear in seeking and sharing information in an effort to 'verify' expectations of the opinion leader identity. Outcomes associated with this process, in turn, potentially shape identity meaning and enforce or impede communication behavior over time (see Slater, 2007). Also, individuals may face conflicting information needs in situations where opinion leadership is tied to multiple role, group, and personality-based identity dimensions. This dissertation explores how these phenomena play out in the context of natural gas drilling. For example: are individuals able to find sufficient information about various impacts? How do they deal with information that is lacking or uncertain in terms of the probability of certain impacts occurring? Do others with whom they share information benefit from this exchange? Do they prioritize information needs in situations where they want to become informed about many different types of impacts?

In pursuit of these goals, 36 in-depth interviews were conducted in three upstate New York counties where gas drilling in the Marcellus Shale may occur. Participants were opinion leaders identified through several techniques and representing various perspectives on this issue. Results from these interviews have theoretical implications related to the integration of previously segregated literatures on identity theory, opinion leadership, and communication behavior as well as practical implications for addressing risk communication challenges issues like natural gas drilling pose.

Research Context

The following sections of this Chapter provide an overview of the Marcellus Shale controversy and how this issue provides an ideal setting for examining the aforementioned research agenda.

Overview of the Marcellus Shale

The Marcellus Shale is a 95,000 square mile, 350-415 million year old Devonian shale formation that spans 600 miles across eastern Ohio, West Virginia, western Pennsylvania, and southern New York (Sumi, 2008). It varies in thickness from a few feet to more than 250 feet as well as depth (from surface exposure to 7,000-9,000 feet below) (Cornell Cooperative Extension [2009]) and is estimated to hold potentially significant natural gas deposits. Estimates vary and are frequently updated (United States Geological Survey, 2011; Urbina, 2011) but range between 50 and 516 trillion cubic feet. At the low end, these reserves are double the amount originally estimated to lie in Alaska's Prudhoe Bay and could meet U.S. demand - estimated at 23 trillion cubic feet a year - for more than two years (U.S. Energy Information Administration (EIA), 2010a). At the high end, it would place the Marcellus right behind Iran and Qatar's Pars field as the world's second largest natural gas field (Lavelle, 2010a).

Shale gas deposits like the Marcellus Shale are considered unconventional fossil fuel sources. Such sources, while difficult to characterize, tend to be more dispersed across large areas and require additional extraction methods to make production economical, such as well stimulation (American Petroleum Institute, 2010). In the case of Marcellus Shale, gas is present in rock pores that are poorly connected and of limited permeability (Kargbo, Wilhelm, & Campbell, 2010).

Accessing these reserves requires drilling a vertical well followed by a horizontal shaft and pumping a combination of water, sand, and chemicals to fracture the rock and transport gas to the surface: a process known as hydraulic fracturing or 'fracking'(Lavelle, 2010b; Soeder & Kappel, 2009). This technique allows drillers to maximize the amount of pores and naturally occurring factures that are contacted as well as create artificial fractures to further facilitate gas flow (Kargbo et al., 2010).

Unconventional natural gas deposits in the U.S. have been known for decades, with the U.S. Department of Energy and U.S. Geological Survey conducting extensive subterranean mapping during the energy crisis in the 1970s. Long considered inaccessible due to high drilling costs and inadequate technology ("An Unconventional Glut, 2010; "Energetic Progress," 2010; Howe & Kay, 2008), they have recently attracted interest due to increasing demand for domestic sources of lower carbon fuels; improved drilling technology; close proximity to major urban markets; and volatile gas prices (Honan, 2010; Jacquet, 2009; Johnson, 2011). Scattered throughout the U.S. (EIA, 2010b), they currently account for over 40% of total U.S. domestic gas production (estimated at nearly 19 trillion cubic feet in 2006). In approximately 20 years, this figure is expected to increase to 50% (Theodori, 2009). Shale deposits alone account for 15-20% of total domestic gas output, with a fourfold increased expected over the next 15 years (Honan, 2010). Such deposits have enabled the U.S. to emerge as a major natural gas producer with 22.6 trillion cubic feet of production in 2010, up from 18.9 trillion cubic feet in 2005 ("The Need to Be Seen to Be Clean," 2011).

Potential Impacts of Shale Gas Development

Development of the Marcellus shale entails a number of potential economic, environmental, social, and health impacts on individuals and communities. Many of these impacts can be understood in the context of research, beginning in the 1970s, on energy 'boomtowns.' The Boomtown Impact Model describes objective and subjective social, economic, and environmental effects arising from rapid population growth in rural communities as a result of nearby energy extractive activities such as oil and gas drilling and uranium mining (Little, 1977). An important contribution of this research involves the emergence and perception of development-related impacts over time through pre-production, production, and post-production phases of activity. Such activity reflects the boom-bust nature of fossil fuel development due to factors such as the pace and scale of drilling/mining; well/mine productivity over time; and volatile commodity prices (Brown, Dorius, & Krannich, 2005; Gilmore, 1976). In addition to remaining "the most recent wide-scale analysis on the effects of energy development in the United States" (Jacquet, 2009, p. 1), the Model has inspired research on impacts associated with natural gas drilling in shale gas formations throughout the U.S., including the Barnett Shale in Texas and the Marcellus Shale in Pennsylvania. Such research has included studies of public perception of economic, water, environmental, infrastructure, community, and other impacts (Anderson & Theodori, 2009; Brasier et al., 2011; Theodori, 2009) as well as statistical analyses of potential or actual effects.

From an economic perspective, potential drilling-related benefits may include job creation in the local economy; increased income and wealth for individuals, specifically landowners who sign gas leases and receive royalties based on the volume of gas produced; expanded business

opportunities for those that directly serve (i.e., construction) and indirectly serve the gas industry (i.e., hotels, restaurants, etc); and increased revenue for communities as a result of taxes on gas-related personal income and the volume of gas produced (Brasier et al., 2011; Hurdle, 2010; Legere, 2011). Scholars from various universities, consulting groups, and other organizations have attempted to quantify these impacts using various modeling techniques (Considine, Watson, Entler, & Sparks, 2009; Kay, 2011; Kelsey, 2011; New York State Department of Environmental Conservation [DEC], 2011a; Penn State Cooperative Extension [PSCE], 2011a, 2011b). An important point to note, however, is that these economic impacts depend on a number of dynamic factors including existing tax structure on the local and state level as well as new structures that may be created such as a severance tax on gas extraction, which states like Pennsylvania currently does not possess (PSCE, 2011a, 2011b). Other factors include where gas drilling workers are from, live, spend wages, and pay taxes (Jacquet, 2009; Kay, 2011) and the fact that employment levels, lease and tax-related revenue, and other economic activity can fluctuate based on the number of wells drilled in an area and amount of gas produced over time.

In some respects, moreover, these impacts are double-sided. In the boomtown literature, affected communities were typically small and rural before the boom, and existing public facilities and services were already "antiquated or seriously strained" (Little, 1977, p. 403). They were faced with additional strain in terms of extending these services to newcomers, and many areas were unable to match supply with increasing demand, leading to increasing costs (Anderson & Theodori, 2009; Gilmore, 1976). Specific services included housing; water provision and wastewater treatment; roads; law enforcement; fire protection; emergency medical and healthcare services; and education and recreational facilities. Furthermore, in some

instances, tax burden on individuals could actually increase if anticipated revenue did not match expenses related to services (Anderson & Theodori, 2009).

Perhaps the most discussed impact relates to water, which involves infrastructure, public health, and environmental considerations. Hydraulic fracturing requires between 2-10 million gallons of water per well, and "many regional and local water management agencies are concerned about where such large volumes of water will be obtained" (Soeder & Kappel, 2009, p. 4). Specific issues include depletion of aquifers and other sources (Kargbo et al., 2010). If nearby water supplies are not available or insufficient, trucks may bring water to the drilling site, which can pose problems to local roads not used to handling this traffic (Theodori, 2009). An estimated 890 to 1340 truckloads may be required per well per site, and transporting freshwater to one site alone is equivalent to nearly 3.5 million car trips (Randall, 2010).

In addition, drilling wastewater may contain natural and artificial chemicals (some of which are carcinogenic), salt brines, and naturally occurring radioactive materials like radium (Lustgarten, 2009a; Sumi, 2008). Thus, it presents disposal challenges in terms of whether existing wastewater treatment processes are sufficient, whether it should be treated on site, or whether it should be injected back underground (Kargbo et al., 2010). Furthermore, potential contamination of subterranean and surface water supplies can occur and, in rare instances, has occurred because of the release of inadequately treated wastewater into rivers and streams; surface spills of chemicals; and methane migration into aquifers as a result of drilling (Hurdle, 2009; Lustgarten, 2009b; Oshorn, Vengosh, Warner, & Jackson, 2010; PSCE, 2011c; United States Environmental Protection Agency [USEPA], 2011a). In response, agencies in New York, Pennsylvania, and other states have developed new and revised regulations related to the proper

treatment and disposal of drilling wastewater (DEC, 2011b; PSCE, 2011d; USEPA, 2011b); disclosure of hydraulic fracturing chemicals (Schwartzel, 2011); monitoring and, where necessary, remediation of contaminated water wells; and revised well casing standards to prevent the migration of hydraulic fracturing fluid and methane into aquifers (DEC, 2011c).

Finally, social and community-related issues involve public safety, power dynamics, and sense of community. Many boomtown communities were, in pre-boom times, politically homogeneous (i.e., conservative, not as formally educated, and religious); however, newcomers riding the wave of energy development tended to be more politically liberal, young, more formally educated, and less religious: a so-called "oldtimer-newcomer" divide (Jacquet, 2009). Studies have pointed to problems associated with a community's ability or willingness to integrate these newcomers, including the potential for value-based conflicts, social tension, mental health problems, community dissatisfaction, feelings of alienation, and shifting friendship patterns (Brasier et al., 2011; Little, 1977). These issues can produce cascading effects in terms of (1) participation in community groups and civic affairs that depend, in part, on interpersonal trust and strong interpersonal networks and (2) maintenance or breakdown of informal normative behavioral controls, which can lead to increases in crime (Freudenburg & Jones, 1991; Theodori, 2009). These impacts, moreover, can be experienced differently by individuals depending on socioeconomic status, gender, age, length of residence in an area, and degree of perceived benefit from energy development (Kassover & McKeown, 1981).

Communication Context

Proposed natural gas drilling in the Marcellus Shale provides an ideal setting for examining the aforementioned research agenda. In light of a push for social science research on how

individuals perceive and respond to potential impacts of energy development (Jacquet &
Stedman, 2009), there is an opportunity to better understand how people become and remain
informed, and inform others, about not merely natural gas drilling in general but about dynamic,
interrelated impacts. These impacts help make Marcellus Shale emblematic of a 'wicked
problem' (Nie, 2002) in that the underlying issues are not just scientific, such as the probability
of a given impact occurring, but based also on ethics and morality. Thus, information about
specific impacts can be contested.

Marcellus Shale has been described as a "polarizing debate about visions for the future [of]
the southern Fingers Lakes and Southern Tier" of the state (Wilber, 2009a, p. 1). Wilber (2009b,
p. 2) observed that "on the extremes of the debate are those who believe the Marcellus Shale will
become either the engine that will power the Southern Tier's economy into lasting prosperity or
an environmental disaster than will devalue land, degrade water, and ruin the landscape."
Drilling therefore involves moral questions rooted in different conceptualizations of right or
wrong; mobilized groups representing different stakeholders; and dynamic impacts that are still
being understood in areas where shale gas development is occurring (see Peterson, Peterson,
Peterson, Lopez, & Silvy, 2002). Drilling proponents – including industry trade groups and some
landowner coalitions that collectively negotiate leases with gas companies - have stressed
economic benefits of revitalizing a declining upstate New York economy and the environmental
benefits of using a lower carbon fuel source (Honan, 2010). By contrast, drilling opponents,
which include national environmental organizations as well grassroots citizen groups, have
highlighted potential threats to aquifers and surface water supplies, economic impacts on
communities such as stressed infrastructure, perceived inadequacies with state drilling
regulations, and other concerns.

Solutions to these problems, moreover, are also of a 'wicked' nature. They are not just technical, such as policies to address these impacts, because there may be no consensus among stakeholders on appropriate courses of action. There may also be uncertainty about potential impacts of policy decisions and constraints on time and resources (Lachapelle, McCool, & Patterson, 2003). In the process, these groups often have contested definitions of risk information and 'sound science' (McBeth & Shanahan, 2004). For example, proponents point to a lack of evidence that drilling threatens underground or surface water supplies (Watkins, 2010), while opponents counter that such information is available but selectively referenced or suppressed (Mouawad & Krauss, 2009).

Citizens and other stakeholders, therefore, step into a confusing information arena – many voices talking about potential health, environmental, economic, and social impacts involving various degrees of uncertainty about probability of occurrence and severity of consequences. Existing research on communication behavior, especially in risk contexts, is largely not equipped to explore how people make sense of this arena: that is, how they choose to become informed and inform others about particular impacts. Such insight is important because the manner in which people search for, engage with, and exchange information can help shape what messages they remember and what decisions they may make about gas drilling, including whether to support or oppose it (see Griffin et al., 1999). Moreover, what role does opinion leadership – as an identity – play in motivating individuals to become informed and inform others about these impacts? Indeed, people may search for and share information both for personal benefit (i.e., fulfilling an information need) as well as for social reasons (i.e., interacting with and persuading others).

Moreover, given the boom-bust nature of energy development as it proceeds through different phases of intensity, Marcellus Shale provides an opportunity to examine the dynamic nature of communication behavior and opinion leadership. For example, do the types of information – about specific impacts – that opinion leaders look for and share with others change over time as different impacts emerge and gain public and media attention? Studying dynamic information needs in the context of a multi-faceted risk issue represents a valuable contribution to a communication field that tends to concentrate on cross-sectional assessments. Also, does the meaning of and behaviors associated with opinion leadership - including information seeking/sharing, persuasion, and advocacy – likewise change over the lifetime of development? Identity theory describes how identity meaning and behavior change over time to adapt to changing circumstances (Burke, 2006); however, most of the existing research, like its communication behavior counterpart, has focused on unique instances in time rather than assessing change over time.

Marcellus Shale is an ideal issue for examining the relationship among opinion leadership, identities, and communication behavior, and New York State provides a useful geographic setting to this end. Several reasons are noteworthy: the state's two-century long history of fossil fuel development (13,000 active wells currently in existence; DEC, 2010a); ongoing coverage of Marcellus Shale in local and state newspapers; and an ongoing environmental review process that has provided ample opportunities for citizens to become informed about various potential impacts. In September 2009, after state environmental officials issued a Supplemental Generic Environmental Impact Statement (SGEIS) (DEC, 2009), public hearings across the state afforded citizens and other stakeholders the chance to comment on the document, listen to the perspectives of others, and further gather information (Wilber, 2009b). A similar process of

public comment also occurred in August 2010 as part of a $1.9 million Environmental Protection Agency study on the effects of hydraulic fracturing on groundwater (Zeller, 2010). In September 2011, DEC (2011a) issued a revised SGEIS with accompanying regulations (2011b). A public comment period began in November 2011 with additional public hearings, and a final SGEIS is expected to be issued sometime in 2012, with permits for gas drilling using hydraulic fracturing potentially to follow.

Overview of Dissertation Chapters

Given the research goals and context described above, this dissertation is organized as follows. Chapter 2 provides an in-depth articulation of the rationale and tenets behind the proposed relationship among identity theory, opinion leadership, and information seeking and sharing. This discussion informs research questions for the dissertation. Chapter 3 lays out the methodological approach: in-depth, semi-structured interviews with opinion leaders residing in a 3-county area in Upstate New York. It explains why this method is particularly suited to exploring the meaning people associate with staying informed and looking for/sharing risk information about gas drilling. The process of recruiting participants, developing interview questions, and analyzing data is described in detail.

Chapter 4 presents results of these interviews, with particular emphasis on the relationship among group, role, and personality-based opinion leader identity dimensions; identity meaning (i.e., drilling-related impacts about which people perceive social and personal pressure to remain informed as well as perceptions of referent groups believed to hold these expectations); and communication behavior. Finally, Chapter 5 speculates on the theoretical and practical implications of these findings. Theoretically, this research provides an opportunity to synthesize

previously segregated research on communication behavior, opinion leadership, and identity theory, in the process linking communication, psychological, and sociological perspectives. This synthesis can extend research in all three areas, including identifying new ways to conceptualize and measure communication behavior and an opinion leader identity in the context of multi-faceted risk issues.

From a practical perspective, this research provides insight into addressing the communication challenges controversies such as natural gas drilling pose and, in the process, provides an opportunity for integrating literature on boomtowns, shale gas development impacts, and risk communication. Given contested definitions of risk information and stakeholder groups with differing views on potential impacts, risk communication involves several potential strategies, including encouraging informed decision-making (Juanillo & Scherer, 1995; Scherer, McComas, Juanillo, & Pelstring, 1999) and facilitating interactions among stakeholders as part of deliberative processes (Chess & Purcell, 1999). Opinion leaders have a potentially vital role in facilitating engagement among stakeholders and encouraging people to become and remain informed about these impacts, especially over the lifetime of energy development.

CHAPTER 2: LITERATURE REVIEW

This dissertation investigates the role identities, specifically, opinion leadership, play in motivating risk information seeking and sharing about proposed natural gas drilling in New York State's Marcellus Shale. By integrating research on risk information seeking (Griffin et al., 1999), opinion leadership (Weimann, 1994), and identity theory (Burke & Stets, 2009), it takes an interdisciplinary approach to addressing important gaps in existing scholarship in the interest of advancing risk communication theory and practice. Specifically, it elucidates how an opinion leader identity, emerging in group, role, and personality-based identity dimensions, enables people to negotiate a potentially complex risk information environment. As people encounter a variety of information about potential economic, health, social, and environmental impacts of gas development, how do they choose to become informed and seek and share information – about what impacts and through which sources? It also explores how this identity helps determine whether and, if so, how people engage in such behavior over time, especially as development progresses through different stages and different impacts become salient.

This chapter describes the proposed theoretical connections involving identity theory and opinion leadership as they relate to communication behavior, followed by research questions that this dissertation investigates.

Information Seeking, Avoidance, and Sharing

Risk-related information seeking and sharing form the core of the dissertation, with information defined as "stimuli from a person's environment that contribute to his or her knowledge or belief" about an issue (Brashers, Goldsmith, & Hsieh, 2002, p. 259). Information

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seeking is a goal-driven behavior. An individual is searching for information in response to specific motivating factors (Trumbo, 2002), perhaps by consulting media channels and/or engaging in interpersonal conversation. These motivations can be personal, such as knowledge gain and uncertainty reduction, or social in nature, such as participating in interpersonal discussion (Atkin, 1972). Many scholars consider seeking a hallmark of an active, involved populace engaging with important issues (Cho et al., 2009; Shim et al., 2006). In this sense, it differs from more passive information gathering, such as scanning (Berger, 2002), which "represents [passive, habitual information] acquisition that occurs within routine patterns of exposure to mediated and interpersonal sources that can be recalled with a minimal prompt" (Niederdeppe et al., 2007, p. 155).

Information sharing is the purposeful exchange of messages between and among individuals, often via interpersonal discussion. It is not merely gleaning information from others in the course of seeking (Afifi & Weiner, 2004; Borgatti & Cross, 2003) but exchanges for the purpose of informing and persuading others. Communication researchers have studied the important role interpersonal discussion, in particular, plays in phenomena ranging from political knowledge and participation (Cho et al., 2009) to perceptions of risk (Scherer & Cho, 2003).

<div align="center">Identity Theory</div>

Identity theory draws on several theoretical traditions – including role theory (Biddle, 1986; Stryker, 1968), social identity theory (Tajfel & Turner, 1979), and self-categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). It describes (1) the definition, origins, and meanings of identities and how they connect individuals to social structure (and vice-versa); (2) how they are brought to bear in different situations (i.e., prominence and salience); (3) how they

influence behavior and vice-versa; and (4) when and how different identities relate to each other in terms of compatibility and conflict.

Identities are sets of shared social meaning people hold that define what it means to be who they are as individuals, role occupants, and group members (Burke, 2004; Burke & Stets, 2009). They serve as standards for personal behavior (Stets & Biga, 2003) by linking personal expectations and social appraisals (Burke & Reitzes, 1991). They provide a social basis for the "self" and individual action (Hogg, Terry, & White, 1995).

Identity Origins and Social Structure

Identity theory posits three types of identities that people can possess. These identities emerge within occupants of particular roles or positions in society, within members of social groups, or personality-based characteristics people believe they possess. One may perceive meaning tied to being a student, spouse, or parent (role identity), a member of a family or political party (social identity), or as someone who is outgoing, caring, or environmentally conscious (person identity). Burke (2004) argued that these identity types are distinguished "by the way in which each…is tied into the social structure, and consequently by the way in which the verification process works" (p. 9). Verification involves people engaging in behaviors in an effort to match identity standards with appraisals from social interactions; the extent to which this effort succeeds speaks to whether and how these behaviors are performed and the stability of the given identity. However, as Hogg et al. (1995, pp. 255) noted, what unites them is the idea of a "multifaceted and dynamic self that mediates the relationship between social structure and individual behavior." The self "emerges not as an autonomous psychological entity but rather as a multifaceted social construct" (p. 256): one that controls meaning and shapes our responses to

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environmental stimuli; is "developed through communication and interaction with others" (Burke & Stets, 2009, p. 19); and is tied to – and manifested in - these identities. Moreover, identity theory draws on self-categorization theory (Turner et al., 1987) in positing that individuals 'label' themselves as 'possessors' of these identity types in the course of their behavior and social interaction as a means of defining themselves.

Drawing on Symbolic Interactionism, identities help connect individuals to social structure and vice-versa. As social products, identities are formed, maintained, and controlled within social interactions. They allow us to assign order to a confusing world in terms of explaining, predicting, and assessing the implications of one's own behavior and that of others (Burke & Reitzes, 1991). They facilitate "coordinated interaction, communication, and control of resources within the [social] setting" (Burke, 2004, p. 7). Furthermore, working toward verification and achieving shared meaning facilitates the emergence of social structure "from individual actions [tied to identities]…patterned over time and across persons" (Burke & Stets, 2009, p. 5). In turn, this structure - what Burke (2004) labeled 'culture' - creates and names the various groups and roles to which identities and related meanings are tied. As Burke (2004) argued, "We learn the categories, as well as the meanings and expectations associated with those categories, from others around us and from the culture in which we are embedded" (p. 7).

For example, identity theory draws on role theory in defining roles and the processes through which they influence individual behavior and are verified (Biddle, 1986). Roles are defined within the culture and are "part of the set of named categories that people…learn to apply to themselves and to others" (Burke & Stets, 2009, p. 9); role-related meanings and expectations are the standards that guide verification. Burke and colleagues also draw on social identity theory

(Tajfel & Turner, 1979) in exploring how group identities influence behavior and how they are verified. Social identities are based on membership in a group, and meaning is shared among members. Verification as a group member entails acceptance by others and reinforcing ingroup-outgroup differences. In other words, verification is about who one is, not what one does as a role occupant, and social identity theory is more concerned about intergroup relationships than role-related behaviors (Hogg et al., 1995). Finally, person identities "are based on culturally recognized qualities, traits, and expectations for an individual that…serve as standards guiding the verification process" (Burke, 2004, p. 9). Verification is achieved by distinguishing oneself as a unique person.

Identity Salience/Prominence and the Multifaceted Self

Identity theory once again draws on Symbolic Interactionism in positing a multi-faceted persona consisting of many different identities, reflecting the diverse social structure within which they arise (Stets & Biga, 2003). Burke and Stets (2009) argued that people possess multiple identity types "because they occupy multiple roles, are members of multiple groups, and claim multiple personal characteristics" (p. 3). Therefore, people bring different ones to bear in different situations (Hogg et al., 1995; Stryker, 1968). Prominence reflects how important an identity is in general, while salience reflects importance in a given situation. Scholars have proposed a hierarchical structure (Burke & Reitzes, 1991), with salience determining which ones matter most and, in turn, which behaviors people perform (Stryker & Burke, 2000). However, others challenge this structure (Marks & MacDermid, 1996), and Burke and Stets (2009) discussed an identity "control system" (p. 54) that allows multiple identities to be verified and

co-exist at once. Nonetheless, both salience-prominence and identity control have provisions for managing identity conflict (described below).

Identity Verification and Resources

As mentioned above, identities serve as standards for personal behavior by linking personal and social expectations as part of reciprocal relationship between the individual and social structure. More specifically, the prominence and salience of particular identities proscribes behavior consistent with a particular set of identity-related meanings or standards (Terry, Hogg, & White, 1999). People engage in behavior in an effort to match identity-related standards with appraisals from social interactions (Strachan & Brawley, 2009) – a process known as verification. The process begins with an "input" - the identity standard/meaning or personal expectations of conduct - that guides behavior in a given social setting. Within this setting, an individual attains feedback from others on this behavior (i.e., explicit or implicit social expectations) in an attempt to match personal and social input (Burke & Reitzes, 1991). This feedback represents "perceptions of self-relevant meanings in the social situation" (Burke, 2006, p. 82). In effect, "individuals derive a view of themselves in the environment based on meaningful feedback from others… modifying outputs to the social situation in attempts to control the perception input to match the internal standard" (Stets & Biga, 2003, p. 402).

The degree to which personal standards and social feedback "line up" speaks to the extent to which one commits to a given identity and its meaning. Commitment represents the "strength of the forces that maintain congruity between one's identity standard and the reflected appraisals of identity-relevant meanings from the social settings" (Burke & Reitzes, 1991, p. 244–245). Higher commitment is manifested in continued performance, over time, of the particular

behavior tied to a given identity (Rise, Sheeran, & Hukkelberg 2010). Such performance further reinforces salience and meaning (Sparks & Shepherd, 1992). Operationally, scholars have measured this concept in two ways: (1) social connections, or "the number of people to whom one is tied through [an] identity" as well as the strength of those ties (Stets & Biga, 2003, p. 404; Hoelter, 1983) and (2) perceived costs and benefits associated with enacting an identity. Higher commitment involves greater perceived quantity and quality of connections and a belief that benefits outweigh costs. Burke (2004), however, noted that verification is, at best, imprecise, as "neither we nor others know in advance exactly what behavior will bring about this state of a match between perceptions and [the] identity standard" (p. 6). What are important are the meanings or goals one seeks to enact through behavior. Therefore, the process described above is one of trial and error, as individuals observe their progress in attaining those goals.

According to Stets and Cast (2007) and Burke (2004), people work to achieve identity verification through the use of personal, interpersonal, and structural resources. Personal resources reflect beliefs one holds about the self such as self-efficacy, while interpersonal resources flow from relationships (i.e., role-taking; trust), and structural resources speak to one's placement in society in terms of occupation, income, education, and other factors. All three types can be active or potential in nature. Active resources are "those processes that function to currently support the social actor," such as a pen with which to write, eyeglasses with which to see, and education with which to obtain a job (p. 519). Potential resources are not currently used for such support, but they may be in the future: for example, food to consume at a later time. Verification can thus be viewed as a process of controlling meaning by marshalling resources for performing identity-proscribed behavior. Furthermore, the relationship is reinforcing, in that

"resource use facilitates identity verification and identity verification increases the resources available for future use…across identities and over time" (p. 517).

Identity Compatibility/Conflict and Change

A given identity does not operate independent of (1) other pressures within the same identity or (2) other salient identity types and their meanings and expectations that compete for a person's resources and attention. Intra or inter-identity salience ('multiplicity) – and the potential for compatible or conflicting meanings - has important implications for identity stability and change (Burke, 2006).

The first way identities change is via disturbances that impact one's ability to verify an identity. For example, one may face inconsistent expectations (Rizzo, House, & Lirtzman, 1970; Stryker & Stathamm, 1985). A student identity, for example, may entail both attention to schoolwork as a well as participation in school activities. These expectations may be compatible as part of a well-rounded school experience or conflicting if one detracts from the other; for example, after school activities may leave little time for homework. The degree of compatibility and conflict can either leave one confident in one's ability to verify identity meaning or distressed at being unable to reconcile discrepant meaning dimensions (Burke, 2006). Such distress, in turn, can lead one to adapt behavior – such as spending more time on homework and less time engaged in after school programs - and/or potentially change the meaning of the identity by placing less emphasis on academic achievement. In the process, one attempts to balance competing meaning dimensions.

The second way identities change is via conflicts between two or more identities. Multiple identities can proscribe similar or different sets of behavior – and thus verification challenges - if they become simultaneously salient; that is, "as one controls perceptions of self-relevant meanings to match the standard for one identity, they may become discrepant with the standard for another active identity if they also are relevant for that identity" (Burke, 2006, p. 85). A student identity entails expectations and actions discussed previously. Having an afterschool job (a worker identity) may be compatible with the former in terms of developing and adhering to a daily routine or in conflict in terms of working late hours affects one's school sleep schedule. Burke (2006) suggested that the standards for the conflicting identities will work toward a compromise that favors achieving verification for both at the same time; however, the success of this process depends on the salience of and commitment to each identity and how similar the identity-related meanings are to each other.

Identity multiplicity – whether involving conflicting intra or inter-identity meaning - is an important facilitator or impediment to behavior performance depending on how it is viewed and handled by the individual (Marks & MacDermid, 1996). Researchers have argued that multiplicity usually, if not always, produces negative outcomes, including not knowing how to act and "psychological stress and social instability" (Sieber, 1974, p. 567). Others, however, believe that it can lead to balance - working out a routine that governs when one acts in different identities - and positive outcomes, including personal gratification as a 'jack of all trades' and more social contacts (Sieber, 1974).

Opinion Leadership

Opinion leaders are individuals who exert influence on other peoples' decisions, serve as sources of information and advice, and from whom others model behavior (Flynn, Goldsmith, & Eastman, 1996; Nisbet & Kotchner, 2009). Opinion leadership has a rich history in the communication field, beginning with Katz and Lazarsfeld's (1955/2006) two-step flow, in which information flows from mass media to opinion leaders and then to less engaged members of the population (see also Weimann, 1994). Over the last few decades, moreover, researchers have developed and validated measures of this concept (Nisbet & Kotchner, 2009; Rogers & Cartano, 1962). Research on opinion leadership has focused on several areas – *what* leaders do especially in terms of communication behavior; *who* leaders are in terms of personal characteristics; and *how* they exert influence especially via social networks.

In terms of the first area, research has focused on the impact of opinion leadership in areas such as the diffusion of technological innovations (Rogers & Cartano, 1962; Valente & Davis, 1999), marketing (Flynn et al., 1996), and the transfer of information across social groups (Burt, 1999). Opinion leaders compared to non-leaders tend to more actively communicate about issues about which they perceive expertise, in terms of seeking and sharing information (Weimann, 1994). In terms of whom leaders are, scholars have described various characteristics; for example, they tend to be more innovative, familiar with the norms and perceptions of those whom they influence, interested in and knowledgeable about issues on which they exert influence, more politically engaged, and more exposed to mass media and other information sources (Scheufele & Shah, 2000). They are adept at "presenting their ample knowledge to their

multiple contacts" and are, in short, informed, connected, and persuasive (Boster, Kotowski, Andrews, & Serota, 2011, p. 179).

Opinion leaders occupy important positions in social networks through which influence takes place (Katz & Lazarsfeld, 1955/2006). A social network is a "pattern of friendship, advice, communication or support which exists among the members of a social system" (Valente, 1996, p. 70). Networks consist of nodes (individuals) connected to other nodes through ties that can be one or two-way (Christakis & Fowler, 2007). By virtue of interacting with others in these networks, individuals are able to exchange information and potentially influence the attitudes and behaviors of those around them. Scholars from various fields have explored processes, outcomes, and implications of this phenomenon, known as social contagion (Fowler & Christakis, 2008a, 2008b; Scherer & Cho, 2003). Whether seeing themselves as leaders, being viewed by others as such, or both, opinion leaders tend to position themselves as central nodes within networks; they possess more social contacts and interact with those contacts more frequently, thus facilitating interpersonal influence (Roch, 2005; Weimann, 1994).

Opinion Leadership, Identity, and Risk Information Seeking and Sharing

Having reviewed identity theory and opinion leadership, the following section links the two in exploring communication behavior about natural gas drilling in the Marcellus Shale. This link informs several guiding research questions for this dissertation. The fact that opinion leadership is a quality that is potentially both recognized by the self and others with whom one interacts suggests that it can be considered a salient identity. This section explains how meaning tied to this identity shapes (1) how people negotiate a complex information environment related to gas development and (2) why individuals engage in these actions over time.

Origin of the Opinion Leader Identity

An identity defines what it means for people to be who they are as individuals, occupants of roles, and members of groups (Burke, 2004), and identity theory envisions a multi-faceted persona consisting of many different identities (Stets & Biga, 2003). However, much of the existing research has focused on distinct identity types: for example, gender as a role identity or environmentalism as a person identity (Burke, 2006; Stets & Biga, 2003). Burke (2004) argued that while these identities differ in the way each relates to the social structure and, thus, how verification operates, the verification processes remain the same (see also Burke & Stets, 2009). Interestingly, Burke (2004, 2006) also suggested that the person identity – one based on culturally recognized qualities, traits, and expectations that define one as a unique person - may function in a 'master' capacity because it can become salient and prominent across group and role identities. As a result, "the meanings in the person identity would influence the meanings held in one's role and social identities" (Burke & Stets, 2009, p. 126; Burke, 2006). Role and social identity meanings, all things being equal, tend to become consistent with meanings contained in the personal identity, and "people choose roles and groups that provide opportunities to verify their person identity" (Burke, 2004, p. 11). For example, people who view themselves as environmentally-minded could be expected to join environmental organizations and seek roles or positions that reflect these personal qualities.

Adapting this view, this dissertation suggests that opinion leadership is a master identity because it is activated and relevant across group, role, and personality-based identity dimensions. One may see oneself as a leader because of a social position one occupies such as a landowner, environmentalist, or community member; membership in a social group such as belonging to a

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town council; seeing oneself as possessing certain traits (i.e., the type of person who is knowledgeable); or a combination of these reasons. This view departs from existing research that has defined opinion leaders on the basis of who they are – what are arguably personal traits/characteristics - and what they do in terms of structural positioning with social networks (Roch, 2005; Weimann, Tustin, van Vuuren, & Joubert, 2007). It is not suggested that these approaches are incorrect; rather, opinion leadership is a multifaceted concept, and the meaning it has for people and the behaviors to which it is tied depend on identity-related dimensions in which it emerges. This relationship also extends identity theory. The focus is not on separate group, role, and person identity types but one identity operating across these three identity dimensions and how meaning and communication behavior are shaped within and among these dimensions (Burke, 2004).

Opinion Leader Identity Dimensions and Meaning

Identities serve as standards for personal behavior by linking personal and social expectations (Burke & Reitzes, 1991). They proscribe behavior consistent with a particular set of meanings, and people engage in these behaviors by using resources in an effort to match standards with appraisals from social interactions: that is, verification. In the case of communication behavior, this dissertation pushes research beyond the somewhat obvious finding that opinion leadership is a positive predictor of information seeking and sharing (Weimann et al., 2007) and posits that such behavior depends on the group, role, and personality-based dimensions in which this identity emerges and operates. Overall, opinion leadership is a master identity consisting of different meanings and expectations – tied to different role, group, and personality-based identity dimensions - that functions as a determinant of communication behavior about natural gas

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drilling. Specifically, it guides how people negotiate a complex risk information environment and provides insight into the development and maintenance of these behaviors over time. This process is detailed below.

First, it is argued that opinion leader identity meaning related to communication behavior reflects both personal agency and perceived social influence - in particular, perceived personal obligation and perceived social pressure to remain informed; the latter is known as information subjective norms. Both concepts build on a rich literature on social norms (Lapinski & Rimal, 2005; Reno, Cialdini, & Kallgren, 1993). Originating in Griffin et al.'s (1999) RISP model, information subjective norms are derived from the concept of subjective norms or perceived social pressure to perform a behavior (Ajzen, 1988). The RISP model modifies this concept: the degree to which others would want us to remain informed about an issue. Perceived personal obligation to remain informed is an addition to the information seeking literature. It reflects personal norms, which are self-expectations based on internalized values that reflect feelings of personal obligation to engage in a behavior (Harland, Staats, & Wilke, 1999; Stern, 2000).

Second, opinion leaders are more likely to perceive a salient norm to remain informed about particular gas drilling impacts. What impacts matter most– that is, those about which they perceive social and personal pressure to remain informed as well as perceptions of referent groups believed to hold these expectations – can depend on the group, role, and personality-based identity dimension that are salient at a particular time. An example is provided below, and it is important note that these norms function as an opinion leader identity "input" or personal expectations of conduct. However, that while information subjective norms represent social influence on one's communication behavior, they serve as motivation for initially engaging in

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such behavior as opposed to social feedback once one has undertaken it. Indeed, Griffin et al. (1999) place this concept as a predictor of information seeking (positive) and avoidance (negative). Thus, although it plays an important role in the information seeking, avoidance, and sharing process, this concept is not a proxy for such feedback; other concepts described in subsequent sections will help fill this gap.

Third, the group, role, and personality-based identity dimensions in which an opinion leader identity emerges motivates people to seek and share information about particular gas drilling impacts for which they feel particular social/personal pressure to remain knowledgeable. Thus, these identity meanings tell us what messages are important and worthy of attention. They help us make sense of an often-complex mosaic of information. As a result, the opinion leader identity can help people negotiate a complex information environment in the context of a controversial risk issue, paying attention and becoming informed about certain impacts over others. This phenomena is consistent with research on selective exposure, in which people select and attend to certain types of information and sources over others, specifically that which is consistent with existing perceptions (Stroud, 2008). These "perceptions" can include values placed on different objects (such as self, other people, or the environment) (Steg, Dreijerink, & Abrahamse, 2005), the salience and accessibility of attitudes (Arpan, Rhodes, & Roskos-Ewoldsen, 2007), the extent of prior knowledge about an issue, the importance attached to different worldviews, which are "specific patterns of social relationships [that generate] distinctive ways of looking at the world" (Marris, Langford, & O'Riordan, 1998, p. 636), and accessible beliefs.

For example, a person views him/herself as an opinion leader by virtue of being a landowner (arguably a role-based identity dimension), while another does so by virtue of being an environmentalist (another role-based dimension). Both individuals may consider themselves leaders but for different reasons and may thus feel a need to remain informed about – and seek and share information about – different impacts related to gas drilling. The landowner may perceive a personal obligation and/or social pressure to remain informed about potential economic and environmental impacts of leasing one's land. The environmentalist, by contrast, may concentrate on messages about ecological threats, surface and groundwater impacts, and similar issues.

Verification, Communication Behavior, and Identity Change

This research also examines processes through which communication behavior may potentially be reinforced or impeded over time. Consistent with identity theory, it is suggested that opinion leaders seek verification of their identity: perceived congruence between personal expectations of conduct and social feedback. Information subjective norms reflect *a-priori* social influence. Actual verification is tied to the perceived outcomes of the information seeking and sharing process and use of the identity-related resources (see Stets & Biga, 2003; Stets & Cast, 2007). For example, a person views him/herself as an opinion leader, perceives a personal obligation as well as social pressure to remain informed about particular impacts related to natural gas drilling, seeks such information, and shares it with others. Potential outcomes can be positive – for example, the information found is considered accurate and appropriate, and one believes that others benefited from what was shared - or negative (i.e., unclear or inappropriate information; belief that others did not benefit from what was shared) (Arora et al., 2007).

Moreover, individuals will draw on various types of resources to achieve identity verification in these dimensions. These resources are both active, in that they currently supporting the actor, and potential: not currently used, but may be called upon in the future; they are also personal, interpersonal, and structural in nature (Stets & Cast, 2007). For example, in deciding to look for information about the impacts of Marcellus Shale natural gas drilling, an individual may consider his/her perceived ability to do so. The concept of self-efficacy or the perceived ability to perform a behavior is a fundamental component of many theories of behavior change (Ajzen, 1988) and, especially, communication behavior (Wilson, 1999). It represents "an individual's perception that they possess the skills to complete successfully the information [seeking or sharing] process" (Afifi & Weiner, 2004, p. 178). For example, does one have access to desired sources? Is one able to disseminate information to potentially interested others? Low levels of perceived efficacy are a seeking or sharing barrier. People can lack confidence for various reasons: source unavailability, perceived inability to handle what one finds, or belief that others are not interested in the information (Afifi & Weiner, 2004; Griffin et al., 1999). Furthermore, interpersonal, mass mediated, and other sources through which one gathers information are also resources. Wilson (1999, p. 251) observed that "seeking behavior arises as a consequence of a need perceived by an information user, who in order to satisfy that need makes demands upon formal or informal…sources or services, which results in success or failure to find relevant information."

Finally, drawing on the notion of identity stability and change in terms of meaning and behavior, it is suggested that opinion leaders may face challenges in achieving identity verification (see Burke, 2006). These challenges, in turn, can impact meaning as well as willingness/ability to engage in communication behavior over time (Burke & Reitzes, 1991). There are two ways these phenomena can occur. First, opinion leaders can be faced with

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potentially overlapping group, role, and personality-based identity dimensions and, as a result, consonant or dissonant meaning regarding communication behavior. To reference the example above, the landowner opinion leader may perceive a personal obligation and/or social pressure to remain informed about potential economic and environmental impacts of leasing one's land. He or she may thus look for such information and share it with other people such as coalition members. The environmentalist opinion leader, by contrast, may concentrate more on messages about ecological threats, surface and groundwater impacts, and similar issues at the expense of economic considerations. In situations where both role-based identity dimensions become simultaneously salient, the individual may perceive a greater depth of information need than was the case for the two in isolation. He or she may simply broaden the search and/or share more information with more people. However, he or she may be unsure which messages to search for/share first and may thus prioritize or perhaps not even initiate the process due to such confusion. Such changes in behavior can impact opinion leader identity meaning - altering the perception of what it means to be a leader in these identity dimensions.

Second, an opinion leader identity operating in different group, role, and personality-based identity dimensions can potentially conflict – in terms of meaning and behavior – with other, non-opinion leader identities. For example, being a leader by virtue of membership in a group such as a landowner coalition may conflict with expectations tied to being a community member that have nothing to do with natural gas drilling and to which opinion leadership is not tied. Perhaps a community member identity entails focusing on other issues aside from natural gas drilling, which would proscribe an entirely different set of communication behaviors that opinion leadership.

For both situations involving verification challenges, Burke (2006) suggested that the standards for the conflicting identities (or, in this case, identity dimensions) will work toward a compromise. This compromise involves achieving verification for both at the same time; success of this process depends on the salience of and commitment to each identity dimension and how similar identity meanings are to each other.

Research Questions

This dissertation is guided by a fundamental question: What is the relationship between an opinion leader identity and risk information seeking and sharing regarding impacts associated with proposed natural gas drilling in New York State's Marcellus Shale? Based on the research gaps described in Chapter 1 and theoretical connections outlined in this Chapter, the following research questions are proposed:

- *RQ 1*: How does an opinion leader identity emerge within group, role, and personality-based identity dimensions regarding Marcellus Shale?

- *RQ 2*: How do group, role, and personality-based opinion leader identity dimensions influence meaning regarding risk information seeking and sharing, in terms of perceived personal obligation and/or social pressure to remain informed about particular drilling-related impacts?

- *RQ 3:* How do group, role, and personality-based opinion leader identity dimensions influence the kinds of information - about specific drilling-related impacts - that is sought and shared?

- *RQ 4:* How do resources individuals use for engaging in communication behavior and outcomes associated with such behavior enable identity verification as an opinion leader? How do challenges to achieving verification – within and between the opinion leader identity - impact meaning and communication behavior over time? Are group, role, and personality-based opinion leader identity dimensions, when they overlap, associated with different meanings and behavior in terms of becoming informed and/or informing others about different kinds of information about drilling-related impacts?

CHAPTER 3: METHODS

To address the research questions posited at the end of Chapter 2, semi-structured interviews were conducted with 36 opinion leaders in three up-state New York counties: Tompkins, Tioga, and Broome. This methodological approach entailed a review of measures of identity-related attributes (Burke & Stets, 2009) and opinion leadership (Weimann, 1994) as well as best practices for qualitative interviewing (Weiss, 1994) and data analysis (Charmaz, 2002).

Research Setting (see Table 1)

Table 1: Socio-demographic Profile of Three County Study Area

County Population	County Seat (Largest Locality)	Median Household Income	Land Area (Active oil/gas wells)
Broome 194,630	Binghamton (45,217) (same)	$42,630	706.82 mi (0)
Tioga 50,064	Owego, Village (3,911) Owego, Town (20,365)	$50,493	518.82 mi (1) [1]
Tompkins 101,779	Ithaca, City (29,829) (same)	$48,537	476.05 mi (0)

Source: United States Census Bureau (2009a, 2009b, 2009c, 2011a, 2011b, 2011c)

[1] Total production: 217,114 million cubic feet per year in 2010 (DEC, 2010b)

The three counties share similarities in terms of household wealth; relatively low levels of current oil and gas drilling activity but a history of development dating back over a century; and relatively small populations compared to major metropolitan areas in the southeastern part of the state. Also, the Marcellus Shale runs under each county, and each has considerable land acreage already leased for drilling; is home to pro-drilling and anti-drilling advocacy groups; and has hosted public hearings on gas drilling sponsored by the DEC and/or local governments.

However, the counties also differ on a number of levels, including the potential scope of Marcellus Shale development should it occur and resident and policymaker views on this issue. Broome County lies entirely under the so-called Marcellus fairway, where the thickness and depth of the shale makes gas extraction particularly economically viable. Only half of Tompkins County, by comparison, is in the fairway. As a result, drilling activity is predicted to be particularly intense in the former compared to the latter two counties (Negrea, n.d). In addition, while opinion polls of New York State residents concerning development of the Marcellus Shale do not stratify responses by county - only in the state overall as well as between the "upstate" and "downstate" regions (Marist College Institute for Public Opinion, 2011; Siena Research Institute, 2011) - an informal review of print media coverage in these counties as well as conversations with colleagues suggests that residents in Tompkins County are more opposed to drilling than their Broome or Tioga counterparts. One explanation is that the former is home to a major university and associated community that tends to be politically more liberal that surrounding counties. Moreover, the aforementioned opinion polls suggest a partisan divide on the issue of hydraulic fracturing, with a plurality of Republicans supporting it and a plurality of Democrats opposing it.

In addition, landowner coalitions groups are particularly active in Broome and Tioga counties and less so in Tompkins County (Joint Landowners Coalition of New York, n.d.; Marcellus Drilling News, 2011; Tompkins Landowner Coalition, 2011). These entities consist of landowners and, although varied in size and organizational structure, work to negotiate gas leases with energy companies that are compatible with desired land management and environmental protection goals. Thus, unsurprisingly, most are supportive of gas drilling in the Marcellus Shale. Jacquet and Stedman (2011) estimated that at least 35 coalitions exist in the Southern Tier of New York State that, collectively, claim more than 1,125 square miles of land owned by more than 20,000 individuals.

Similarities and differences among these counties have important implications related to theory development and generalizability; these are discussed in Chapter 5.

Rationale for In-Depth, Semi-Structured Interviews

This research explores the opinion leader identity as it relates to communication behavior about impacts associated with natural gas drilling in the Marcellus Shale. It seeks illumination and understanding of these phenomena from the interviewee's perspective, making in-depth, semi-structured interviewing a particularly appropriate technique (Golafshani, 2003; Weiss, 1994). Keyton (2006, p. 269) described in-depth interviews as a "practical, qualitative method for discovering how people think and feel about their communication practices" that involves "a semi-directed form of discourse or conversation with a goal of uncovering the participant's point of view." The goal is to "find out, not with perfect accuracy, but better than chance, what people think they are doing, [and] what meanings they give to the objects and events and people in their lives and experience" (Becker, 1996, p. 58).

The project used a semi-structured approach, which is a middle ground between (1) completely structured interviews using standardized, close-ended questions and (2) completely unstructured interviews in which the conversation revolves around a set topic(s) but with little in the way of "set" questions (Fontana & Frey, 2000). In the middle ground, a researcher approaches the interview with *a-priori* questions derived from theoretical perspectives – specifically, identity theory and opinion leadership - but with the flexibility to explore additional avenues as the conversation evolves and preliminary themes emerge (Charmaz, 2002).

Selection of Participants

The study involved interviewing opinion leaders about communication behavior surrounding Marcellus Shale. Identifying such individuals was a challenging endeavor. In the decades since Katz and Lazarsfeld (1955/2006) first proposed the concept, many researchers have developed and validated measures of opinion leadership (Nisbet & Kotchner, 2009; Rogers & Cartano, 1962). Weimann and colleagues (Weimann, 1994; Weimann, Tustin, van Vuuren, & Joubert, 2007) classified these approaches into several domains, including

1. Positional - "persons in elected or appointed positions in the community are assumed to be opinion leaders";

2. Reputational - asking people to nominate influential individuals whom they know;

3. Self-designating - people are asked the extent to which they consider themselves leaders;

4. Sociometric – "[tracing] communication patterns among members of a group, which allows for the systematic mapping of member interactions" to identify opinion leaders;

5. Observation - observing social interactions and documenting the emergence of leaders;

6. Key informant - identifying "a limited numbers of people assumed to be knowledgeable regarding the patterns of influence within a group, and then asking them to identify influentials in that group" (Weimann et al., 2007, pp. 177-178).

Each approach has strengths and weaknesses. For example, key informants and self-designation allows one to avoid speaking to potentially all individuals in a given social setting, which is advantageous if the setting is very large such as a community or city. However, people asked to self-nominate may over or underestimate social influence. Given that no one method is drawback-free, Weimann recommended "a full range of research procedures" (p. 51).

To recruit participants, the present research used a mix of self-designation in relation to identity theory as well as positional, reputational, and key informant strategies. The overall goal was to capture as wide array of perspectives – and identify as wide a pool of knowledge - on Marcellus Shale natural gas drilling as possible, with the realization that such perspectives do not fall neatly into "pro" or "anti" camps; rather, while many people and organizations are supportive of or opposed to gas development, awareness of and concern about different impacts can vary. Furthermore, to rely on one strategy for identifying leaders would leave the study susceptible to inherent drawbacks of that strategy. A multi-faceted approach, on the other hand, would help compensate for the weaknesses of any one technique.

The recruitment process was conducted as follows. To begin, a positional strategy was employed in which local elected officials in the three study counties were contacted through publically available sources such as a county or town government website and asked to

participate. This strategy functioned as a starting point for recruitment, and it is recognized that such individuals may not automatically see themselves as leaders. Second, local print media coverage of Marcellus Shale in the study area was reviewed, with particular attention to stories on community educational forums and public meetings organized by local, state, or federal officials; local colleges/universities; and advocacy organizations. The researcher attended many of these forums and meetings and took notes on who presented and what they discussed. These included a November 2009 public hearings on the SGEIS document in Chenango Bridge in Broome County and Ithaca in Tompkins county and an August 2010 EPA public hearing on an ongoing study of the effects of hydraulic fracturing on drinking water supplies in the city of Binghamton, also in Broome County. Local and state-level elected officials spoke as well as other individuals representing a variety of organizations:

- Local environmental advocacy organizations, many of whom have expressed concern about potential environmental impacts such as contamination of water bodies or supplies;

- Landowner coalitions;

- Entities focused on economic development, such as local Chambers of Commerce;

- Unaffiliated citizens.

A list of these individuals was assembled and, if they resided in the three county study area, were contacted using publically available sources including organizational websites. In some cases, initial contact was made with individuals in positions of authority within an organization – such as a President or other leader - to help establish an initial foothold through which other contacts could be identified (see Anderson & Theodori, 2009). It was also possible, but by no

means assured, that by virtue of being in positions of authority, these individuals would be especially likely to see themselves as opinion leaders regarding Marcellus Shale (Weimann, 1994).

Interview questions focused on the extent which these individuals considered themselves – and where seen by others – as opinion leaders. After each interview, moreover, participants were asked to nominate others with whom the researcher could speak whom they likewise consider knowledgeable, informed, and influential about this issue and/or with whom they have interacted and sought/exchanged information (snowball sampling) (see Scherer & Cho, 2003; Weiss, 1994). Overall, each technique allowed for some 'check' on the other. Self-designation allowed the participant to reflect on his/her level of perceived opinion leadership inclusive or irrespective of their position (i.e., as an elected official). Referrals allowed the researcher to see if a person who may see/not see him/herself as a leader may, in fact, be seen in this capacity by others.

It is recognized, however, that snowball sampling is likely to produce a social network comprised mainly of individuals who may/may not see themselves as opinion leaders. It is important to note, though, that this research did not seek to map the various social networks of opinion leaders and non-leaders that might exist in the context of Marcellus Shale or the characteristics of these relationships. Rather, it sought to study self-reported communication behavior among a sample of perceived leaders identified, using various techniques, and explore the opinion leader identity-behavior link.

Interview Logistics

Interviews lasted between 30 and 60 minutes and took place either over the phone or in person. E-mail was the primary contact method, and a uniform outreach letter (approved, like the larger project, by Cornell's Institutional Review Board) was used. The letter explained the purpose of the study, potential risks and benefits of participation, and the policy on confidentiality, and provided researcher contact information. Informed consent was provided orally. Given the controversial nature of Marcellus Shale, participants may have felt obliged to promote, defend, or attack a particular viewpoint and/or been reluctant to nominate other contacts. For each participant, the protocol emphasized that he or she was "free to answer as many questions as [he or she felt] comfortable;" that the researcher was "here to listen to what [he or she had] to say; there were no right or wrong answers," and that nothing said would be connected with his/her name on any published material."

Interview Questions

Interview questions were derived from research questions proposed at the end of Chapter 2. A full list of interview questions is provided in Appendix 1. Only a brief discussion is provided here. Questions explored identity-related aspects of opinion leadership related to risk information behavior – an objective made difficult by the need to adapt existing quantitative survey measures for more open-ended, qualitative interviews (see Burke & Stets, 2009; Flynn et al., 1996).

- **Participant background information.** Questions focused on how long the participant had resided in the study area; approximately when s/he first became aware of Marcellus Shale; and why s/he cares about it as much as s/he does. Probes explored perceived economic,

environmental, and social impacts of drilling (see Theodori, 2009). It should be noted, however, that these perceptions were tangential to the focus on opinion leadership and communication behavior. The goal was to establish rapport and identify issues about which interviewees could potentially seek and exchange information.

- **Identification as an opinion leader.** The second set of questions touched on the identity-relevant dimensions of being perceived by others and regarding oneself as an opinion leader. Relevant literature on measuring leadership using the self-designation approach was reviewed (Rogers & Cartano, 1962; Weimann, 1994; Weimann et al., 2007), with particular emphasis on being seen by others - and seeing oneself - as a source of information, advice, and/or expertise on Marcellus Shale. Examples included whether and how often people came to the participant wanting to know more about this issue and what they wanted to know about (i.e., specific potential impacts associated with drilling). Probes explored inquiries related to economic, environmental, and social impacts of drilling.

- **Dimensions of the opinion leader identity.** The next group of questions explored the extent to which opinion leadership was a salient identity for the participants. Relevant literature on identity theory was reviewed (Burke & Stets, 2009; Stets & Biga, 2003). The question "why do you think people come to you (why do you see yourself as a resource about Marcellus Shale)" and probes explored whether this identity was tied to group-based dimensions such as being part of a particular organization like a landowner coalition; role-based dimensions such as being a 'citizen;' and/or personality-based identity dimensions such as being the type of person who likes to be knowledgeable about issues like natural gas drilling. In the event a participant mentioned only one particular identity dimension, probes elicited additional

dimensions that may be relevant such as "if you weren't with X organization, do you think people would still see you (would you still see yourself) as a resource?"

Participants were then asked the extent to which being seen by/seeing oneself as a source of information about Marcellus Shale was important to the participant and what it meant to be seen in that light. In the event responses such as "staying informed about Marcellus Shale" were not mentioned, probes explored the extent to which they considered these communication behaviors part of the identity standard or meaning. Questions related to social pressure to remain informed (Griffin et al., 1999) and personal need to be informed were used. Additional probes explored particular groups/individuals whom the participant felt expected him/her to be informed; drilling-related impacts about which s/he perceived the need to be knowledgeable; reasons why participants felt this pressure (tying back to group, role, and personality-based identity dimensions); and whether and, if so, how this pressure differed depending on these dimensions.

The next question set focused on information seeking behaviors – the extent to which they looked for information about Marcellus Shale; about which drilling-related impacts; reasons why participants did so (tying back to identity dimensions); and whether and, if so, how information needs differed depending on these dimensions. Furthermore, questions on information sharing centered on how participants responded to the questions/inquiries received about Marcellus Shale and whether and, if so, how identity dimensions affected this process (i.e., whether they spoke on behalf of a particular group, from their own viewpoint, both, etc).

The final set of questions explored factors that could potentially facilitate or impede the information gathering/sharing process and, by extension, opinion leader identity verification. Participants were asked if they felt that people who reached out to them were satisfied with the

answers provided; whether it was difficult to remain informed about Marcellus Shale; how confident they were that they could find information if they needed it; and how satisfied they were with the information found. Participants were then solicited for additional contacts and de-briefed.

Before ending this section, two points are worth noting. First, this study sought open-ended answers to identity theory concepts that are typically operationalized as part of surveys. Thus, not every identity-related measure was appropriate or adaptable such as asking participants to indicate how prominent the opinion leader identity was using a set scale. Second, it is recognized that being an information resource is one of several dimensions of opinion leadership; others include perceived influence over and serving as a role model for others. However, this study focused on risk information seeking and sharing about Marcellus Shale gas drilling. Focusing on this dimension represented the most appropriate method of investigating these phenomena.

Data Analysis

With participant permission, all but one interview was audio recorded and transcribed to ensure information accuracy; one participant declined to have the conservation taped. Field notes supplemented the transcripts. The qualitative data analysis program Atlas.ti was used to thematically code the transcripts (Charmaz, 2002; Glaser & Strauss, 1967). This process involved several steps.

First, preliminary data analysis took place concurrently with collection, which occurred from July 2009 to February 2010. Specifically, the researcher transcribed 29 interviews almost as soon as they took place; 6 were transcribed by a research consulting firm; and 1 conversation, as

mentioned above, was not recorded. Having the researcher transcribe served two functions: to begin identifying codes and themes in the data that would form the basis of future analysis as well as modify question wording for clarification purposes where appropriate (Charmaz, 2002). For example, a follow-up probe could be used after a particular question that built on a theme identified in past conversations. Moreover, the February 2010 end of data collection was selected to allow sufficient time to conduct additional, more detailed thematic analysis and complete the dissertation writing process. Ideally, interviews cease upon reaching saturation, in which similar themes begin to emerge across conversations. Such saturation did occur for many issues, such as perceived drilling-related impacts and identity-related reasons for seeing oneself/being seen by others as an information resource about Marcellus Shale. At the same time, additional interviews could have taken place to further explore emergent themes. Thus, ultimately, the decision to cease data collection was driven by both theoretical and practical constraints.

Second, upon the conclusion of data collection, detailed thematic analysis was conducted that involved several steps:

- Identifying emergent themes through preliminary analysis (initial, 'open' coding) and expanding on them during later analysis, which is known as more directed or 'focused' coding. This process, Charmaz (2002, p. 676) noted, helps "keep researchers close to their data gathered rather than what they may have previously assumed or wish was the case."

- Organizing and expanding on themes emerging within and a cross interviews into broader categories and codes. This technique facilitated an "issue-focused" analysis (Weiss, 1994, p. 153) that involved presenting findings "about specific issues…events or processes," linking "what the respondent says…to the concepts and categories that will appear in the report" (p.

154), and "using a selected number of the expanding or more analytically interesting codes to knot together larger chunks of data" (Lofland, Snow, Anderson, & Lofland, 2006, p. 201). Analysis moved from a discussion of one issue to another, with connections among issues identified. Furthermore, comparison with other themes as analysis progressed allowed for integration or separation into broader categories or codes.

- Sorting and integrating of categories/codes "into a theoretical framework that specifics causes, conditions, and consequences of the studied processes" (Charmaz, 2002, p. 677; Weiss, 1994). This process was deductive as well as inductive. As Lofland et al. (2006) noted

  Prior familiarity with other potentially relevant bodies of work, theoretical or empirical, is obviously a necessary condition for developing extensions and refinements, but actually making those connections should be triggered by one's empirical observations (p. 195).

In the present research, categories were inspired by the research questions guiding the study. These included references to salience of the opinion leader identity, meanings related to communication behavior, and potential differences in information sought and shared about natural gas drilling impacts depending on the group, role, and personality-based identity dimensions in which this identity emerged. However, as an iterative process, categories, themes, and relationships were allowed to emerge during analysis. For example, one cannot anticipate in advance which opinion leader identity-related dimensions would be mentioned most often or how, or even if, one's information needs would vary depending on these dimensions.

Thematic analysis is not a standardized data analysis technique but a series of strategies that vary depending on the degree to which the researcher becomes "immersed" in the data

(Charmaz, 2002; Lofland et al., 2006). A constructionist approach involves the researcher actively engaging the data to study how participants construct meaning and action. Thus, the data represent the researcher's attempt to tell a story from that person's perspective: a 'co-construction' of the interview. Objectivists view analysis as portraying objective facts about participant realities. The researcher thus "discovers" and describes this reality, and no interpretation on his/her part is required or appropriate. S/he becomes "more…of a conduit for the research process than…a creator of it" (p. 677). Much like the middle ground approach this project takes with semi-structured, in-depth interviews, the data analysis technique used falls in between these two perspectives. On one hand, the goal was to explore themes and categories that represented "realities;" the researcher sought to represent interviewees' perspectives as accurately as possible. On the other hand, participants may not share the same realities, and the researcher, in describing the meaning people give to their communication behavior in the context of Marcellus Shale, arguably becomes immersed in the data by virtue of understanding behavior from that person's perspective.

Data Presentation

Emerging codes and categories identified through various "waves" of analysis were grouped according to particular research questions that, in turn, reflected overarching research goals mentioned in the Introduction chapter. However, it is acknowledged that findings may not readily conform to particular questions but may, in fact, transcend multiple questions or apply to none at all. Therefore, particular attention was paid to findings that spoke to – or warranted discussion beyond – these questions. Furthermore, connections within, between, and among findings were examined and illustrated using interviewee quotes.

Comment on Validity and Reliability of Qualitative Interview Data

Although quantitative and qualitative research both investigate participant perspectives albeit through different methods, the two diverge in how they define and work to ensure data quality – in particular, validity and reliability. Reliability is defined as "the extent to which results are consistent over time [and whether] results can be reproduced under a similar methodology" (Golafshani, 2003, p. 598). Validity is the means to determine "whether the research truly measures that which [it] intended to measure[as well as] how truthful results are" (p. 599). There is no universal agreement among scholars as to (1) whether qualitative research should (or even can) be subject to these considerations or (2), assuming that it can, the extent to which reliability and validity should easily 'carry over' to the qualitative domain.

Some scholars have argued that qualitative research should not be concerned with reliability and validity (Morse, Barrett, Mayan, Olson & Spiers, 2002). Golafshani, 2003) argued that "unlike quantitative researchers who seek causal determination, prediction, and generalization of findings, qualitative researchers seek instead illumination, understanding and extrapolation to similar situations" (p. 600). Measures of data quality from quantitative research are an attempt to standardize a qualitative research domain that thrives, constructionists would argue, on discovering multiple meanings - not one universal truth - and having the researcher and respondent co-create the interview. Such standardization would stifle creativity and defeat the very purpose of the research (Seale, 1999). However, other scholars have argued that qualitative inquiry does indeed use (and need) these concepts. For some, the reason is practicality. Becoming embroiled in philosophical debates over epistemology won't settle the debate, and there is a need to acknowledge the conflict; find a middle ground that recognizes that elusive

nature of standardized criteria for judging quality but accepts that something in the way of concepts and techniques are needed; and get on with research. For others, the reason is concern - that "by refusing to acknowledge the centrality of reliability and validity in qualitative methods, qualitative methodologists have inadvertently fostered the default notion that qualitative research must therefore be unreliable and invalid…[and] unscientific" (Morse et al., 2002, p. 4).

The issue then becomes how to conceptualize and assess validity and reliability in qualitative contexts. Long and Johnson (2000), for example, argued that "nothing is to be gained" by using "alternative terms" that often "prove to be identical" to traditional definitions of the two concepts (p. 30). In other words, the meaning of the concepts should remain unchanged. However, alternative strategies for assessing reliability and validity in the qualitative domain is both necessary and welcome. They suggested dependability as a way to judge reliability - the extent to which (interview) data was gathered in a consistent manner "free from undo variation which unknowingly exerts an effect on the nature of the data" (p. 31; see also Golafshani, 2003; Seale, 1999). A specific tactic for doing so, Morse et al. (2002) and Long and Johnson (2000) suggested, is the peer audit - a process by which the researcher examines data collection, analysis, and presentation methods; opens these methods to external review; and makes changes where appropriate to ensure consistent representation of participant realities. This technique helps ensure that "the investigator remain[s] open, use[s] sensitivity, creativity and insight, and [is] willing to relinquish any ideas that are poorly supported regardless of the excitement and [their] potential" (p. 11). Long and Johnson also used the term stability for reliability, which involves asking identical questions at different times and finding similar responses. A similar technique is equivalence, or the use of alternative question forms designed to elicit similar responses that are 'imbedded' at different points in the conversation.

For validity, Johnson and Long (2000) used a similar definition as for quantitative research: ensuring that the researcher adequately and appropriately represents participant perspectives (see also Weiss, 1994). They also proposed several methods, including member checks – in which respondents have an opportunity to review the data and comment on whether/to what extent their perspectives are properly portrayed - and researcher acknowledgement of and reflection on potential biases. These biases may reflect *a-priori*, theory-informed beliefs about how to analyze the data. On a broader scale, constructivist and positivist researchers disagree on the extent to which such an acknowledgment is even necessary. For the positivists, it certainly is because the goal is to objectively represent participant realities; for the constructivists, it is not, because the goal is to 'co-construct' the interview data along with the respondent (Charmaz, 2002). Lincoln and Guba (1985), by contrast, proposed combining reliability and validity into a single measure of data quality, which they call trustworthiness – whether an observer is convinced that the "research findings are worth paying attention to" (Golafshani, 2003, p. 601). In light of the goals of qualitative research, assessing trustworthiness involves determining whether the realities of study participants are adequately described (validity) and consistently represented across different settings (reliability).

From the perspective of this dissertation, the debate over whether validity and reliability can/should be part of qualitative research – and, if so, how to conceptualize and measure these terms - misses the larger point: the importance of accurately describing participants' realities to the fullest extent possible. A number of the aforementioned techniques were used to assess the quality of the data gathered:

- Member checks - upon completion of a draft summary of interview results, all participants were afforded the opportunity to comment on the extent to which their views were adequately represented (Long & Johnson, 2000; Seale, 1999);

- Data saturation – data collection ceased when themes emerging within and between interviews (and the contacts suggested) became redundant;

- Peer auditing of data collection methods, research questions, analysis methods, and findings so as to minimize researcher bias. Members on the researcher's graduate committee and colleagues who were members of an inter-disciplinary social science research group assisted in this effort.

CHAPTER 4: Findings and Discussion

The preceding chapters have provided a rationale for exploring the role identities, specifically opinion leadership, play in motivating risk information seeking and sharing about impacts associated with proposed natural gas drilling in New York State's Marcellus Shale. Research on identity theory, opinion leadership, and information seeking and sharing were discussed and relevant gaps were identified. To address these gaps, theoretical connections among these areas was presented that, in turn, informed research questions. In addition, the methodological approach of using in-depth interviews was described. Results from these interviews have theoretical implications related to the integration of previously segregated literatures on identity theory, opinion leadership, and communication behavior as well as practical implications for addressing risk communication challenges issues such as natural gas drilling pose. The present chapter explores these results as follows:

- A general overview of the interviews in terms of the number conducted and participant affiliations;

- Interviewee background information and perceptions of drilling impacts;

- Emergent themes related to the relationship among an opinion leader identity, the dimensions to which it is tied, and communication behavior. The research questions served as the organizational structure around which these results are grouped. However, analysis was both inductive and deductive.

Departing from a more traditional approach common to quantitative research, findings are presented along with correlative discussion, drawing on theoretical perspectives outlined in

Chapter 2. In essence, the Results and Discussion sections were combined - a common technique in qualitative research. Regardless if one is a constructionist studying how participants construct meaning, an objectivist discovering 'facts' about participant realities, or someone who embraces a middle-ground approach, the objective remains the same: understanding and explaining meanings people give to their actions in the context in which such actions occur (Becker, 1996). Thus, presentation of emergent themes, categories, and codes should not occur separate from an interpretation of their relevance both to the larger narrative told by participants as well as the study's goals and implications.

Of final note, no interviewee names are used for direct quotes, and affiliations are kept sufficiently broad to protect confidentiality.

General Overview of Interviews

In total, 105 individuals were contacted, and 42 responded to the outreach solicitation. The remaining 63 did not reply. While the exact reason(s) are unknown, it is possible that these individuals did not have the interest and/or time to participate. Moreover, there was insufficient time and resources to conduct a non-response follow-up. It was also inappropriate to do so with a truncated version of the interview protocol, a common technique in quantitative survey research, because only the full protocol would yield the rich, in-depth data needed.

Of the 42 respondents, 36 agreed to an interview, and 6 declined. The most common reason for declining was lack of time. Only one individual declined because s/he did not see him/herself as an information resource. A few individuals also raised concerns about the research purpose. One person was especially wary of scholars who, in his/her view, were taking advantage of the

gas drilling situation to secure external funding, especially from industry, and further their own careers. S/he was also wary of universities that were not doing an adequate job educating citizens about potential negative impacts of shale gas development. Finally, s/he was concerned that study results could be used by the natural gas industry to thwart the efforts of anti-drilling activists. In response to these concerns, the researcher explained the study purpose, disclosed the funding source, and explained potential theoretical and practical implications that did not involve sharing results with industry sources. This correspondence helped clarify these concerns, but the respondent nevertheless declined participation.

Of the 36 interviews, 10 were done in person and 26 over the phone. The average interview time was 38 minutes and ranged from 17 minutes to 70 minutes. In recruiting participants, the goal was to capture as wide array of perspectives – and identify as wide a pool of knowledge - on Marcellus Shale natural gas drilling as possible. As a result, interviewees represented a diverse array of organizations from Broome, Tompkins, and Tioga Counties, including

- Local elected officials - 7 elected bodies represented; n=18 participants;

- Landowner coalition representatives - 5 coalitions represented; n=11 participants;

- Town and county-level gas drilling task force members - 2 bodies represented; n=5 participants;

- University researchers - n=3 participants;

- Members of grassroots advocacy organizations - n=3 participants.

While an appreciable degree of variety was achieved in terms of affiliation, there was less of a balance in terms of number of participants within each category. One potential explanation is that many interviewees held multiple affiliations, such as an elected official being a member of a landowner coalition. As will be shown in later sections of this chapter, multiple affiliations provide insight into the role of identity dimension in shaping communication behavior.

<div align="center">Interviewee Background and Perceptions of Drilling Impacts</div>

Background Information

Many interviewees had resided in the study area for considerable lengths of time, with several indicating they were life residents. Not everyone provided an actual number, so calculating an average is not possible. However, for many interviewees, the length was on the order of several decades. In addition, when asked how they first became aware of natural gas drilling in the Marcellus Shale, they provided a range of responses. For some, it was direct experience in actually being contacted and asked to lease their land for drilling:

> I was approached about 6 years ago about leasing my land. At that point…they really hadn't developed the technique to do [drilling] economically…so I leased my land then, and I have been paying attention to it…I've been really involved in the subject since then.

Others commented on more indirect experiences, such as hearing about it through the mass media, conversations with others individuals, or others means:

> I think I became aware of it in 2008. I have a friend, we talk about finances a lot, and they started asking me, "hey…what's [going on] in Pennsylvania, there's gas [drilling] down there?"…that's the first time I heard the word "Marcellus."

In addition, for some individuals, the issue didn't become salient until conversations about forming a local landowner coalition began to take place:

I got wind of a meeting that was being held not very far from my house…so I said, "You know what? I want to go find out about what this is." So I went down to the meeting, and that's where I sort of had a much better understanding of what it was…the person speaking there had some experience out West with drilling and knew a little more about it, and he was talking about it coming to this area and asking people to help sign up…to form a coalition.

Perceptions of Drilling Impacts

Interviewees were asked why they cared about Marcellus Shale natural gas drilling as much as they did. In response, they discussed a number of potential impacts, both positive and negative. Some comments reflected a general view that drilling would mark a significant change in the area. Some even considered it the biggest and most intensive activity ever to occur in the area. However, far more honed in on specific impacts. Economic issues were particularly salient, and an interesting tension emerged involving both positive and negative aspects. Elected officials and members of landowner coalitions were particularly keen on potential economic opportunities. These included the creation new jobs in the local economy; increased incomes of landowners who lease their land; increased revenues and tax bases for local communities; and expanded opportunities for businesses supplying materials to the drilling companies. In discussing these aspects, a larger narrative emerged of a declining rural economy it need of a financial boost, as one elected official noted:

I want to say [that drilling is] a catalyst to economic development and job creation…[The area has] struggled for a long time, economically, and I think this is a way, not to rely on

something long term, but I think it's a good way…if it's here and it's going to happen, it's a good way to jump-start our economy [and] jumpstart our economic development and job development for the next fifty years.

Not all economic impacts were discussed in such a positive light. Interviewees were cognizant of potential drawbacks related to short term versus long-term economic gains. Concerns centered on increased real estate values associated with gas development and associated increases in property taxes, which can be a burden on individuals, families, and businesses. Additional examples included the potential need to expand public services to deal with the influx of drilling workers and other groups. An accompanying concern was that housing prices could spike with increasing demand. Others, especially members of landowner coalitions, were cognizant of challenges associated with a potentially large influx of royalty payments. As one member noted:

If they drill and find gas and we start getting royalties, how are we going to handle that money? We're trying to come up with a way with setting this up before it happens instead of arguing about it, because it has the potential to be very disruptive when you've got 25 members and we've got this money coming in every month. How are we going to use it?

Another interviewee took a broader and arguably more ominous perspective on "boom and bust" cycles of energy development in that economic gain may not last as long as desired:

Undoubtedly, there [are] some economic gains made by every community, but it then goes away after 4 or 5 years when the big number of people who are actually working the wells, the drillers, leave, and what's left over is a few people working the wellheads and working

for the gas companies…so the economic boom kind of…ends for places…[it's] short term versus long-term loss…..

Water-related impacts seemed to cut across different identity dimensions, including environmental quality, public health, and infrastructure. Water use was tied to impacts on local infrastructure, especially roads. Many interviewees believed that local roads simply cannot handle the sheer number and weight of trucks and other vehicles needed for the drilling process in terms of transporting water to the drill site and hauling away wastewater. As one interviewee noted:

I'm concerned about the roads and the infrastructure because you're talking about country roads….the roads that I live on were seasonal until 1963, and then they opened it up…you're talking about cars and SUVs, you're not talking about water tankers, etc.…..driving on these roads…I know that you would not take your drilling equipment that's so extremely expensive on a road that was going to collapse, that you would build the road up before you did that….

Interviewees also discussed potential water contamination associated with the drilling process, specifically, gas migration, and disposal and handling of wastewater. These concerns touched on public health/environmental quality and supply-related issues, in terms of people's ability to obtain clean drinking water. Elected officials were particularly sensitive to these impacts, given familiarity with how their town, city, county, or other area they represented obtained water and how decisions related to water use and management could affect these supplies. As one official noted:

I'm very concerned about water [impacts], mostly…how the [drilling] liquid will be disposed of, and I still have yet to be convinced that there isn't some sort of…migration of the gas…there seems to be some sort of connection with….the contamination of drinking water…it seems a little curious that when drilling seems to start, then people either start paying attention to their water or something really is connected….

Environmental impacts related to aesthetics of the area were also mentioned. Like the aforementioned economic considerations, an interesting tension emerged. On one hand, many interviewees were aware of how drilling could damage the beauty of the area in light of concerns over water, noise, air pollution, and other issues. One interviewee summed up such concerns:

I'm a huge kind of nature [person], and I love the [nearby] lake and…when you [talk] about the [gas drilling] chemicals that [might] affect the environment…[for this area, the environment is] the greatest resource for tourism and quality of life for people…[drilling] scares me….

On the other hand, some placed those concerns in the context of a broader philosophy that drilling could – if not must - take place in an environmentally responsible and sensitive way. Some mentioned specific policies that could help accomplish this goal, including drilling well pad placement. With one Marcellus Shale well pad potentially every 640 acres (one square mile), and with multiple wells originating on one pad, the potential for widespread surface disturbance is comparatively less than if the pads were closer together (Sumi, 2008). In addition, horizontal drilling enables each well to tap a comparatively larger subterranean area versus traditional horizontal wells. As one interviewee observed

If you go out in the western part of the United States, you'll find places where the well spacing units are as small as 20 acres. That's means they've got a well pad every 20 acres. You've got access roads connecting all those well pads together. You've got…pipelines connecting all those well pads together, and if that happened in an area like the Northeast, which is heavily forested, it would just make a mess…when they started talking about 640 acre units with horizontal drilling and stuff like that, I was 100% for it because I've convinced - just because of experience - that the environmental impacts are all associated with surface disturbance…

Social and community-related issues were also mentioned: public safety, noise, and quality of life, including concerns about water and infrastructure (i.e., roads, housing, etc). Others pointed to a more abstract sense that community social structure could be affected. Some interviewees were nervous about their communities becoming less safe, while others were concerned about how new arrivals in communities could upset political power dynamics, including the balance of liberal versus conservative ideologies. One interview summarized these sentiments:

Why did we move to…the Finger Lakes to begin with? One of the big reasons was for beauty [and] getting away from the big cities, so why would I want some [sort of] economic development that could compromise….the very things that make this place unique and great?…..I think that our communities….a lot of our small towns in Upstate New York…[are] safe communities, and I wonder what happens when you get a larger number of individuals that are coming here, mostly men….who are younger in age, that work hard 7

days a week and then have…basically have 7 days of [off] time….how does that affect the safety of our community?

<p style="text-align:center">Emergent Themes: Opinion Leader Identity and Communication Behavior</p>

Having provided an overview of participant views on impacts related to natural gas drilling in the Marcellus Shale, this chapter turns to the relationship among opinion leader identity; the role, group, and personality-based dimensions in which it emerges; and communication behavior about potential impacts.

Interviewees were first asked the extent to which they saw themselves – and were seen by others – as sources of information, advice, and/or expertise on Marcellus Shale. The majority of interviewees frequently received inquiries via telephone, e-mail, in person or other means. These interactions also extended beyond requests for information to include receiving information from these contacts and having their views and opinions on natural gas drilling solicited; at times, the inquirers attempted to persuade interviewees to adopt particular viewpoints. This finding is consistent with previous research. Opinion leaders are not just sources of information but are, themselves, influenced by others by virtue of these interactions (Weimann et al., 2007). Measures of self-designated opinion leadership bear this out, with questions such as the extent to which people talk to others about an issue, try to persuade others, offer advice, and have their views solicited (Flynn et al., 1996).

Overall, many interviewees saw themselves as information resources and felt that others saw them in this capacity as well. Many interviewees considered themselves able to answer basic drilling-related questions (what one person labeled "Marcellus Shale 101"); to direct inquirers to

other, more knowledgeable individuals where necessary; and to help people ask the right questions so they can find their own answers. One interviewee, for example, considered him/herself a "great resource" because s/he could help people "ask the right questions" and "see the other side and realize that there's a lot more depth to [Marcellus Shale] than they think." This theme – of being an information bridge or "broker" (Burt, 1999; Roch, 2005) – will be revisited later. However, there was also some variability in these responses. Some interviewees, while considering themselves more informed than the "average person" and sufficiently knowledgeable to make their own decisions, did not see themselves as a resource for other people and/or did not think they were seen by others in this capacity. Some believed that other people were more knowledgeable. References to 'insiders' were made, such as people employed by the natural gas industry. One interviewee gave a rather blunt assessment: "In our community, [there are] about 60 people I would put in front of me before I would say 'come talk to me.'"

RQ 1: Opinion Leader Identity Dimension(s)

The first research question explored the group, role, and personality-based identity dimension(s) in which an opinion leader identity potentially emerges regarding natural gas drilling in the Marcellus Shale. Drawing on the definition of identities as shared social meaning that define what it means for people to be who they are as individuals, role occupants, and group members (Burke, 2004), it was argued that opinion leadership functions as a "master" identity because it is activated and relevant across these three identity dimensions. Interestingly, interviewees also commented on a number of topics about which they received questions that appeared to transcend identity-related dimensions; that is, there was no indication that these issues emerged specifically because of the identity dimensions in which interviewees saw

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themselves and/or were seen by others as information resources. These issues included impacts related to environment, water, infrastructure (especially roads), and quality of life (especially housing) as well as general questions about the hydraulic fracturing process. Many of these inquiries reflected interviewee concerns discussed earlier in this chapter. For example, one interviewee commented that the water-related issues about which s/he received questions spanned "the entire gamut of the issue…where the water will come from, how the water will be transported, how will the wastewater will be managed, [and] how will we both avoid possible contamination to the aquifer and respond in the event there is damage." A member of landowner coalition likewise observed that "when we first started it was really about the water…what do you do with the water…will the surface get contaminated? Will our drinking wells get contaminated? That was the first big deal." In terms of more general inquiries related the gas drilling process, one interviewee observed that questions were "simple" and included "what's the drilling process? What is horizontal drilling? What's different about vertical [drilling]?"

However, identity-related dimensions did emerge that shaped how interviewees saw themselves/were seen by others as information resources; types of questions they received about gas drilling; and the types of people who came to them with these questions. Being part of a landowner coalition was referenced quite often as one such situation. One interviewee, for example, mentioned membership on a coalition Steering Committee as a key reason why s/he considered him/herself an information resource about gas drilling:

The only I reason I…might see myself as a go-to person [is] because my phone rings off the hook and my e-mail is always full…people I don't know calling me because they were

referred to me by somebody else…it's due to the fact that I'm on a Steering Committee of a landowner coalition.

Interviewees also received inquiries about certain drilling-related issues by virtue of their involvement in these entities. For example, one member commented on how New York State environmental officials from the DEC and representatives of gas companies reached out to him/her because they "want to know what the people are saying" about drilling and believed that coalitions "have a pulse on what's going on, and we do. We hear it all." Furthermore, interviewees cited issues about which they received questions within this identity dimension. Many received inquiries from other coalition members about potential economic impacts, especially potential royalty payments if they were to sign leases. Moreover, as one member noted, one of the first issues raised by members was why "landmen," who are representatives of gas companies charged with negotiating leases, were suddenly appearing in the area.

Being an elected official was another setting in which interviewees saw themselves and/or were seen by others as information resources. Many such interviewees received a large amount of inquiries, with many commenting that Marcellus Shale constituted a significant portion of their "constituency time." One interviewee described it as the "second biggest issue that's ever been talked about" after the State budget. In addition, many officials felt that this position provided an opportunity to (1) be viewed as someone who has information about gas drilling that others may not have, (2) have their name "out there" and well-known in the community, and (3) be seen as someone with decision-making authority over local matters who should thus be kept up to speed on this issue, which was why many commented that people sought them out to give, as well as ask for, information. Many officials felt that citizens in the area were well-informed

about Marcellus Shale and have worked to gather as much information as possible. Thus, it was not surprising that they sought out their elected officials to keep those officials up to speed. As one interviewee noted:

People are always sharing different websites with me…I go to forums. I was at a forum last night in Pennsylvania that's put on by a group, [and people there] wanted to talk about three issues – one is the boomtown effect and what they means. They wanted to talk about housing, and they wanted to talk about business diversity. I'm constantly attending forums, meetings, seminars…people [also] send me articles.

Another interviewee observed that

[People] come to me and basically say, 'this is what I know'…most people who come to anyone who is elected…have their mind made up, and they are trying to influence that elected official…so, there are people who have come to me on both sides who are every educated, very fact-based, who have said, "this is the deal…and this is a fact and truth [about gas drilling]."

Many interviewees embraced opportunities to receive and provide information by virtue of being an elected official. One individual, for example, noted that if s/he were not in that position, the desire to understand Marcellus Shale would be as strong, but "the opportunities" to do so "might be less available." For at least one interviewee, however, this association seemed a bit strange; people may automatically see officials as authority figures irrespective of their familiarity with and knowledge of an issue. On the plus side, however, it provides an impetus to become knowledgeable. In addition, elected officials appeared to have a very broad list of

inquirers and topics of interest, including constituents asking questions about drilling and what the particular locality could/should do to prepare for it or perhaps even stop it altogether; individual landowners and members of landowner coalitions asking about the potential for job creation as a result of gas development; and representatives of natural gas companies interested in gauging public sentiment about drilling.

When asked why these affiliations helped them see themselves and/or be seen by others as information resources, interviewees focused on opportunities to form interpersonal connections, which have served to increase familiarity with and knowledge of Marcellus Shale. Opinion leaders, research suggests, take advantage of their central, strategic position within social networks to communicate with and potentially influence the opinions of those with whom they interact (Roch, 2005; Weimann et al., 2007). Such connections, moreover, speak to identity commitment: advantages of occupying a particular identity that allow an individual to maintain a favorable balance between standards and social appraisals of meaning (Burke & Reitzes, 1991). Aspects of commitment include the amount and strength of social ties/interactions that a particular identity facilitates.

Aside from landowner coalition members and elected officials, some interviewees felt that a particular job they held was the reason they saw themselves and/or were seen by others as information resources. For example, one interviewee involved with local economic development and planning noted that "because of my job…people see me at a lot of these meetings that have to do with gas drilling because I think it's important that I be there and that I educate myself…I'm a face they see around, and [they] know that I'm involved in it and because of that, they reach out to me." Within that capacity, s/he reported receiving contacts from business

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owners in the area about "how they can take advantage of the gas play here…when it come [to] their business growing…[and] diversifying".

In sum, for many interviewees, being an elected official, landowner coalition member, and other affiliations were important to their emergence as an opinion leader. To what extent do these affiliations represent role and/or group-based opinion leader identity dimensions? For example, is coalition membership an example of leadership tied to a role-based dimension in terms of being a member; a group-based dimension that reflects involvement in an organization; or both? This question captures a larger debate on similarities among and differences between these identity types. According to Burke (2004), each is defined according to "people's locations with the overall social structure" (p. 9). As a result, each one ties people to that structure in different ways, and the verification process – while operating under the same general parameters (Stets & Biga, 2003) – is somewhat different. Role-based identities are defined by culture, and the "meanings and expectations attached to these roles become part of the occupant's role identity and serve as the standards guiding the verification process" (Burke, 2004, p. 9). One seeks verification based on one's performance in that role (Burke & Reitzes, 1991). Examples of roles include student, spouse, and worker. Social identities are also defined by culture, but the meanings and expectations are applied to one's identity within social groups. In achieving verification, one desires to receive "recognition, approval, and acceptance" as being like group members and, in the process, achieve shared meaning (Burke & Stets, 2009; p. 9). One seeks validation of who one is (a group member), not what one does (a role occupant). Examples of social identities include being an American and female.

Overall, role and social identities differ in that "they reference the self in terms of *me* and *we*, respectively" (Burke & Stets, 2009, p. 121; emphasis original). However, the distinction is not always clear-cut. For example, roles are embedded in groups: "having a role identity…provides a social identity in terms of the group or organization in which a role is created" (p. 122). Husband and wife roles are enacted within a family. Employer and worker roles are embedded within an organization. Gender has been treated both as a social (Burke, 2004) and role identity (Stets & Biga, 2003). In many cases, moreover, individuals occupy role and social identities simultaneously, although activation of one does not automatically activate the other. If a student role becomes salient, it does not necessarily mean that a student social identity will follow even if the former is embedded in a school 'group'. Burke and Stets (2009) therefore concluded that "both can be individual or collective identities…we [should] draw a distinction between the psychological state that is activated (a *me* or *we*) and the social functions it provides (an ego function that satisfies needs of the self or inter/intra-group function that satisfies the needs of the group" (p. 122; emphasis original).

From the perspective of this research, coalition membership could be both a role-based opinion leader identity dimension, especially if one performs a specific function like serving on a Steering Committee, and group-based identity dimension, in which similarity with other members is emphasized. Similarly, being an elected official is potentially both role-based - a job one performs in the community - as well as group-based in terms of being part of an elected body. Interviewees did not make such a distinction, however, and what is important is that both identity dimensions played an important part in shaping the opinion leader identity – in particular, types of questions interviewees received about natural gas drilling impacts and types of inquirers who sought them out. Research Questions 2 and 3, moreover, elucidate potential

differences in role and group-based identity dimension meaning in terms of drilling-related impacts about which leaders feel personal/social pressure to be informed and seek/share information. Specifically, these dimensions involve different perceptions of referent groups seen as holding these expectations as well as their information needs.

Finally, interviewees not only mentioned role-based or group-based identity dimensions. They also cited personality-based reasons –seeing themselves as possessing certain unique traits or characteristics. Based on the person identity concept (Burke, 2004), this opinion leader identity dimension serves to distinguish individuals as unique individual with unique characteristics. Interviewees commented on being well-known in their communities as someone whom others can consult for information about a variety of issues; Marcellus Shale is no different. Others reflected on being the type of people who are knowledgeable, informed, dedicated to asking questions about gas drilling and finding answers, and who respond to inquiries in a quick and truthful fashion. As one interviewee noted: "I do what I do because it's the kind of person that I am." Moreover, this personality dimension also overlapped with being an elected official and landowner coalition member. For one elected official, for example, even though s/he saw him/herself as occupying that position, it was the fact that s/he was (in his/her view) known as "someone that [people] can go to and trust" that people came to him/her with drilling-related questions.

RQ 2: *Opinion Leader Identity Dimension and Meaning*

The second research question explored whether and, if so, how, an opinion leader identity, emerging in group, role, and personality-based identity dimensions, shapes identity meaning in terms of gas drilling-related impacts about which people perceive social and personal pressure to

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remain informed as well as perceptions of referent groups believed to hold these expectations. Such pressure, it is argued, is an identity input - a personal expectation of conduct. To tap into these meanings, interviewees were asked an open-ended question: what it meant for them to be seen by others (and see themselves) as information resources about Marcellus Shale. Probes addressing social and personal pressure to remain informed were used when appropriate. These included particular groups that expected them to remain informed; drilling-related impacts about which they perceived such pressure; and reasons why this was the case, relating back to the aforementioned identity dimensions. This approach was different than previous identity theory research, in which respondents rate meaning using semantic differential scales, such as the extent being a student involves being 'party going' or 'studious'. For this study, the nature of the opinion leader identity meaning as it relates to communication behavior was not known *a-priori*. Thus, open-ended interview questions were most appropriate.

Before discussing identity meaning as it relates to personal/social pressure to be informed, this section comments on other dimensions of identity meaning that emerged that appeared to transcend identity dimensions. For some interviews, this identity engendered a certain level of frustration. One interviewee, for example, expressed a desire to "step away for a while" and focus on his/her personal life. At the same time, however, s/he accepted that being in the "public face" was part of what it meant to be a resource. Similarly, some commented on feeling "burned out." Specific concerns included: not feeling they had any answers to give people who might seek them out; perceiving information as uncertain and complex; and difficulty assessing the quality of the information encountered. These sentiments arguably speak to resources one uses to verify the opinion leader identity as well as social appraisals of identity meaning tied to

outcomes of communication behavior. The section corresponding to research question 4 will further discuss these findings.

Interviewees also described a certain degree of modesty associated with being seen as - and/or seeing themselves - as information resources about Marcellus Shale. This modesty reflected a desire to know more about Marcellus Shale and acknowledge the limitations of their expertise. A member of a landowner coalition summarized this sentiment well:

I don't look lofty at myself. I kind of humble myself…I'm a humble guy, and I feel a tremendous responsibility for people. Am I smart? No, probably not. But I know where to put my notes and find stuff to get people. I have met a lot of smart and gifted people who have helped me…I still feel quite paled in comparison to others, and that's what motivates me to keep going. I have so many questions…

For some interviewees, being an information resource entailed a sense of flattery –the opportunity to learn more about Marcellus Shale – as well as respect. As one interviewee observed:

It's good [to be seen as a resource]…I love that I'm offered so many opportunities to learn new things. I learn about geology. I learn about science…Before [Marcellus Shale], who was interested in water moving through fault lines? I like learning about new things. I like tying some of the old things that I already know into [Marcellus Shale]…[a] knowledge base that I've had to learn from square one…it fits the needs that I have…for intellectual growth.

For some interviewees, being an information resource meant seeing themselves as 'bridges': helping connect people to other people or resources that can answer questions about gas drilling.

One interviewee, for example, stated that s/he "would [not] be the end point of [peoples' information] seeking;" rather, s/he would "direct them [to] who could answer their questions." S/he "[understands] quite a bit about what's going on here [with drilling]" and that s/he "could give them a pretty good overview, but as far as details go, I would refer them on [to other sources]." Another interviewee similarly remarked that being a resource "is more educational in the sense of giving them access to information. I may not give [people] the information, but I tell them where to get it, and…if they're not too lazy, that's what they'll do."

Other interviewees, moreover, considered an information bridge part of the identity-related dimension in which they saw themselves and/or were seen by others as information resources. One interviewee commented on being a bridge by virtue of being an elected official, which was an affiliation that the previous section suggested could be either/both a role and group-based opinion leader identity dimension. Due to interpersonal connections with other leaders and advocates for and against drilling, s/he felt that "people from both sides…come to me because they feel I can reach out [and] get them together for some good discussion [on this issue]." Another interviewee explained how his/her position with a local college/university put him/her in the position of being a bridge:

> It's part of how my job is defined…we consider ourselves a node into the [college/university]… we advertise …to at least contact us if you don't know where else to start [looking for information about Marcellus Shale], so part of my job is to really be set up to help people navigate, find resources, and find people.

The salience of information bridge as an identity-related meaning speaks to research that has viewed opinion leadership not only as a function of personal attributes or what leaders do, but

who leaders know – what Weimann et al. (2007) termed their "strategic location in the social network" (p. 176). By virtue of being centrally located in social networks, leaders are able to communicate with and potentially influence the opinions of those with whom they interact (Roch, 2005). Burt (1999) went further and suggested that they are, in fact, opinion brokers who 'carry' information between social groups that may otherwise have little or no contact; in the process, they facilitate information exchange that would otherwise not have occurred. Thus, "opinion leaders gain influence not only because they have contacts with members outside the group but because they possess contacts that other group members *lack* (Roch, 2005, p. 113; emphasis original).

This section now turns to meaning of the opinion leader identity as it relates to social and personal pressure to remain informed about potential impacts associated with natural gas drilling in the Marcellus Shale. Social pressure is discussed first. Interviewees perceived a strong social pressure to remain informed about Marcellus Shale in general and, in the case of some interviewees, particular facets. Some issues about which they perceived this pressure seemed to transcend identity dimensions. These issues included potential land use and other environmental impacts; water use and contamination; impact on roads; composition and health effects of chemicals used in the hydraulic fracturing process; and local and state government policies toward gas drilling. A minority of interviewees, however, did not perceive such pressure; in their view, people reaching out to them would be more likely to give them information, volunteer their opinion on gas development, and try to convince them to adopt a particular perspective than to ask for information that would trigger a social expectation to be knowledgeable.

Group, role, and personality-based identity dimensions played a role in shaping these expectations, in terms of reasons interviewees felt pressure to remain up to speed, from whom, and about what issues. Occupying the position of an elected official was one example, with expectations centering not so much on specific drilling-related issues but rather drilling in general. One interviewee remarked that "part of being an elected official is you have a duty to go the extra mile and be more informed than the average person on any issue whatsoever that comes across your desk," including gas development. Other interviewees commented that this expectation was tied to the responsibilities of being an official – that, in the words of one interviewee, "if it were to come down to some sort of vote or some sort of political influence…then I'm much more in a position [to be influential] than…a general layperson [or] a general citizen." Within this identity dimension, the community at large and constituents emerged as two entities that expected them to remain informed, with one interviewee stating that "when a constituent calls you and says, 'what's going on with gas drilling,' the last thing they want to hear is 'I don't know.'" In terms of specific issues about which they considered it their responsibility to remain informed, policy-related dimensions such as road use agreements and zoning regulations were mentioned often, with many commenting that they dealt with such issues frequently because of their decision-making duties.

Being part of a landowner coalition was another situation that informed social expectations to be informed, with coalition members being the key referent group. Issues about which interviewees perceived pressure as a result of this position included economic considerations (i.e., protecting the value of land, negotiating fair leases for landowners, and the potential for gas development to revitalize a struggling economy in the area) and government policies toward gas development. For example, one interviewee mentioned that because s/he was a member of a

coalition's political lobbying committee, it was his/her responsibility to keep track of the latest developments in regard to potential regulations. Moreover, several interviewees discussed how this expectation made them feel proud to assist other people in becoming more informed about gas drilling: a sentiment captured by one interviewee who believed that it "serves to encourage me that people…even if they don't come to [coalition] meetings, there are a lot of people who care…it helps me feel as though I'm doing this on behalf of other people who are in the shadows…I'm representing way more than just myself."

In addition, interviewees commented on other affiliations from which they felt social pressure to remain informed about gas drilling. For example, a member of a local task force observed that because s/he was seen as "the gas drilling [person]" on an elected body of which s/he was also a member, s/he was expected to remain knowledgeable about issues such as community preparedness initiatives because other members of that body "know [that I] have time and [I have] been looking at [drilling] for a long time…so I fulfill that role."

As mentioned earlier in this chapter, the distinction between role and social identity dimensions of opinion leadership – manifested in being an elected official or a member of a landowner coalition – is important when it comes to understanding meaning related to communication behavior about drilling-related impacts. Roles can be embedded within groups, and each can be activated independent of the other (Burke & Stets, 2009). Most elected officials used that particular term rather than other designations such as "member of an elected body". Most landowner coalition members, by contrast, referenced involvement in that particular organization. At the same time, both positions are tied to involvement with specific entities, and it was not clear that referencing that entity (or not) represented a deliberate categorization such

as role versus group or simply the easiest way to describe oneself to others. What is nonetheless important is that these identity dimensions, irrespective of being role or group-based, played a role in shaping expectations to be informed about gas drilling impacts, in terms of reasons interviewees felt pressure to remain up to speed, from whom, and about what issues. The sections that follow explore whether this pressure and the nature (i.e., size) of referent groups perceived to exert it may differ between role and group-based identity dimensions.

Interviewees likewise felt personal pressure to remain informed about Marcellus Shale in general and, in the case of some interviewees, particular facets. As was the case for social pressure, there were certain issues that appeared to transcend identity-related dimensions, including drilling-related policies on the local and state government level. This finding make sense, as gas drilling's various facets, ranging from road use agreements to drilling regulations and permitting, would interest individuals from diverse backgrounds and with various stakes in gas drilling, including elected officials, landowner coalition members, and others. At the same time, personal pressure also applied to certain group, role, and personality-based opinion leader identity dimensions. Elected officials, for example, concentrated heavily on impacts on local communities related to infrastructure, especially roads, as they felt that these issues were under their control as policy-makers. Many also felt that this pressure was simply part of their jobs. One official, for example, was particularly keen on becoming/remaining informed about "how [drilling] affects local areas…the infrastructure that [is] needed [and] the economic boom which will [lead] to economic development" – issues about which s/he felt s/he had control as a policymaker. Elected officials also cited opportunities to become more informed because of interpersonal connections made as an elected representative, which speaks to the concept of identity commitment mentioned earlier. However, no interviewees mentioned membership in a

landowner coalition as an identity dimension in which they perceived personal pressure to remain informed.

Drawing on earlier discussion on similarities among and differences between group and role-based identity dimensions, it is possible that role-based dimensions engender both social and personal attributes. The focus is not on achieving and maintaining similarity with group members in terms of meaning but on enacting role-related standards, which involves an individual as a unique role occupant and allows for a certain degree of idiosyncratic control over role meaning. At the same time, however, roles are also embedded in social groups and are defined, in part, by culture. As Burke and Stets (2009) noted, "The meanings in role identities are derived partly from culture and partly from individuals' distinctive interpretation of the role" (p. 115). To the extent being an elected official can be considered a role-based identity dimension, it can reflect personal expectations tied to that role as well as expectations of others, such as members of groups with whom one interacts in that capacity. Indeed, the aforementioned results pointed to elected official engaging with members of landowner coalitions, other elected bodies, and other entities in the course of receiving inquiries about potential natural gas drilling impacts. Thus, there can be issues about which officials wish to remain knowledgeable by virtue of their intrinsic interest within that role identity dimension as well as by virtue of social expectations from constituents and other referent groups.

Aside from group and role-based identity dimensions, interviewees also commented on how personal characteristics – the essence of the personality-based opinion leader identity dimension - shaped a personal need to be informed. For example, one member of a landowner coalition did not consider his/her involvement with this organization to be the reason for his/her desire to

remain informed about gas drilling; rather, s/he considered him/herself the type of person who wants to remain knowledgeable about what's going on in the surrounding community: "I always want [as much] information I can get about everything. I'm one of those people…I'm the person in the crowed [that when the question is asked] 'are there any more questions,' and I'll say, 'yeah, I have one,' people go, 'oh no…'"

RQ 3: Opinion Leader Identity Dimensions and Communication Behavior

Research question 3 asked whether and, if so how, the meaning of the opinion leader identity, operating in role, group, and personality-based identity dimensions, informs the types of information about particular impacts that individuals search for and share. It is argued that this meaning reflects social and personal pressure to remain informed about particular drilling-related impacts as well as perceptions of referent groups believed to hold these expectations.

Most interviewees spent considerable amounts of time seeking drilling-related information. For some, seeking was especially pronounced when they first heard about the issue, but the motivation for doing so has lessened over time as they have become more familiar with it. Gathering information in an effort to fill a perceived knowledge need is, of course, a well-known tenet in communication research (Griffin et al., 1999; Wilson, 1999). Moreover, interviewees also commented on not needing to seek as much because of ease with which they encounter information without having to look for it; one interviewee, for example, stated that "you get information" about drilling "whether you want it or not". This finding speaks to literature on information scanning: "information acquisition that occurs within routine patterns of exposure to mediated and interpersonal sources that can be recalled with a minimal prompt" (Niederdeppe et al., 2007, p. 155). In other words, it is a function of habitual, incidental exposure to messages

"that occurs within normal patterns of behavior", not a concerted effort to acquire information (p. 155). Even if not actively sought, information can still be acquired and factored into decision-making (Berger, 2002; Case, 2002). Opinion leaders may find themselves in such a position by serving as bridges between social networks and groups (Roch, 2005).

Interviewees emphasized interpersonal and mass media sources, especially newspaper and the Internet, as primary channels through which they sought information. The emphasis on interpersonal sources, in particular, may reflect the importance of identity commitment in helping one form social connections within an identity. Furthermore, as was the case for identity-related meaning, several issues about which individuals looked for information appeared to transcend identity dimensions, as it was mentioned nearly by all interviewees. These issues included basic drilling-related information (what is horizontal drilling? What is hydraulic fracturing?), as one interviewee stated:

I'll seek out [information about] areas that have been involved in horizontal drilling….even though it's been done for many years in other states, it's never been done here in New York. That's [when] I wanted to say, 'okay, horizontal fracturing. I've never heard of that. What does it mean, and what does it involve?'…so you go…seek answers…

Other cross-cutting issues included potential drilling regulations, with several interviewees mentioning reviewing draft environmental regulations issued by the DEC; economic issues, infrastructure issues such as housing availability and road quality; and environmental and land use impacts, including water quality considerations. Thus, in considering issues about which interviewees sought information, perceived a need to remain informed, and were concerned,

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there was considerable overlap in terms of economic, environment, and infrastructure impacts as well as drilling-related government policy.

As was the case for seeing oneself and being seen by others as an information resource as well as perceived social/personal pressure to remain informed about potential gas drilling-related impacts, being an elected official was an important identity dimension in which interviewees sought information. Interpersonal connections formed by virtue of serving in that capacity provided the motivation as well as means for gathering drilling-related information. As one official remarked

> If I wasn't [an elected official], I definitely wouldn't spend time [looking for information]…it's just…the conversations I have just on a business basis with the [elected body], that's when you feel a need to make sure you have that information [about drilling] so you're not left out of those conversations, and if I wasn't involved [with that body]…it wouldn't be as important...to have that information.

Other officials commented on seeking information because of the obligation to remain informed on behalf of those whom they represent (see discussion on RQ 2):

I wouldn't spend nearly as much time [looking for GD information if I wasn't an elected official] because I have a responsibility to represent an area, and this is a local issue that really affects the health and safety and quality of life for people. I feel that I have a greater responsibility to make [gas drilling] a top priority.

For some elected officials, information seeking can take place in spurts: for example, in advance of an elected body deliberating and voting on a drilling-related issue such as whether to

lease land owned by a local government for drilling. In the interim, they rely on a more scanning-based approach. One official, for example, commented on how s/he felt saturated with information and, as a result, "I go off on just what I [hear] from people at this point, and then when I have big votes [to cast], I just do a lot more research."

Being a member of a landowner coalition was another identity-related dimension in which interviewees sought information. However, interviewees highlighted how these seeking patterns have changed over time. One member, for example, remarked that, initially, "it was me doing the research or me being on a committee of people where we [divided] up the research work. Person A would research this topic. Person B would research the other topic and then come back together and share our findings." Later on, as s/he became more well-known in the coalition, the need to seek gradually changed into a more scanning-based approach, in that s/he gets "a lot of information, unsolicited, just sent…because people know I'm interested [in gas drilling]"). In addition, involvement with local gas drilling taskforces was another relevant identity-related dimension. Taskforce members not only commented on issues about which they looked for information by virtue of this position – including land use, water quality, economics, infrastructure, and housing – but how doing so was part of their job. As one interviewee noted, his/her entire job, at times, seemed to entail "just reading and keeping to update" about gas drilling.

Information sharing questions focused on how interviewees, if they received inquiries related to Marcellus Shale, responded to these questions. Probes related such tendencies to the aforementioned opinion leader identity dimensions, such as whether they spoke as members of organizations, as individuals, etc. Others probes were used to ask whether (and to whom)

interviewees shared information, about what issue(s), and the role of identity dimensions in terms of from what perspective they supplied the information. However, as was the case for identity-related meaning and information seeking, interviewees mentioned instances where information sharing transcended these dimensions. For example, several interviewees mentioned that they had set up their own Marcellus Shale e-mail list that they used to send information to colleagues, friends, and other subscribers. As one interviewee noted, "I actually have my own listserv [for] people that I'm aware of [who] are concerned about gas drilling…[when] I know a deadline [is]coming up or a special event or something like that, I will send out a message on my own listserve." These issues were more generic in nature - similar to issues about which interviewees sought information – and centered on an overview of hydraulic fracturing and what it entailed.

Interviewees discussed other sharing strategies that also seemed to transcend identity dimensions, including serving as an information bridge - connecting inquirers to resources who could answer their question - and being cordial in their response, such as listening to what people had to say, repeating it back, and making sure they understood before responding. As one interviewee noted

> The way that I always communicate is I listen to what somebody has to say, and I repeat exactly what I heard, and I ask if that's exactly right, did I articulate everything as they said it, and if they said yes, I'd say, "great, now that I have an understanding of where you're coming from, I want to bring up some additional points that I think are good for us to think about."

Another interviewee similarly believed that to not be cordial would be a disservice to the person asking the question and trying to learn more about gas drilling:

No question is frivolous, and every person is important…everybody's got to be taken seriously because you don't want anybody feeling jolted. If somebody's reaching out for information, the last thing you want to do is stop them from their growth in getting what they need. You want to encourage them to keep searching no matter how simple it might seem to them or to us. The tragedy is when people stop seeking and stop learning [about gas drilling].

In terms of specific opinion leader identity dimensions that informed how interviewees responded to inquiries, being an elected official was mentioned frequently. For many officials, the process of sharing information with people who reached out to them entailed serving as an information bridge and being in the position to bring different sides together for constructive discussion. One official, for example, discussed his/her role in organizing public forums at a local college, in which s/he invited gas company representatives, researchers, and environmental advocates to exchange perspectives and educate each other and public attendees. In a more general sense, as was the case for remaining informed and looking for information, many elected officials felt it was their responsibility to share information, as one interviewee illustrated:

As an elected official, it's my responsibility to share all information, whether it's pro or con….If I'm not elected, I may not want to share certain information, but as an elected person, people put their faith and trust in me…so they want to hear the truth…sometimes the truth may hurt…I'm sure there's going to be a number of people that either aren't going to believe me or are going to be disappointed, but I know, in my heart, that I've take the time to do as much investigation and educating myself as possible to make a decision.

However, while being an elected official enabled them to share information, it did not mean that they always responded to inquiries within this capacity. Some officials did respond on behalf of the elected body to which they belong or as an elected representative; however, others did so on behalf of themselves only. Similarly, being in a landowner coalition was an important identity dimension that shaped interviewees' information sharing behaviors. For some members, though, they did so as individuals, not coalition members, with one interviewee remarking that "I don't respond on behalf of the coalition" because it "is just a group of people that are kind of loosely interested in something…So when somebody asks me something [about gas drilling]…I'm responding on behalf of myself." Others, however, did do so with coalition membership in mind, suggesting that the salience of membership plays a role in terms of with whom one exchanges information and for what purpose:

> As the member of the…coalition…I am looking [out for] the best interests of the coalition and what will serve the purposes of that coalition best and so those answers [to questions I receive about gas drilling] would be mostly a [member] of the coalition trying to help all the people who are in the coalition

Interviewees who earlier referenced job-related reasons for seeing themselves/being seen by others as information resources and needing to stay informed about gas drilling also discussed how job-related responsibilities informed information sharing behavior. One interviewee involved in local planning and economic-development activities, for example, discussed how s/he organized a forum for small business for the purposes of sharing information about potential economic facets of gas development:

[I] reached out and invited all of our small businesses, and I think we had about 200 people that came, and I organized the gas company representatives to come in and speak to these small businesses and talk to them about what are their needs going to be when they do come to [the area], and the whole purpose of that meeting was to educate those small businesses in terms of what the needs of the gas companies [are]…[and to] get them thinking about how they can take advantage of those needs within their current business plan or maybe they need to diversify or change their business plan for the future.

These findings reflect an earlier point, raised throughout this chapter, on the nature of being an elected official or landowner coalition member in terms of whether they are role-based and group-based opinion leader identity dimensions respectively. Role-taking entails a certain degree of personal flexibility in shaping role expectations compared to being in a group, at least as far as identity theory is concerned (see Burke & Stets, 2009). Perhaps being an elected official made it easier – or more appropriate – to speak on behalf of oneself because the referent group is arguably less defined (an elected body, constituents in a community, etc). It is even possible that role-based identity dimensions enable one to serve as an opinion leader within and across different social groups. While role identities involve seeking verification as a role occupant, the meaning of that role may involve interacting with different groups, especially if the role is imbedded in one or more groups (Burke & Stets, 2009). However, the basis of verification remains fulfilling role-related expectations, not adhering to group-related expectations, the latter of which defines social identities and related dimensions such as landowner coalition membership.

This explanation can help account for the many different groups - constituents, landowner coalitions, etc - that came to elected officials to ask questions about Marcellus Shale and the fact that officials saw themselves as information bridges in attempting to remain informed about different impacts and in sharing information. Because they "served" as officials when interacting with constituents, speaking before landowner coalitions, engaging with other members of an elected body, and in other social situations, this position provided an opportunity to (1) be viewed as someone who has information about gas drilling that others may not have; (2) have their name "out there" and well-known in the community; (3) be seen as someone with decision-making authority over local matters who should thus remain knowledgeable about potential impacts; and (4) be in a position to share information about these impacts across these different groups, in the process allowing for inter-group information exchange that may otherwise not occur (see Burt, 1999; Roch, 2005)

RQ 4 Opinion Leader Identity - Resources, Outcomes, Verification, and Change

The fourth and final research question consisted of several components, all of which focused on how meaning and behavior associated with the opinion leader identity potentially changes over time in response to a variety of considerations.

The first component asked whether and, if so how, resources individuals use for engaging in communication behavior and outcomes associated with information seeking/sharing enable identity verification as an opinion leader. Identity theory posits that individuals will draw on various types of resources to achieve identify verification. Verification, in turn, can increase resource use (a feedback cycle) (Stets & Cast, 2007). It was suggested that information self-efficacy – the perceived ability to find information about gas drilling - can function as one such

resource. Moreover, it was posited that outcomes associated with the communication process affect via feedback mechanisms meaning(s) of the opinion leader identity as well as verification. That is, individuals work to achieve verification of a particular identity by "balancing" the perceptual input, or standards of behavior, with feedback attained in social settings (Burke, 2006). It was suggested that such feedback includes outcomes associated with information seeking and sharing (i.e., was information provided useful to people; was it understandable; was it difficult to remain up to speed on this issue; etc). In effect, individuals compare these outcomes, or what they actually do, to identity standards: what they think they should do. At the same time, Burke (2004) noted that verification is, at best, imprecise, as "neither we nor others know in advance exactly what behavior will bring about this state of a match between perceptions and [the] identity standard" (p. 6). What are important are meanings, or goals, one seeks to enact through behavior. Therefore, the process is one of trial and error, as individuals observe their progress in attaining goals and adapt identity-related meaning and behavior as necessary. Discrepancy in the ability to achieve verification can lead to identity change in meaning and/or behavior (Burke, 2006).

In terms of identity-related resources, many interviewees felt confident in their ability to locate information about Marcellus Shale if desired. Some interviewees reflected on the ease of finding information online or in print form. However, far more emphasized the importance of personal connections and social networks. These connections speak to identity-related commitment referenced earlier in this chapter: the amount and strength of social contacts one has when occupying an identity. However, while high confidence appeared to be the norm for most interviewees, it was not a universal sentiment; some interviewees discussed perceived inability to find information about certain facets of the Marcellus Shale issue. A member of a local gas

drilling task force, for example, described his/her difficulty finding data related to the economic impacts of drilling:

I did participate in a webinar from Pennsylvania on economic impacts, and I was very disappointed by it…there weren't as many studies that I'd like to see, and I felt a lot of these studies…were lacking and were not well done. As an example, there was one looking at tourist impacts [of gas drilling] in Texas…and they essentially said [that] there's no negative impact on tourism because there's been no decline in restaurant sales or in…hotel bookings…I just thought, "that's not a good measure of tourism…gas drilling people are there, not…tourists are there…"

The challenge was to find information where relevant data are not (yet) available and, as a result, considerable certainty exists. Interviewees treated such uncertainty as an understandable part of the issue and gave no indication that it affected the extent to which they viewed themselves and/or were seen by others as information resources. Another challenge, moreover, related to concerns about quality of information. Some stated that drilling-related information was, for the most part, of sufficient quality and balance between pro and anti drilling perspectives Furthermore, some made a distinction between objective facts – such as the size of the Marcellus Shale formation and how much gas it contains – and more subjective assessments of potential impacts; many considered information about the latter to be of poor quality, a sentiment captured by one interviewee:

I go onto these websites…[that say that drilling] is going to be the greatest thing since sliced bread…I know that's not true…it's a salesmanship thing…I want the information [about gas drilling], but I'm not sure the information I'm getting is real, so I'm very skeptical of

it…mainly because you read one thing, and two seconds later you go over to another article that says exactly the opposite.

This quote illustrated concerns about the lack of "objective" information on potential impacts of gas development – in particular, that it was too tilted in favor of a pro or anti drilling perspective. For some interviews, non-objective information overstated the potential risks of drilling; for others, it overstated the benefits. For example, some mentioned "misinformation" that hydraulic fracturing contaminates water supplies (they argued that it doesn't) or that drilling will have a positive economic impact on the region (they believed that it wouldn't). As mentioned in Chapter 1, Marcellus Shale involves contested definitions of risk and risk information related to impacts, such as whether or not, and how, drilling can affect water supply and quality and the economic advantages and/or disadvantages of gas development. To this end, another interviewee described his/her aversion to "blatant statements" both for and against gas development:

I'll give you a sample pro: "they've been drilling forever, and there's never been a single problem." Well, that's such a blanket statement. Is anybody going to believe a comment like this? Conversely, somehow who might be adamantly opposed [to drilling] could make a statement that every time they drill, they ruin everything, they poison the creeks and the water…. Those are certainly extreme examples… you really need to understand the source and do a little more research…

When it came to outcomes associated with communication behavior, one of the major issues was not the ability to find information but rather keeping up with it. Many interviewees discussed difficulties associated with drilling-related information constantly becoming available

and changing on a regular basis. One interviewee illustrated how, in some cases, this problem has been a more recent one:

Early on, it was difficult [to become informed about Marcellus Shale]…I knew next to nothing…because there are so many facets…there's the [gas] lease, what is the Marcellus, what is the geology, what is the drilling process, what are the different types of drilling techniques, what are the environmental impacts, what are the municipal issues, what are the benefits…that certainly is a huge learning curve to go up, but I think, more so, having climbed that hill so to speak, what makes it more difficult these days is the huge amount of information that's published.

This finding reflects the notion of information overload: an abundance of information without the ability to easily and meaningfully process and categorize it. Overload can cause confusion and anxiety as one struggles to attend to such messages (Jensen et al., in press). Indeed, a number of interviewees believed that the more they have learned about drilling, the less they expected that anyone – including themselves – can remain 100% up to date because of the amorphous nature of the issue. For some, this large volume of information placed a strain on how they viewed themselves as opinion leaders about Marcellus Shale and the role, group, and personality-based identity dimensions in which they did so. A member of a local gas drilling task force, for example, stated that despite his/her best efforts, s/he could not keep up with the large volume of information and meet the expectations of that position:

We all have our strengths and…our deficits, and certainly there's some people [who can] move through grand quantities of information faster than I do and retain it at different levels…ideally, it would be great to have a person in this position [on the task force who]

could keep all of the information in their head, at [their] finger tips…I think [it's] a reasonable expectation…to have the person [on the task force]…be very well-informed about all the issues [surrounding gas drilling].

As mentioned above, identity theory suggests that outcomes associated with communication behavior in a given identity dimension provide social feedback as part of the verification process, allowing for a comparison to identity standards. Most interviewees did not comment specifically on whether and, if so, how these outcomes informed their status as an opinion leader about Marcellus Shale. Some, however, did make a connection. One interviewee, for example, commented on how, because s/he considered people "more savvy" and knowledgeable and more focused in their questions (i.e., asking about specific drilling-related issues versus drilling in general), s/he felt like "less of a resource now. I still am playing a very important role...but in terms of being able to answer any specific questions, I feel less like that now than I did one and a half years ago." Similarly, when it came to challenges associated with becoming informed - namely the large volume of information - some interviewees commented that they had to scale back the amount of time they spent looking for information and keeping informed, relying more on other individuals to send them information. One interviewee, moreover, commented on how the challenges associated with staying informed have actually led him/her to see him/herself as less of a resource over time:

It's impossible, actually, [to be informed] because of the full array of issues. That's why…I don't accept any speaking offers anymore, because I'm not who you want to talk to. You need to talk to somebody who has figured out this topic in a more deep way. I do try to stay on top of [it]…it feels like there is more and more complexities that keep [getting] added [to

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this issue], so I try to keep that very big picture in mind, and that picture, I think, keeps getting bigger…

In terms of information sharing outcomes, most interviewees believed that those with whom they interacted and shared drilling-related information - in particular, people who reached out to them with questions - benefited from this exchange. "Benefit" may not necessarily equate with agreeing with the interviewee and/or the information provided but rather that the interviewee took the time to engage with that individual and was attentive and cordial (see findings related to RQ 2). Benefit also centered on whether the information helped address an inquirer's needs: that is, that it helped them become aware of a particular aspect of gas drilling about which they were previously unfamiliar. As one interviewee stated: "I hope they aren't satisfied [with the information I provide]. I hope that it…preps them to go chase down some more information…I don't want to give answers, I want to give them the capability to pursue questions." However, many were also aware that those with extreme views really can't be satisfied and can't "be reached." Strong, pre-existing views made doing so difficult.

The comments above highlight two important points related to the opinion leader identity. First, information self-efficacy can function as an important resource for achieving identity verification, which is consistent with research that views resource use as a means for controlling meaning and performing identity-proscribed behavior. The relationship is also reinforcing, in that "resource use facilitates identity verification and identity verification increases the resources available for future use…across identities and over time" (Stets & Cast, 2007, p. 517). Stets and Case also described three types. Personal resources reflect beliefs one holds about the self (i.e., self-efficacy), while interpersonal resources flow from relationships (i.e., role-taking; trust), and

structural resources speak to one's placement in society (i.e., occupation, income, and education). All three types, in turn, can be active or potential in nature. Active resources are "those processes that are drawn on in the immediate situation" and which "function to currently support the social actor," such as a pen with which to write, eyeglasses with which to see, and education with which to obtain a job (p. 519). Such resources are directly experienced when they are 'in use,' such as physically feeling a chair on which one sits or feeling of satisfaction in completing a degree program. Potential resources are not currently used for such support, but they may be in the future: for example, food to consume at a later time. They are important because of their potential capacity to sustain the self and verify an identity.

Self-efficacy represents an active, personal resource that reflects beliefs one hold's about oneself, in terms of the motivation and ability to find information about natural gas drilling impacts and, in the case of the opinion leader identity, balance perceived expectations to remain informed and feedback from social surroundings. In other words, "those who feel good and competent about themselves will be more likely to achieve verification because they will continue their efforts to work toward this goal even when they periodically fail…[they] have a reservoir of good feelings about themselves and strong believes about their capabilities…" (Stets & Cast, 2007, p. 520). Indeed, Bandura's (2004) view of this concept, which serves as the inspiration in models of communication behavior (Griffin et al., 1999), suggests that strong efficacy not only facilitates action but allows one to persevere during hardships. Thus, for many interviewees, overcoming the challenge of finding drilling-related information where relevant data are not (yet) available and, as a result, considerable certainty exists – and, thus, continuing to see themselves/been seen by others as information resources - was arguably made easier by high levels of efficacy.

At the same time, self-efficacy may also reflect interpersonal and structural resources. As mentioned above, interpersonal resources flow from relationships and help support individuals and the system of interaction that identities help create and maintain. Much of the research in this area has centered on role-taking and interpersonal trust. Both allow an individual to "construct" another's viewpoint to determine "whether the self and the other perceive the self in the same way – that is, whether self-verification exists" (Stets & Cast, 2007, p. 521). Moreover, trust helps one identify those who can serve as reliable sources of identity support. Structural resources, by contrast, speak to one's placement in society (i.e., occupation, income, and education). When such resources are used, one demonstrates knowledge and skills to accomplish identity goals. In the process, one achieves high status in a social interaction, receives deference from others, and thus is able to achieve verification. One reason interviewees felt confident in their ability to find information about Marcellus Shale was personal connections within social networks. They knew people to whom they could go for information: a strategy that appeared, in many cases, preferable to mediated sources. These connections not only reflect aspects of identity-related commitment in terms of the amount and strength of social contacts one has when occupying an identity, but also (1) trust individuals place in others to provide needed, accurate information and how these perceptions shape communication behavior (Afifi & Weiner, 2004; Clarke & McComas, in press) and (2) centrality, with social network(s), of opinion leaders (Roch, 2005).

Second, there were also barriers interviewees faced when it came to verifying an opinion leader identity: in particular, a discrepancy between identity standards and perceptions of performance from the social setting. That is, they felt expected to remain informed about specific impacts associated with natural gas drilling, but the large volume of such information as well as its perceived quality made doing so difficult. In the case of the interviewee from the local gas

drilling task force described above, this discrepancy led him/her them to doubt his/her ability to fulfill the perceived expectations associated with being an information resource. Identity theory, moreover, posits that a gap between perceived actions and perceived expectations within a given identity (or, in this case, identity dimension) could negatively impact commitment and, by extension, behavior performance and the stability of meaning over time (Rise et al., 2010; Sparks & Shepherd, 1992). The interviewees cited above commented on this phenomenon: seeing themselves as less of a resource over time about Marcellus Shale because of these issues. Burke (2006), however, noted that in most situations, changes in identity meaning and/or behavior occur slowly over time. Chapter 5 discusses strategies for measuring such identity discrepancy and change.

Whereas the first part of RQ 4 explored identity verification challenges with a given role, group, and person-based identity dimension, the second part explored conflicting expectations among identity dimensions or between opinion leadership and other salient identities. Intra or inter-identity salience (or multiplicity) – and the potential for compatible or conflicting meanings - has important implications for identity meaning and communication behavior stability and change (Burke, 2006). The degree of compatibility and conflict can either leave one confident in one's ability to verify identity meaning or distressed at being unable to reconcile the discrepancy between different meaning dimensions. Burke's (2006) work suggests that the conflicting identity dimensions will work toward a compromise that favors achieving verification for both at the same time; however, the success of this process depends on salience of and commitment to each one and how similar meanings are to each other. Specifically, when it comes to negotiating meaning across identity dimensions, conflict can most often emerge – and compromise most

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often needed - when meanings and associated behavior are similar enough to be activated simultaneously but dissimilar enough to proscribe sufficiently different expectations and action.

In the first scenario, individuals can be faced with potentially overlapping opinion leader identity dimensions and, as a result, consonant or dissonant meanings regarding communication behavior and difficulty achieving verification. For example, a person who views him/herself as an opinion leader by virtue of being a landowner, which is arguably a role-based identity dimension, may perceive different information needs than a person who sees him or herself as an opinion leader by virtue of being an environmentalist (another role). What happens if both dimensions become simultaneously salient? The individual may possibly perceive a greater depth of information need than was the case for the two in isolation. He or she may simply broaden the search and/or share more information with more people. However, he or she may be unsure which messages to search for/share first and may thus prioritize or perhaps not even initiate the process due to such confusion. Such changes in behavior can also impact identity meaning and alter one's perception of what it means to be a leader in these situations.

Interviews discussed situations involving overlapping identity dimensions and meaning when it came to gas drilling-related impacts about which they felt social/personal pressure to remain informed and sought information. For example, the comments of one interviewee who saw him/herself as a resource both because of being in a landowner coalition and an elected official illustrated this phenomenon:

> Having gotten involved in a landowner's group…I feel responsible [to be informed about gas drilling]. I volunteered to take on that role and, therefore, there are expectations [from] the people in the landowner group [and] our neighbors, friends, and people in our community.

That is my role and, therefore, I take it seriously and try to stay on top of the issue…and, of course, after taking [elected] office, it absolutely is my duty to stay on top of the issues so that I can help the [elected body] and anyone who needs my help to become knowledgeable in order to make the right decisions [about gas drilling].

For this interviewee, these identity dimensions (landowner coalition member and elected official) proscribed similar sets of meaning related to becoming and staying informed about gas drilling-related impacts, and this person gave no indication that fulfilling the expectations of both dimensions was difficult. Moreover, most interviewees did not perceive different impacts about which they felt they were expected to remain informed in situations of overlapping dimensions. Instead, their focus was on being as up to speed on every dimension of gas drilling as possible, with an elected official summarizing this sentiment: "you need to be informed [on] every aspect. I don't think because I'm a Legislator, I don't need this information or want it…any and all information that you get, whichever hat you're wearing, is very, very important." Interestingly, however, some interviewees commented on different pressure within dimensions. An elected official, for example, remarked that a person who is in favor of drilling would have "expectations for me to assist them [in] finding very different kinds of [gas drilling] information than the environmentalist…[who] chained themselves to a tree."

Once again drawing on the notion of overlapping meanings within and among identity dimensions, interviewees also commented on situations where they felt a personal obligation to remain informed about drilling-related impacts because of both role and personality-based identity dimensions. As one elected official observed:

You certainly want to be able to answer a question with some authority and accuracy, but beyond that, I like so many of the issues that we deal with, which is…why I decided to run for [elected office], and I'm just interested in a lot in these issues…I'm really interested, and I would normally want to stay informed on those issues [such as gas drilling] whether I was elected or not, but obviously I [have] a responsibility to have a high level of accurate information about what's going on in my county, in county government, and also localities.

Overall, interviewees largely did not comment on drilling-related impacts about which they wanted to know that might differ because of overlapping opinion leader identity dimensions. These dimensions proscribed similar sets of meaning related to becoming and staying informed about gas drilling-related impacts, and interviewees gave no indication that fulfilling expectations of overlapping identity dimensions -achieving compromise - was difficult. Indeed, the focus was on being up to speed on as many facets of gas drilling as possible.

When it came to information seeking, most interviewees did not perceive different drilling-related information needs by virtue of these different dimensions. The focus was on gathering as much information as possible in an effort to know as much about gas drilling as possible; one interviewee, for example, noted that the information "all kind of globs together for me" irrespective of identity dimension. Some interviewees, however, did perceive different needs depending on particular dimensions. One interviewee, for example, described needs depending on her position in an environmental non-profit organization and her role as a citizen. As a member of the former, her job is defined a certain way: focusing on environmental-related impacts of drilling. As a citizen, her information needs focus more on "who benefits and who pays the cost…so that [involves me] being interested in other things [about drilling]…I'm

certainly very interested in the environmental issues as a private citizen, but I have these extra things I want to know about as well." For this person, there did not appear to be any indication of conflict in terms of information need or spending more time focusing on information about one issue versus another. Rather, these dimensions simply increased amount of information desired.

An important question to consider is why, in examining both social and personal pressure to remain informed about specific drilling-related impacts as well as information seeking behavior, interviewees largely did not perceive different information needs as a function of overlapping opinion leader identity dimensions. Several explanations may account for this finding. First, asking about conflicting identity-related meaning and information needs across identity dimensions proved challenging at times; in some cases, interviewees did not understand the question, and it was asked again for clarification. Second, as mentioned above, when it comes to negotiating meaning identity dimensions, conflict can most often emerge when meanings and associated behavior expected are similar enough to be activated simultaneously but dissimilar enough to proscribe different kinds of expectations and action (Burke, 2006). In the case of communication behavior, the underlying meaning and action within and across opinion leader identity dimensions was remaining informed and gathering as much information about potential impacts of gas drilling as possible. While certain dimensions did relate to certain types of expectations (i.e., what to know and who expects one to know it), across dimensions it seemed that interviewees viewed multiple issues about which they felt pressure to become knowledgeable and seek information in a complementary, rather than conflicting light. In other words, one simply perceived a greater depth of information need, and there was more meaning similarity that dissimilarity.

Third, this question may reflect the distinction between opinion leadership as trait or state and, more specifically, research on differentiating polymorphous leaders who are experts in multiple areas from monomorphous leaders who tend to be influential in only one area (Weimann et al., 2007). Interviewees were not asked whether they considered themselves resources or were seen by others in this capacity about issues besides natural gas drilling. Within this identity, however, it would seem logical that there would be monomorphous and polymorphous elements. Some individuals would limit expertise to specific drilling-related impacts because of a specific opinion leader identity dimension, while others would perceive expertise across, and thus motivation for remaining informed and looking for information about, a diverse array of impacts, perhaps as a result of occupying multiple identity dimensions. Polymorphous leaders would arguably occupy multiple dimensions and perceive a greater information need in terms of what to know about gas drilling, perhaps because they interact with a larger pool of individuals and groups who expect them to be knowledgeable. Thus, they endeavor to be as informed about as many potential impacts of gas drilling as possible.

When it came to information sharing, however, communication behavior was more closely contingent on opinion leader identity dimension. For some interviewees in which being an information resource spanned multiple dimensions, they found that the types of drilling-related information they shared depended, in part, on these dimensions. One interviewee, for example, commented on how the information s/he provided about leasing-related issues depended on his/her position both as an elected official and an attorney, although the responses remained similar:

When somebody [comes] in here to seek my advice as an attorney, I give them legal advice.

When somebody approaches me as an [elected official]… I'll give them my best advice.

Often, it parallels what I would give a client.

Some interviewees, moreover, went further in stating that how an inquirer heard of them would influence how they responded to the questions received. For example, one elected official was also a member of a landowner coalition, and both played a role in how s/he saw him/herself as an information resource about Marcellus Shale. S/he could respond to drilling-related inquiries as an official speaking to a constituent or as a coalition member speaking with a member. Like other interviewees, s/he felt it important to make clear when she was responding from a particular position. Another interviewee noted that such situations are "almost like wearing [multiple] hats at once. You don't take one off and put another one on. They're all on at the same time. You just have to be very, very clear to everyone [about] your perspective and where you're coming from so that nobody misunderstands you."

Why did a "sharing as much information as possible" sentiment not emerge as was the case for social and personal pressure to be informed and information seeking behavior? Information sharing, by definition, implies another party in the interaction and beliefs about one's own, as well as the other actor's, information needs and ability to meet those needs (Afifi & Weiner, 2004). When it comes to information seeking, one is more apt to consider only personal needs and expectations, although such behavior can also be shaped by social pressure to be informed (Griffin et al., 1999) and the anticipatory value of information for use in future social interactions (Atkin, 1972). Thus, opinion leader identity dimensions can involve specific questions a leader can receive about natural gas drilling and specific individuals asking those questions. Although

identity meaning can involve becoming as informed as possible about various potential impacts, how one responds and shares information can depend on identity dimensions and the perceived needs of the inquirer.

In the second scenario, an opinion leader identity operating in different dimensions can potentially conflict – in terms of meaning and behavior – with other identities aside from opinion leadership. For example, being a leader by virtue of membership in a group such as a landowner coalition may conflict with expectations tied to being a community member that have nothing to do with gas drilling. Perhaps a community member identity entails focusing on other issues aside from drilling, which would proscribe an entirely different set of communication behaviors that the opinion leader identity. Interviewees in the present study discussed situations involving overlapping identities and potentially conflicting expectations. In particular, for some, demands associated opinion leadership conflicted with those of other identities. To illustrate, an elected official commented that while this position was the primary way in which s/he engaged with Marcellus Shale, s/he also had a full time job that likewise placed demands on his/her time, making staying informed more difficult. However, s/he gave no indicated that it impacted the extent to which s/he saw him/her self (and/or was seen by others) as an information resource.

This finding mirrored situations involving overlapping opinion leader identity dimensions. When it comes to negotiating meaning across identities (or identity dimensions), conflict can emerge when meanings and associated behavior are similar enough to be activated simultaneously but dissimilar enough to proscribe different kinds of expectations and action (Burke, 2006). In the case of overlapping opinion leader identity dimensions, the meaning that seemed to bind the different dimensions together involved remaining informed and gathering as

much information about potential impacts of gas drilling as possible. In this case, meanings and associated behavior were similar enough to be activated simultaneously; however, they were *too* similar to proscribe different kinds of expectations and action and come into conflict. There is some overlap but not enough to cause problems. Thus, interviewees were able to achieve verification within these dimensions.

Such was also the case for the example described in the preceding paragraph; underlying meaning of the opinion leader and job-based identities were sufficiently similar as to be concurrently salient (both perhaps united around the issue of time needed to remain informed about Marcellus Shale). However, they were also sufficiently different as to not be in fundamental conflict. However, it is worth noting that this situation was, overall, less common than conflicting expectations within opinion leader identity dimensions. One likely explanation is that the interview questions focused mainly on compatible or conflicting meaning and behavior across these dimensions. Future research, described in Chapter 5, elucidates implications for exploring these scenarios involving opinion leadership and other identities.

CHAPTER 5: Implications, Limitations, and Future Research

The preceding chapters have explored the role identities, specifically opinion leadership, play in motivating risk information seeking and sharing about a controversial risk issue: proposed natural gas drilling in New York State's Marcellus Shale. Chapter 1 argued for an interdisciplinary approach to addressing important gaps in research on risk-related communication behavior so as to advance communication theory and practice. It also provided a rationale for examining the Marcellus Shale issue: a dynamic, increasingly intractable controversy that involves a variety of potential social, economical, health, and environmental impacts about which individuals could become informed and look for/share information.

Chapter 2 went into more detail on the theoretical links involving identity theory, opinion leadership, and communication behavior that informed research questions and methods (Chapter 3) and around which results and discussion were structured (Chapter 4). The central argument is that an opinion leader identity, emerging in group, role, and personality-based identity dimensions, functions as important determinant of communication behavior about gas drilling. Within these dimensions, opinion leadership (1) shapes identity meaning in terms of drilling-related impacts about which people perceive social and personal pressure to remain informed as well as perceptions of referent groups believed to hold these expectations; (2) motivates information seeking and sharing based on this meaning; and (3) guides communication behavior over time based on one's ability to fulfill these expectations, especially when opinion leadership is related to multiple group, role, and personality-based dimensions.

This dissertation's concluding chapter addresses theoretical and practical implications of these results in light of the study goals and research questions. Woven into the discussion are acknowledgments of research limitations and elucidation of opportunities for future inquiry.

Theoretical Implications

Theoretically, this research provides an opportunity to synthesize previously segregated research on communication behavior, opinion leadership, and identity theory, in the process linking communication, psychological, and sociological perspectives. In particular, several points are addressed:

- An opinion leader identity, as a master identity tied to role, group, and personality-based identity dimensions (see Burke & Stets, 2009), provides a new perspective on conceptualizing and measuring opinion leadership using the self-designation approach (Weimann, 1994);

- Given various behaviors in which opinion leaders engage, including persuasion and information seeking and sharing, as well as various mechanisms through which leaders exert social influence, an opinion leader identity provides a framework for understanding how and when certain behaviors are performed. Specifically, such behavior is a function of identity-related meaning within the aforementioned identity dimensions. In terms of communication behavior, this identity provides insight into how people become informed – and inform others – about complex, dynamic risk issues. This dissertation suggests ways to measure identity meaning associated with opinion leadership as it relates to communication behavior: specifically, social and personal pressure to remain informed about potential impacts of

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natural gas drilling. This approach views meaning as one of information negotiation rather than a more simplistic notion that opinion leaders seek and share information for issues about which they perceived expertise. It also describes processes through which opinion leaders attempt to verify this identity, which has implications for how seeing oneself/being seen as a leader can potentially change over time.

The following sections describe the aforementioned implications in greater detail. Propositions are advanced that build on key dissertation findings related to these areas.

Measuring Opinion Leadership as an Identity

This dissertation argues that an opinion leader identity, as a master identity tied to role, group, and personality-based identity dimensions (Burke & Stets, 2009), provides a new perspective on conceptualizing and measuring opinion leadership using the self-designation approach (Weimann, 1994). In other words, it provides insight into thinking about who leaders are and how to identify them. In the process, research on identity theory is also extended.

As mentioned in Chapter 2, scholars have developed various methods of measuring opinion leadership that are grouped under several domains, each with its own strengths and limitations (Weimann, 1994; Weimann et al., 2007). Some methods focus on particular positions individuals occupy in a social setting, including those in elected or appointed positions, that may be conducive to being a leader or being able to identify leaders (Weimann et al., 2007). Others focus on the group level, attempting to map patterns of social influence within networks in which leaders reside. However, the majority of research has favored a self-designation approach. While it is not without drawbacks, in that people asked to self-nominate may over or underestimate

social influence, it involves comparatively less effort, money, and time versus other strategies. For example, it allows one to avoid speaking to potentially all individuals in a given social setting, which is advantageous if the setting is very large such as a community or city. Moreover, self-designation has attempted to account for both the psychological and sociological processes that underlie opinion leadership, including personal characteristics such as being the kind of person who likes to serve as a role model, be seen as innovative, or convince others of his/her opinion (Shah & Scheufele, 2006) as well as a person's perceived centrality within a social network (Roch, 2005).

This dissertation argues that viewing opinion leadership as an identity, through the lens of identity theory, extends the self-designation approach by focusing on personal and structural characteristics as not separate paths to the emergence of leaders but rather as complementary dimensions that shape this identity and give it meaning in terms of who leaders are and what they do. Opinion leadership reflects many of the characteristics of identities discussed by Burke and colleagues (Burke & Stets, 2009). It is a quality that is potentially both recognized by the self and others with whom one interacts. It involves individual behavior that translates to social influence in social settings. Such behavior, moreover, is a function not only of personal characteristics one possesses but also positions one occupies in a social setting as well as groups to which one belongs and potentially exerts influence (Roch, 2005; Rogers & Cartano, 1962; Weimann, 1994). This argument reflects the view of identities as sets of shared social meaning people hold that define what it means to be who they are as individuals, role occupants, and group members (Burke, 2004; Burke & Stets, 2009) and that serve as standards for personal behavior by linking personal expectations and social appraisals (Burke & Reitzes, 1991; Stets & Biga, 2003). It also speaks to how opinion leadership and the behaviors to which it is associated

occur through communication and interaction with others. That is, in attempting to achieve verification - in terms of how they think they should act/what they should do and how they actually act/what they actually do - social networks of leaders and followers are formed that facilitate social influence.

Applying an identity theory perspective to the self-designation approach also implies that people may label themselves as leaders on the basis of three identity dimensions. That is, opinion leadership is a master identity because it is activated and relevant across group, role, and personality-based identity dimensions. One may see oneself as a leader because of a social position one occupies such as a landowner, environmentalist, or community member; membership in a social group such as belonging to a town council; seeing oneself as possessing certain traits (i.e., the type of person who is knowledgeable); or a combination of these reasons. Thus, personal and structural characteristics function as complementary dimensions that shape this identity, give it meaning, and guide behavior. As discussed in Chapter 4, many interviewees saw themselves – and, in their view, were seen by others – as information resources about Marcellus Shale because they occupied specific roles in a community such as elected official; were members of particular organizations like landowner coalitions; and/or possessed certain traits such as being knowledgeable about local issues or well-known in a given locality. Moreover, viewing opinion leadership in this capacity also extends research on identity theory. The focus is not on separate group, role, and person identity types but one identity operating across these three dimensions and how meaning and communication behavior are shaped within and among these dimensions (Burke, 2004).

These arguments, in tandem with the aforementioned findings, inform perhaps the most important proposition related to the opinion leader identity:

- **Proposition 1:** Opinion leadership is master identity defined by meaning emerging in group, role, and person-based identity dimensions.

As a master identity, it is necessary to measure the extent to which opinion leadership is tied to any or all of these identity dimensions. For example, future research involving Marcellus Shale or perhaps other issues could use a baseline question - such as I see myself [I am seen by others] as an information resource about this issue because" - and then use response scales that measure the perceived importance of different dimensions, including:

- Social groups; for example: "because of my membership in a landowner coalition";

- Social roles; or example: "because I am a community member";

- Personality characteristics; for example: "because I am the type of person to whom others tend to go for advice".

Moreover, to properly study opinion leadership as an identity would involve bringing in the full battery of measures outlined by Burke and Stets (2009), including prominence and salience. As mentioned in Chapter 2, prominence reflects how important an identity is in general and the extent it is "seen as central to the self-concept" (Stets & Biga, 2003, p. 404). Salience reflects importance in a given situation. Thus, two additional propositions can be stated:

- **Proposition 2:** The prominence of the opinion leader identity in any of the aforementioned identity dimensions reflects general importance among other identities that an individual may possess.

- **Proposition 3:** The salience of the opinion leader identity in any of the aforementioned identity dimensions reflects its importance in particular situations.

Both prominence and salience matter because people "possess multiple identities…they occupy multiple roles, are members of multiple groups, and claim multiple personal characteristics" (Burke & Stets, 2009, p. 3). In this research, the issue is that people may see themselves and/or are seen by others as opinion leaders across role, group, and person-based identity dimensions. Determinants of prominence and salience prominence include commitment, or the extent to which one receives social support within a given identity and positively evaluates one's identity-related performance (see Hoelter, 1983). These factors speak to the reciprocal relationship between commitment and identity meaning, in that enacting an identity strengthens commitment, which then reinforces meaning. Subsequent sections advance propositions related to commitment and how individuals respond to situations involving multiple salient and prominent opinion leader identity dimensions. What is discussed here is the salience-prominence relationship. An identity cannot be salient, presumably, unless it is also prominent. Does salience and the enacting of identity meaning and behavior in turn strengthen prominence in terms of how central that identity is to self-concept? Must a master identity like opinion leadership be 'exercised' (or salient) in a given identity dimension so as to remain prominent?

To use an example discussed in Chapter 4, elected official was an arguably role-based identity dimension that emerged as particularly central for some interviewees as reasons for

seeing themselves/being seen by others as information resources about Marcellus Shale. Although not all elected officials saw themselves in this light for this reason, many commented that this position allowed them to become informed; be seen as knowledgeable; and begin to see themselves as resources in part because of the inquiries they began to receive from constituents and others. Do situational cues that invoke identity salience – in particular, questions one receives about natural gas drilling and interactions one has with other people as a result - shape whether being an elected official becomes part of an opinion leader identity? The answer to this question depends, in part, on the extent to which opinion leadership is polymorphous or monomorphous in nature. As suggested in Chapter 4, it would seem that polymorphous leaders would have an identity that is both strongly prominent and salient because it is activated across different opinion leader identity dimensions. The centrality of this identity for monomorphous leaders, by contrast, would arguably be more dependent on one identity dimension. As a result, polymorphous leaders would arguably perceive expertise, and thus motivation for remaining informed and looking for information, about a diverse array of impacts perhaps because, given multiple identity dimensions, they interact with a larger pool of individuals and groups who expect them to be knowledgeable. These suppositions relate to a fourth proposition:

- **Proposition 4:** There is individual variation in the extent to which opinion leadership becomes tied to a specific role, group, or person-based identity dimension; prominence and salience are a function of situational cues, including the degree of interpersonal interaction in a given identity dimension and one's status as a polymorphous or monomorphous leader.

Opinion Leadership, Identity Meaning, and Communication Behavior

Earlier, it was argued that an opinion leader identity focuses on personal and structural characteristics as not separate paths to the emergence of leaders but as complementary dimensions that give this identity meaning in terms of who leaders are and what they do. Opinion leaders engage in, and are otherwise associated with, various behaviors that underlie the process of social influence, including advocacy, information seeking and sharing, and behavioral modeling (Flynn et al., 1996; Nisbet & Kotchner, 2009). This dissertation argues that it is not possible to understand who leaders are or what they do independent of meaning associated with this identity; the role, group, and personality-based identity dimensions in which it emerges; how this meaning proscribes behavior; and how individuals work to negotiate this meaning (Burke, 2004; Burke & Stets, 2009). Thus, communication-based and other behaviors are goal-oriented: a means through which people attempt to achieve verification of identity standards that defines what it means to be a leader. In other words, an opinion leader identity provides a framework for understanding why certain behaviors are performed.

In terms of communication behavior, research has clearly pointed to higher motivation on the part of opinion leaders to become informed, look for information, and inform others about issues for which they perceive expertise (Scheufele & Shah, 2000; Weimann, 1994). Applying an identity theory perspective to opinion leadership provides insight into communication behavior about complex, dynamic risk issues like natural gas drilling. The majority of risk information seeking research has studied particular kinds of information in isolation such as about cancer or other health risks. However, natural gas drilling entails a number of potential economic, health, social, and environmental impacts. In other words, there is no one 'risk,' and a far more pressing

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question involves how individuals become informed and seek and share information about particular impacts. This dissertation suggests ways to measure identity-related meaning associated with opinion leadership as it relates to communication behavior within the aforementioned identity dimensions: specifically, social and personal pressure to remain informed about potential impacts of natural gas drilling and referent groups believed to hold those expectations. Such meaning functions as a standard of conduct: how leaders should act. Also, it explores methods of measuring information seeking and sharing behavior that is also tied to these identity dimensions. In broad terms, the notion of opinion leadership as a master identity activated in group, role, and personality-based identity dimensions involves viewing meaning and behavior as one of information negotiation rather than a more simplistic notion that leaders seek and share information for issues about which they perceive expertise. These expectations and seeking and sharing behavior depend, in part, on meaning within these dimensions.

As discussed in Chapter 4, interviewees described social and personal need to be informed about specific drilling impacts, particular groups that expected them to be knowledgeable, and specific information needs they sought to address via seeking and sharing messages that were a function of group, role, and personality-based identity dimensions. For example, elected officials, by virtue of occupying that particular position, felt expected to remain informed– and, as a result, sought and shared information – about impacts that were, in their view, under their control as policymakers; these included potential regulation of gas drilling in the form of road use agreements and zoning. Constituents and other citizens functioned as the referent group expecting them to be knowledgeable. Landowner coalition membership, moreover, was tied to the need to be informed– and look for/share information – about economic aspects of gas development, among other issues. Other coalition members were the referent group. In both

settings, moreover, interviewees stressed the responsibility to share information with others with whom they interacted; the value of being cordial and respectful to all who came to them with questions; and the importance of acting as an information bridge, in terms of linking inquirers with relevant and helpful resources to answer questions. These finding suggest a fifth proposition related to meaning and communication behavior:

- **Proposition 5:** Role, group, and personality-based meaning of the opinion leader identity reflects issues about which one perceives social and personal pressure to remain informed as well as referent groups/individuals believed to hold these expectations.

Taking this process one step further, a sixth proposition reflects identity dimension-specific information seeking and sharing tendencies that flows from this meaning:

- **Proposition 6:** Role, group, and personality-based meaning of the opinion leader identity can shape subsequent communication behavior, in terms of issues about which one looks for and exchanges information.

The question then becomes how to develop appropriate measures of meaning and communication behavior that define the opinion leader identity. Measuring meaning could follow accepted measures proposed by Burke and colleagues: in particular, semantic differential scales that feature paired, polar opposite phrases. For example, measures of gender identity meaning include items such as "masculinity-femininity", while measures for environmental identity include items such as "very concerned-indifferent about the environment" (Burke, 2006; Stets & Biga, 2003). For Marcellus Shale, and focusing specifically on communication behavior, questions would tap into perceived personal and social pressure to remain informed about gas

drilling in general as well as about specific impacts. A root phrase could start with 'is/is not expected by others to remain informed about…" and "does/does not expect themselves to be informed about…" This approach builds off of measures of information subjective norms proposed by Griffin et al. (1999) and also extends it to the realm of personal pressure to be knowledgeable.

There exist a variety of approaches for measuring information seeking. Some scholars use a general question, such as whether a respondent had ever looked for information about [name of issue] from any source and, if so, the source one first consulted and the type of information for which one searched (see Rutten, Squiers, & Hesse, 2006). Other approaches provide a list of issues - such as economic, water, and social impacts of natural gas drilling - and ask respondents the extent to which they pay attention to issue-specific information when it comes up, go out of their way to find it, or tune it out (see Griffin et al., 2008). Measures of information sharing likewise span a wide gamut. It is important that the focus be not merely on the relationship between an information seeker and provider, which indicates a more one-way interaction in that the latter provides an answer to the former, and the interaction then ends (see Afifi & Weiner, 2004). Instead, sharing should be measured as an exchange of messages between and among individuals, often via interpersonal discussion and for the purpose of informing and persuading. Potential indicators include with whom one speaks to about an issue and how often (see Cho et al., 2009).

An additional challenge, hitherto un-explored in research on identity theory, is to link identity-related meaning and behavior to different role, group, and personality-based opinion leader identity dimensions, consistent with the notion of opinion leadership as a master identity.

Burke (2006) and Stets and Biga (2003) have used discriminant or factor analysis to 'sort out' different meaning dimensions within an identity. For example, a battery of questions measures gender identity meaning, and discriminant analysis is used to distinguish masculine and feminine aspects. In the case of this dissertation, the focus is not just on separating types of meaning and behavior in terms of remaining informed/looking for information about different impacts of natural gas drilling but to determine whether these types are a function of opinion leadership emerging in different identity dimensions. Future research should explore different data analysis strategies for exploring these relationships, including discriminant and cluster analysis, which identify and classify objects into mutually exclusive and exhaustive groups by maximizing within-group similarities and out-group differences. The limitations of this measurement approach are discussed later in this chapter.

These measurement approaches will also need to consider nuanced, but potentially important, differences among opinion leader identity dimensions in terms of how they inform meaning and communication behavior. Chapter 4 explored the role and group-based dimensions of being an elected official, arguing that a case can be made that it represents both a role and group-based identity dimension. That is, an elected official is a public service position one holds in a community, but it does not exist independent of a larger elected body to which one is a member. Such overlap is important, as Burke and Stets (2009) noted that role, group, and personality-based identities share the same general verification process but that that the referent meanings, in terms of standards of behavior, and sources of social evaluation such as being like others in a group or differentiating oneself in a role, are different. Role-based identity dimensions, moreover, can potentially afford a certain amount of personal and well as social influence over opinion leader identity meaning and, by extension, communication behavior. While one's social

surroundings ('culture') shape role meaning independent of the occupant (Burke, 2004), an individual's idiosyncratic actions in fulfilling those expectations can afford him/her arguably more control over role meaning and behavior than in group-based identity settings, in which group-related meaning is paramount (see also Callero, 1985). Thus, in role-based identity dimensions, personal and social pressure to be knowledgeable can both come into play when it comes to becoming informed about impacts related to natural gas drilling in the Marcellus Shale.

To the extent being an elected official can be considered a role-based identity dimension, it can reflect personal expectations tied to that role as well as expectations of others with whom one interacts in that capacity. This argument is bolstered by the finding that while being an elected official was associated with social and personal need to be informed about specific drilling issues, landowner coalition membership was only associated with social pressure. It was also suggested that role-based opinion leader identity dimensions may involve greater interaction with a variety of different social groups and individuals because one can occupy a role within and across groups (see Burke & Stets, 2009). Thus, one may perceive pressure to remain informed not only for personal reasons, in terms of drilling-related impacts about which one personally desires to know, but also on a social level given these group interactions. Moreover, one may be in a position to emerge as an information bridge in terms of providing information about gas-drilling related impacts to different groups that otherwise may have little contact. Opinion leaders may be particularly likely to develop these connections (Burt, 1999; Roch, 2005). For example, because elected officials "served" as officials when interacting with constituents, speaking before landowner coalitions, engaging with other members of an elected body, and in other social situations, being an official provided an opportunity if not an obligation to remain knowledgeable and share information about various potential drilling-related impacts

on behalf of and across these different groups. This explanation helps account for the many different groups - constituents, landowner coalitions, etc - that came to elected officials to ask questions about Marcellus Shale and the fact that officials saw themselves as information bridges in attempting to remain informed about different impacts. That is, they saw themselves as in a position to bring different sides together for constructive discussion. These arguments and findings lead to the seventh and eighth proposition:

- **Proposition 7:** Role-based opinion leader identity dimensions, when compared to group-based counterparts, can involve a greater emphasis placed both on social and personal aspects of identity meaning, in terms of social and personal pressure to remain informed about drilling-related impacts.

- **Proposition 8:** Role-based opinion leader identity dimensions, when compared to group-based counterparts, are conductive to emerging as an information bridge by virtue of greater interaction with a variety of social groups as a role occupant.

Finally, commitment is another important ingredient in shaping meaning of the opinion leader identity and guiding communication behavior. It reflects benefits and costs of adhering to this identity: specifically, social connections one forms and maintains by virtue of occupying a specific identity and the strength of those ties (Stets & Biga, 2003). Higher commitment involves greater perceived quantity and quality of connections and a belief that benefits outweigh costs. Identity theory also suggests that stronger commitment is associated with continued performance of identity-related behaviors and reinforced meaning. Many interviewees commented on opportunities to form interpersonal connections within group and role-based identity dimensions, which enabled them to become more informed – and, in turn, share information – about potential

drilling-related impacts. Many also believed that it was because of these dimensions such as elected official and landowner coalition member that these connections formed and matured. Thus, an eighth proposition is as follows:

- **Proposition 9:** There is a reciprocal relationship between opinion leader identity commitment and identity-related meaning and communication behavior.

Opinion Leader Identity Resources, Social Appraisals, and Verification

How does an opinion leader identity evolve and change over time? This dissertation explored how resources brought to bear in engaging in communication behavior, such as the perceived ability to seek and share information, as well as people's appraisals of these behaviors and the opinion leader identity in social settings, in terms of perceived outcomes of the communication process, shapes opinion leader identity meaning and behavior over time. As described in Chapter 2, identity theory posits that individuals will draw on various types of resources to achieve identify verification; verification, in turn, can increase resource use over time (Stets & Cast, 2007). Based on interview data presented in Chapter 4, it was argued that self-efficacy represents an active, personal resource that reflects perceived ability to perform find information about natural gas drilling. Many interviewees felt confident in their ability to locate information if desired, with particular emphasis placed on information accessibility from personal connections and social networks. Moreover, finding information where relevant data are not yet available and, as a result, considerable certainty exists – and, thus, continuing to see oneself/be seen by others as an opinion leader - was arguably made easier by high levels of efficacy. This finding informs a ninth proposition:

- **Proposition 10:** There is a reciprocal relationship between information self-efficacy and opinion leader identity verification; high levels of efficacy facilitate verification, which then serves to strengthen efficacy perceptions.

It was also suggested that self-efficacy can be an interpersonal and structural resource, reflecting not just judgments of one's perceived ability but also (1) one's location in a social network n terms of access to contacts who can assist one in finding relevant information (see Roch, 2005) and (2) degree of trust in these contacts to provide such information (Afifi & Weiner, 2004). To date, the majority of communication research has focused on the ability-related aspects of self-efficacy without comparable attention to interpersonal and structural aspects. This supposition leads to a tenth proposition:

- **Proposition 11:** Information self-efficacy, as an identity-related resource, is a function of personal ability to locate information as well as one's structural location in a social network and interactions with network contacts, such as the degree of interpersonal trust.

In addition to resources, social appraisals of identity-related behavior also play an integral role in achieving verification. While verification processes across role, group, and personality-based identity types – or, in the case of this dissertation, identity dimensions – differ in some respects (Burke & Stets, 2009), fundamentally it is about matching identity standards with appraisals from social interactions (Burke, 2006). The extent to which this effort succeeds speaks to whether and how these behaviors are performed and the stability of a given identity. In Chapter 2, it was argued such feedback includes outcomes associated with the information seeking and sharing process in terms of whether information provided about Marcellus was useful to people and whether it was difficult to remain up to speed on this issue. In effect,

individuals compare these outcomes, or what they actually do, to opinion leader identity meaning, or what they think they should do, in an effort to achieve verification. A discrepancy between perceived and ideal behavior can lead to changes in opinion leader identity meaning and/or behavior (Burke, 2006).

When it came to these outcomes, one of the major issues was not the ability to find information but rather the ability to keep up with it. Many interviewees discussed difficulties associated with gas drilling-related information constantly becoming available and changing on a regular basis. For some interviewees, moreover, these demands impacted perceived ability to fulfill expectations they associated with opinion leadership: in particular, being as informed as possible about all aspects of natural gas drilling. As a result, some began to see themselves as less of a resource and spent less time remaining informed and looking for drilling information. On a more positive side, many interviewees felt that individuals with whom they interacted and exchanged information had benefited from the interaction, especially if interviewees felt that such individuals then became motivated to learn more.

Considerable research has identified psychological and sociological determinants of information seeking and sharing (Griffin et al., 1999; Wilson, 1999). Research has also explored perceived outcomes of such behavior that can facilitate or impede future action (see Arora et al., 2008). Such factors include perceived reluctance of a source to disclose information; inability to find information; not knowing one's exact information needs at the onset; inability to understand information due to lack of expertise or education; lack of social contacts with which to discuss and exchange messages; and asymmetrical power relationships between seeker and source, especially if the latter is seen as an authority figure in an encounter, such as a physician speaking

with a patient (Afifi & Weiner, 2004; McKenzie, 2002; Niederdeppe, 2008). However, such inquiry has largely consisted of cross-sectional analyses, and there is somewhat of a disconnect between the theoretical approaches - how and why individuals engage in such behavior over time in response to successes and failures in finding/not finding information) (Arora et al., 2007; Shim et al., 2006) - and cross-sectional studies that cannot address the dynamic nature of these phenomena. The same issue likewise applies to identity theory: a reliance of cross-sectional techniques to explore dynamic processes that evolve over time, such as the trial and error process through which identity verification is achieved (Burke, 2004; for exceptions, see Burke, 2006).

This dissertation links these barriers (as outcomes of communication behavior) to the stability of an opinion leader identity, which can facilitate or impede behavior by virtue of the perceived ability to achieve identity verification. This research, in other words, links determinants of behavior, namely, identity-related meaning, and outcomes of such behavior to study whether and, if so, how information seeking and sharing tendencies are reinforced or impeded over time. Based on these arguments and findings discussed above, an 11th proposition can be stated as follows:

- **Proposition 12:** Positive (negative) assessments of outcomes associated with communication behavior within opinion leader identity dimensions are positively (negatively) associated with identity verification and stability and continued enactment of such behavior.

Future research should explore whether, in situations where *both* positive and negative outcomes are perceived, there is a threshold with which one overshadows the other and impacts communication behavior. That is, one can be satisfied that others with whom one shared information were satisfied while also perceiving that, because of the large volume of information

about, it his case, drilling-related impacts, there is much one still does not know. How people balance these conflicting outcomes has important implications for identity stability. Another area of future research relates to how best to measure feedback relationships between outcomes and identity verification. These relationships should be studied using longitudinal data, including panel studies, to capture lagged, time-dependent effects (Slater, 2007). Analytical approaches such as two-stage least squares regression, structural equation modeling, and latent growth models account not only for cross-sectional, two-way associations between outcomes of information seeking and sharing and opinion leader identity verification but also time-lagged pathways, in which time 2 values of these variables are predicted, in part, by time 1 values.

Opinion Leader Identity Interactions and Multiplicity

Whereas the first component of RQ 4 explored verification challenges within role, group, and person-based identity dimensions, the second component explored conflicting expectations *between* identity dimensions or between opinion leadership and other salient identities. Intra or inter-identity salience, known as multiplicity, has important implications for identity-related meaning and communication behavior stability and change (Burke, 2006). The degree of compatibility and conflict can either leave one confident in one's ability to verify identity meaning or distressed at being unable to reconcile discrepancy between different meaning dimensions (Burke, 2006).

Individuals can be faced with potentially overlapping opinion leader identity dimensions and, as a result, consonant or dissonant meaning regarding communication behavior and difficulty achieving verification. In the interviews, there were situations involving overlapping group, role, and personality-based identity dimensions and meaning. Specifically, different identity

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dimensions were related to different drilling-related impacts about which interviewees felt social/personal pressure to remain informed and sought information as well as who they felt expected them to be knowledgeable. However, the meaning that seemed to bind identity dimensions together involved remaining informed and gathering as much information about potential impacts as possible. In other words, interviewees viewed multiple issues about which they felt pressure to remain knowledgeable and seek/share information in a complementary, rather than conflicting, light.

Burke (2006) suggested that conflicting identities will work toward a compromise that favors achieving simultaneous verification for all involved; however, success depends on salience of and commitment to each identity and how similar meanings are to each other. When it comes to negotiating meaning across identities or, in the case of this dissertation, identity dimensions, conflict can most often emerge – and compromise most often needed - when meanings and associated behavior are similar enough to be activated simultaneously but dissimilar enough to proscribe different kinds of expectations and action and, thus, conflict (Burke, 2006). In the case of overlapping opinion leader identity dimensions, meaning and associated behavior were similar enough to be activated simultaneously; however, they were *too* similar to proscribe different kinds of expectations and action and come into conflict. There was some overlap but not enough to cause problems. Interviewees simply perceived a greater depth of, rather than conflicting, information need. Thus, they were able to achieve verification within these identity dimensions in situations of overlap.

One reason for this ability may be that many interviewees saw themselves and/or were seen by others as polymorphous opinion leaders, in terms of being knowledgeable about many

different impacts of natural gas drilling. Given the diverse array of potential impacts related to drilling, it is not surprising that interviewees have attempted to become as informed as possible. Overlapping opinion leader identity dimensions can contribute to this motivation in terms of different referent groups on whose behalf one endeavors to become knowledgeable and expectations to be informed about different issues. These perceptions can contribute to a unifying meaning, across identity dimensions, to be as informed as possible. This argument leads to a 12th proposition:

- **Proposition 13:** In situations of simultaneously salient opinion leader identity dimensions, the degree of dissonance in meaning related to communication behavior – and, by extension, the degree to which a compromise can be achieved to enable simultaneous verification of meaning across all dimensions - will be determined, in part, by perceived similarity of meaning and one's status as a monomorphous or polymorphous opinion leader.

Some interviewees also encountered situations in which an opinion leader identity became simultaneously salient along with other identities, with the potential for consonant or dissonant meaning. Although this situation was overall less common than overlapping group, role, and personality-based opinion leader identity dimensions, the outcome was the same. The underlying meaning of both identities was sufficiently similar as to be concurrently salient, with both perhaps united around the issue of time needed to remain informed about gas drilling-related impacts. However, they were sufficiently different as to not be in fundamental conflict when it came to looking for and sharing information. People simply wanted to be as informed as possible about this issue, and as a result, they were able to achieve identity verification. Thus, proposition

12 can be extended to cover situations involving overlap between opinion leadership and other salient identities:

- **Proposition 14:** In situations of simultaneously salient opinion leader and other, non-leader identities, the degree of dissonance in meaning related to communication behavior – and, by extension, the degree to which a compromise can be achieved to enable verification of meaning across identities - will be determined, in part, by perceived similarity of meaning.

The two types of identity overlap were clearly indicative of accommodative tendencies discussed by Burke (2006). Individuals will work to balance meaning and behavior across identity dimensions in an effort to achieve verification, avoid situations of conflicting expectations and action, and maintain a stable sense of self as comprised of multiple, co-existing group, role, and personality-based opinion leader identity dimensions (Marks & MacDermid, 1996). This notion is consistent with the view, outlined in Chapter 2, of opinion leadership as a master identity salient across these identity dimensions and the finding that meaning related to communication behavior can be similar across dimensions. Future research can expand on this notion by assessing, perhaps quantitatively, the degree of identity dimension overlap and meaning-related accommodation using measures proposed elsewhere (i.e., Burke, 2006; Marks & MacDermid, 1996).

However, the findings above assume that accommodation and balance are even possible or desirable in situations of inter/intra identity overlap. Other scholars have taken a different stance than Burke (2006), adhering to a hierarchical ordering of identities and, for the purposes of this research, opinion leader identity dimensions. In this approach, prominence and salience guide identity meaning and behavior (Hoelter, 1983; Stryker & Burke, 2000). Individuals can work to

achieve balance (Siebert, 1974) but tend to engage one identity at a time to avoid conflict, in part because they are not as committed to each identity equally. Identities with more commitment will emerge as prominent and salient in situations of overlap (Hoelter, 1983), and identity-strain, manifested in not knowing how to act, is a potential problem. Future research should assess identity strain (see Marks & MacDermid, 1996) as well as accommodation, including the perceived ease with which one

- Can balance expectations associated with opinion leadership in different role, group, and personality-based identity dimensions, in terms of personal/social pressure to be informed about natural gas drilling impacts as well as information seeking/sharing behavior;

- Is able to achieve verification across dimensions;

- Is satisfied with one's ability to achieve balance;

- Perceives strain in terms of potentially conflicting meaning across identity dimensions.

Practical Implications

This dissertation sought to address gaps in existing research on risk-related communication behavior in the interest of advancing communication theory and practice. It was argued that effective risk communication depends, in part, on understanding how people seek, avoid, and engage with risk messages; how such behavior influences risk-related attitude and behavior (Griffin et al., 1999); and how to motivate people to become more informed about and engaged with such issues. This research provides insight into addressing the communication challenges controversies such as Marcellus Shale pose by integrating literature on boomtowns, shale gas development impacts, and risk communication.

In light of a push for social science research on perceived impacts of shale gas drilling and given that the nature and extent of potential impacts depend on many time-dependent factors and reflect the boom-bust nature of fossil fuel extraction, there is an opportunity to better understand how people become and remain informed and seek/share information about various impacts that may emerge at different points in time and, in the process, work to verify an opinion leader identity. Such research provides insight into the dynamic nature of communication behavior and opinion leadership and pushes scholars to embrace a more longitudinal perspective on these phenomena as part of risk communication practice. Two areas are particularly noteworthy to examine:

- The role opinion leaders may play in regard to effective engagement among publics, policymakers, and other stakeholders about energy development, including encouraging people to become and remain informed about potential impacts;

- Whether – and, if so, how - the meaning of and behaviors associated with an opinion leader identity, including but also extending beyond information seeking/sharing behavior, potentially change as gas development progresses through different stages.

The following sections describe these implications in greater detail.

Risk Communication and Natural Gas Drilling: Challenges and Opportunities

As mentioned in Chapter 1, challenges associated with communicating about potential natural gas drilling impacts in New York State speak to the contentious nature of 'wicked' problems. Specifically, the underlying issues are not just scientific in nature, in terms of the probability of a given impact occurring, but also normative and ethical, and solutions involve not

merely technical fixes such as policies to address these impacts. Indeed, these issues involve potentially divergent interpretations about the existence, nature, and effects associated with different impacts; the meaning and appropriateness of risk information; and how to appropriately communicate about these impacts (McBeth & Shanahan, 2004).

Given these challenges, moreover, risk communication takes on different meanings. Advocacy groups, government agencies, and others may focus on persuading people to modify their views about the nature, magnitude, and management of risk (Meadow, Readings, Phillips, Mehringer, & Miller, 2005): that gas drilling is or is not 'risky. Indeed, much of the early risk communication research involved the perceived need to "align the risk perception of the public with that of the risk experts" in an effort to "reduce fear of risk-related technology and to diminish public resistance toward that domain of technology" (Gurabardhi, Gutteling, & Kuttschreuter, 2004, p. 325). In terms of Marcellus Shale, Haut, Williams, Burnett, and Theodori (2010) stressed the importance of "informing and education stakeholders" so that the natural gas industry can "begin to change the misperceptions of problems associated with energy development and gain the public's trust" (p. 747).

This dissertation argues that it is essential to think beyond persuasive risk communication and embrace a more engagement-based approach. Persuasive approaches do not represent the entire risk communication picture. Scholars have emphasized other goals, including raising awareness of risk issues, building trust among stakeholders, and facilitating opportunities for engagement and consensus building related to risk management (Bier, 2001; Chess & Purcell, 1999). Scholars have identified various techniques for accomplishing those goals (Chess & Purcell, 1999; Decker & Chase, 1997). Broadly speaking, these approaches reflect both greater

awareness of the importance of public deliberation and participation (Scherer et al., 1999) as well as demand on the part of citizens and other stakeholders for greater involvement in decision-making procedures (Jacobson & Decker, 2008).

When it comes to Marcellus Shale, government officials may pursue an engagement-based approach by seeking input on drilling-related policy decisions, working to attain consensus on a particular course of action, and facilitating stakeholder understanding of diverse viewpoints about this issue (Chess & Purcell, 1999). Haut et al. (2010), for example, argued for "mature, meaningful dialogue among members of the general public, community leaders, representatives of oil and gas associations, regulatory agency personnel, non-governmental organization representatives, and other interested individuals" about issues such as "the potentially positive aspects and negative consequences of energy development" and "hopes, fears, and/or anxieties associated with unconventional gas development" (p. 746). They also expressed optimism that "open and honest communication will reduce the spread of rumors and inaccuracies" about the drilling process (pp. 746-747). In a broad sense, this approach reflects a dialectical approach to risk communication: one that goes beyond transmitting risk message to audiences in anticipation of an effect and involves "[helping] stakeholders evaluate the scientific and technical merits of the information" (McComas, 2004, p. S65) so as to facilitate "informed participation in decision-making processes" (Scherer et al., 1999, p. 209). Specifically, it entails empowering people to

1. Appreciate and scrutinize different, potentially conflicting perspectives on risk;

2. Search for and critically evaluating risk messages in a forum that facilitates a "democratic exchange of information" (Juanillo & Scherer, 1995, p. 278);

3. Arrive at a decision "about risks that…[impact] individual and community lifestyles and polices" based on careful deliberation and critical thinking (Juanillo & Scherer, 1995, p. 278);

Of course, dialectical risk communication may not and often does not produce consensus on a particular issue, and for this reason, some scholars have questioned its applicability to polarizing issues like Marcellus Shale (see Jacobson & Decker, 2008). However, it can ensure that "all the parties involved are informed of the ambiguities, uncertainties, and potential of scientific as well as other types of risk assessment [and can thus] contribute to political decisions" (Juanillo & Scherer, 1995, p. 294). Moreover, an important ingredient in the success of dialectical risk communication is "[whether] citizens can acquire the information needed to deal effectively with…the nuances and complexities of risk situations" (Scherer et al., 1999, p. 209). Thus, exploring determinants of information seeking and sharing and, with this knowledge, motivating people to engage in these communication behaviors is crucial (see Griffin et al., 1999). Such insight is important because the manner in which people search for, engage with, and exchange information with others can help shape what messages they remember and what decisions they may make about issues such as gas drilling, including whether to support or oppose it.

However, as emphasized in Chapter 1, existing research on communication behavior, especially in risk contexts, has tended to focus on specific risk issues in isolation, such as why and how people become informed about climate change, energy policy, and environmental contamination (Griffin et al., 2005; Kahlor et al., 2006; Kahlor & Rosenthal, 2009). A focus on potential health, environmental, economic, and social impacts of gas drilling that each involves

various degrees of uncertainty about probability of occurrence and severity of consequences; on how people become informed and inform others about these impacts; and on the role an opinion leader identity plays in this process pushes communication research to focus on how people make sense of a complex risk issue with multiple dimensions. It also represents a valuable contribution to a communication field that tends to concentrate on cross-sectional assessments. Moreover, in understanding and applying principles of dialectical risk communication in this setting, researchers must consider whether and, if so, how communication behavior changes over time. In particular, how does the meaning of and behaviors associated with the opinion leader identity – in terms of impacts about which opinion leaders desire to remain informed and seek/share information – potentially change given boom-bust cycles of gas development proceeding through phases of activity (Jacquet, 2009)? This question provides insight into the dynamic nature of opinion leadership and its implications for risk communication practice.

Some scholars have faulted boomtown research, including studies on shale gas development, for inadequately investigating changes in actual or perceived impacts through different phases of development over time (Wilkinson, Reynonds, & Ostresh, 1984). Different impacts can gain prominence in public, policymaker, and media arenas depending on the pace and scale of development; the occurrence of particular events such as road degradation and water contamination; and other factors (Brown et al., 2005; Kay, 2011; Theodori, 2009). For example, oftentimes enthusiasm over potential positive economic impacts at the onset of development are tempered by concerns related to provision of services, adequate tax revenue, and other issues as development increases (Gilmore, 1976). Longitudinal studies conducted to date provide insight into these changing perceptions, in terms of impacts seen as getting worse, getting better, and unchanged (Anderson & Theodori, 2009; Theodori, 2009), as well as how individuals and

communities adapt to positive and negative impacts. Brown et al. (2005) examined perceived

social impacts of energy development in Western U.S. communities, including indicators such as

community satisfaction and attachment, trust in other community members, and social

integration. They suggested that *anticipatory* impacts before an expected boom can play an

important role in the perceived existence and severity of these impacts. They also found that

communities can adapt and even emerge stronger than before development began as "residents

create new interpretations of their area and…form new relationships to their communities"

(Brasier et al., 2011, p. 34).

Risk Communication and Natural Gas Drilling: The Role of Opinion Leaders

As different drilling-related impacts emerge and necessitate appropriate adaptive policies, so

too can people respond by seeking and sharing information and becoming more informed about

them. In the process, communication behavior is arguably both a reflection of perceived impacts

as well as a driver of those perceptions; that is, becoming more informed and informing others

about specific impacts can attenuate or amplify perceptions of benefit and risk associated with

gas drilling. Furthermore, from a practical perspective, longitudinal insight into communication

behavior can help local, state, and federal officials identify potentially evolving, pressing

information needs among citizens and other stakeholders related to gas drilling across stages of

development. Opinion leaders have a crucial and dynamic role to play in regard to effective

communication among publics, policymakers, and other stakeholders, including, but also

extending beyond, encouraging people to become and remain informed about various impacts

that may arise.

Previous research has highlighted the important role opinion leaders play in communicating persuasive messages in various situations (Valente & Davis, 1999) and in facilitating public participation, interpersonal trust, and collective action in response to economic, political, and social problems (Goodman et al., 1998; Raik, Siemer, & Decker, 2005).They also can help build capacity at the individual and community level in preparing and responding to potential impacts associated with natural gas drilling. Goodman et al. (1998) defined capacity as "characteristics of communities that affect their ability to identify, mobilize, and address social…problems" (p. 260). Dimensions of capacity include "participation and leadership skills, social and inter-organizational networks, sense of community, understanding of community history, community power, community values, and critical reflection" (p. 260).

In the boomtown literature, a key determinant of the nature and extent of energy development impacts was local, state, and federal government capacity to develop effective mitigation policies (Gilmore, 1976; Jacquet, 2009; Kenneally & Mathes, 2011). In the context of Marcellus Shale, various questions remain related to jurisdictional boundaries of local, state, and federal oversight of gas drilling in New York State and elsewhere (Central New York Regional Planning and Development Board, 2010): in particular, about the limits of local government oversight regarding zoning for/against gas development; planning for the location of community growth and the potential need to expand public services; distribution of drilling-related taxation revenue; and instituting agreements that govern how gas companies use and pay for road maintenance and repair (Kay, 2011; Munzer, 2011; Randall, 2010).

How can opinion leaders help build capacity at different levels of government in regard to gas development? Participation and leadership skills, as two dimensions of capacity, depend on "formal and informal leaders" who can "encourage participation from a diverse network

of…participants" and facilitate "the sharing of information and resources by participants and organizations" (Raik et al., 2005, p. 261). From a communication behavior perspective, opinion leader are an indispensable resource in several areas:

1. Raising awareness of the various risk-related impacts of natural gas drilling;

2. Facilitating knowledge acquisition, interpersonal discussion, and understanding of potential impacts;

3. Encouraging others to seek information and become more informed about emergent impacts: in particular, to appreciate that the emergence and severity, both positive and negative, of impacts depends on the phase and intensity of natural gas development at different points in time.

4. Helping stakeholders develop a collective identity based on shared interests or viewpoints, which can be essential in debating policy solutions related to impact prevention and mitigation (Besley & Baxter-Clemmons, 2010; Guttmann, 2007; Nisbet & Kotchner, 2009; Tyler & Degoey, 1995).

Polymorphous opinion leaders who see themselves and/or are seen by others as leaders across group, role, and person-based identity dimensions; who interact with a variety of individuals, groups, and organizations by virtue of trying to remain informed about natural gas drilling impacts; and who are committed to finding and sharing as much information as possible about various potential impacts of gas development may be particularly essential to accomplishing these goals. By virtue of occupying multiple opinion leader identity dimensions, polymorphous leaders would arguably perceive a greater information need in terms of what to

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know about gas drilling, perhaps because they interact with a larger pool of individuals and groups who expect them to be knowledgeable. They may also be better able to bring different groups together for constructive discussion and, in the process, "carry" information between groups that may otherwise have little or no contact and facilitate information exchange that would otherwise not have occurred (Burt, 1999; Roch, 2005).

Although opinion leaders have a vital role to play in communicating about potential impacts of natural gas drilling, it is also important to consider strategies for appealing to opinion leaders to themselves remain informed and inform others. There are challenges, including how and how often to train these individuals so that they match their communication strategies with audience issue perceptions and "deliberately [frame] messages in ways that make them more meaningful and persuasive to their recipients" (Nisbet & Kotchner, 2009, p. 339). Nisbet and Kotchner (2009) stressed the importance of regular training. In the case of Marcellus Shale, such training could be done by natural resource managers, risk communication scholars, or others who conduct participatory decision-making strategies. This dissertation, moreover, adds a layer of complexity in terms of how leaders are identified in the first place as well as trained, given that opinion leadership is an identity that can emerge in role-based, group-based, and personality-based identity dimensions and which can proscribe different meanings and motivations for communication behavior depending on these dimensions. Attention would need to be paid to these identity dimensions when selecting leaders, although the added benefit of such segmentation would be to potentially identify spheres of influence in which these individuals could be effective.

Moreover, appeals used to encourage leaders to become informed, seek information, and communicate with others would need to be tailored to these identity dimensions - for example, elected officials feeling a need to be informed about all drilling-related impacts for the sake of their constituents versus landowner coalition members perceived a need to be informed about certain aspects, such as economic considerations, in response to the needs and expectations of their members. Moreover, identifying and reaching out to polymorphous opinion leaders will also be important because these individuals see themselves and/or are seen by others as leaders across group, role, and personality-based identity dimensions; potentially perceive a greater information need in terms of what to know about gas drilling by virtue of interacting with a larger pool of individuals and groups who expect them to be knowledgeable; and are especially motivated to find and share as much information as possible about various potential impacts of gas development through interaction with different social groups.

As mentioned earlier in this chapter, opinion leaders engage in, and are otherwise associated with, various behaviors that underlie the process of social influence, including advocacy, information seeking and sharing, and behavioral modeling (Flynn et al., 1996; Nisbet & Kotchner, 2009). The opinion leader identity-communication behavior relationship provides insight into how changing patterns of identity meaning are reflected in different behaviors in which leaders engage. Burke (2006) describes how identity-related meaning and behavior change over time to adapt to dynamic circumstances, such as significant events that may disrupt social systems in which identities reside and make verification difficult (Burke, 2006). For example, the birth of a first child can present challenges to verifying husband and wife identities especially if what it means to be husband and wife changes as a result of this event (i.e., the former becomes

more feminine and the latter more masculine). Could meaning and behavior associated with an opinion leader identity likewise change as events arise during different phases of gas development that necessitate leaders to adapt their actions and efforts? For example, events such as water contamination, road degradation, population increases in a community, and other impacts are likely to occur as the number and frequency of wells drilled increases. They are likely to attract media, public, and policymaker attention, which can further amplify or attenuate both awareness and concern (see Kasperson et al., 1988; McCombs & Shaw, 1972). Moreover, such patterns of attention may be cyclical as initial awareness wanes, issues are addressed (or perhaps ignored), and other drilling-related issues emerge and compete for attention (see McComas & Shanahan, 1999). As a result, opinion leaders may find themselves solicited for different kinds of information and may also perceive an expectation to step beyond the bounds of becoming informed and informing others to more of an advocacy role as part of efforts to remediate issues that occur.

Limitations and Conclusion

The opinion leader identity-communication behavior connection outlined in this dissertation is not without limitations; however, these limitations also present opportunities for future research.

First, the sections above provided methodological suggestions for future research. To what extent can the interviews used in this dissertation begin to shed light on the opinion leader identity-communication behavior link as one of causality? Scholars have long debated meanings of causality and ways to test for causal relationships (Cook & Campbell, 1979). Well-known tenets include (1) strong correlation between a presumed cause and effect, (2) temporality (the

cause must precede the effect), (3) dose response, in that increased levels of the cause produce increased effects, (4) a causal mechanism through which effects occur, and (5) ability to rule out alternative explanations (Cook & Campbell, 1979). Some scholars consider randomized experiments the gold standard for satisfying these criteria, with an emphasis on controlling factors aside from the presumed cause through random assignment (Maxwell, 2004). However, controlled settings are not always desirable or possible, and some factors are not subject to random assignment such as whether people view themselves as opinion leaders and on what issues. Moreover, the interviews in this dissertation were not designed as randomized controlled, quasi, or field experiments, in terms of establishing groups *a-priori*, such as leaders or non-leaders, and examining the effects of a particular 'treatment,' whether experimentally introduced or occurring naturally in the field, such as a communication intervention.

The question then becomes whether and, if so, how qualitative research can potentially demonstrate causal relationships. Weiss (1994) and Maxwell (2004) explained that interviews explore these relationships not through random assignment or statistical controls but rather through exploration of processes through which cause and effect potentially occur - how a cause (i.e., meaning of opinion leadership identity) leads to an effect (i.e., information seeking and sharing) as well as vice-versa through feedback processes. The process, in this case, occurs within each interviewee and reflects "the interpretive character of…human thought and action" (Maxwell, 2004, p. 7). The interviews explore the nuances of meaning within each subject in terms of what is happening and why they act as they do. Therefore, interview questions explored why interviewees did/did not see themselves and/or perceived being seen by others as opinion leaders about Marcellus Shale; whether/how different role, group, and personality-based opinion leader identity dimensions played a role in these perceptions; meanings they associated with this

identity; and what drilling-related impacts they perceived social and/or personal pressure to remain informed about and whether/how those expectations were a function of these identity dimensions. The researcher sought to understand and explain relationships in terms of the meanings people give to their actions and behavior in the context in which such actions and behaviors occur (Becker, 1996).

Second, most research on identity theory has involved measuring prominence, salience, meaning, and behavior using quantitative approaches such as Likert and semantic differential scales (Burke & Stets, 2009). However, this study did not seek to fully apply all identity theory concepts to opinion leadership and communication behavior about Marcellus Shale; rather, it explored a theoretical link between these two areas and suggested opportunities for future work. Moreover, it was not known in advance what meaning individuals would give to the opinion leader identity in general and in the aforementioned identity dimensions in terms of social and personal pressure to remain informed. Thus, it was necessary to explore these phenomena through in-depth interviews: to understand and explain meanings people give to their actions and behavior in the context in which such actions and behaviors occur (Becker, 1996). Part of this effort involved adapting these concepts for use in qualitative research.

Third, the questions used in this research to assess opinion leadership – being seen by others and seeing oneself as an information source about Marcellus Shale - were used mainly to avoid the term "opinion leader," which may too confusing to interviewees.

Fourth, interview results raise a number of issues related to data validity. The first issue is whether interviewees are actually opinion leaders about natural gas drilling in the Marcellus Shale at all. In answering this question, and reflecting a theme emphasized through this

dissertation, there are various ways to measure opinion leadership and identify leaders, each with its own advantages and disadvantages. Fundamentally, the goal is to ensure that individuals are identified who (1) believe that they are leaders and (2) are identified by others as such. In other words, social influence should be both recognized and realized. Situations in which only one criterion is met presents measurement validity challenges. People who believe they are leaders without recognition on the part of others are, in effect, lone voices to whom no one listens. This fact also represents the principal drawback of the self-designation approach to identifying leaders, in that people may desire to be seen as influential even when they are not (Weimann et al., 2007). It also illustrates the disadvantages of a positional approach, in that people in particular positions of authority may not necessarily be seen as leaders. For example, an elected official may not be seen as a leader despite representing constituents in policymaking processes. On the flip side, those who are identified by others as opinion leaders but do not realize or appreciate this recognition likely exert influence unknowingly and may see little motivation to capitalize on that position in terms of actively seeking to influence or persuade others. Ideally, the most valid means of identifying leaders take into account both perceived and actual influence. Specific strategies include a sociometric approach, in which researchers identify and systematically map communication patterns in a group, or through actual observation of social interaction (Weimann et al., 2007). However, strategies such as these are often time-consuming and expensive, especially if the population is large like in the case of Marcellus Shale, which is a multi-state issue.

Therefore, a combination of methods is recommended (Weimann, 1994), and this dissertation used primarily self-designation along with interviewee referrals. Interview questions focused on the extent which individuals considered themselves – and felt they where seen by others – as

opinion leaders. After each interview, moreover, participants were asked to nominate others with whom the researcher could speak whom they likewise consider knowledgeable, informed, and influential about this issue and/or with whom they have interacted and sought/exchanged information (i.e., snowball sampling; see Scherer & Cho, 2003; Weiss, 1994). Overall, each technique allowed for some degree of check on the other. Self-designation allowed the participant to reflect on his/her level of perceived opinion leadership. Snowball sampling, moreover, arguably tapped into one's social network comprised mainly of individuals who likely see themselves or at least are seen by others in this capacity. It also provided an opportunity to examine whether an interviewee who saw him/herself as a leader was referred by other interviewees for this reason. Moreover, as mentioned earlier in this Chapter, treating opinion leadership as an identity tied to role, group, and personality-based identity dimensions provides an integrative approach to explaining why people may see themselves and/or are seen by others in this capacity and identifying leaders based on this insight. In effect, it pushes the self-designation approach to embrace both personal and structural characteristics as complementary paths that give opinion leadership meaning in terms of who leaders are and what they do.

A second validity issue involves social desirability. Assuming interviewees were opinion leaders, to what extent where the data presented on the opinion leader identity-communication behavior link a function of researcher bias? In other words, the researcher did not want to unknowingly introduce bias by suggesting that it would be advantageous or desirable for an interviewee to see him/herself as a leader and 'act' that way accordingly in terms of becoming informed and informing others about drilling-related impacts. To guard against this bias, interviewees were reminded that there were no wrong or right answers to the interview questions; that they should not feel obliged to promote or defend a particular viewpoint(s); and

that the goal was to understand how they became informed and informed others about this issue. At no times did probes ask interviewees in a condescending or judgmental way why they didn't look for or share information about specific impacts or why they didn't see themselves as information resources.

The third issue revolves around the generalizability of this dissertation's focus, data, and implications. How representative were the interviewees of all individuals in the 3 county study area who may have seen themselves and/or been seen by others as opinion leaders? How generalizable are this dissertation's findings – in terms of drilling-related impacts about which interviewees desired to remain informed and inform others– to others areas in New York State and elsewhere that are currently experiencing or may experience natural gas drilling? Ter Huurne, Griffin, and Gutteling (2009) argued that the relationship between predictors of communication behavior and actual behavior can depend on subjects who participate in a given study, in terms of their motivation for engaging in such actions and how representative these individuals are of the population of interest. Shale gas drilling is occurring in many locations throughout the U.S., including ongoing Marcellus Shale development in Pennsylvania, potential development in New York State, and drilling in the Barnett Shale in Texas. Within each state, communities, towns, and counties where development is occurring vary from sparsely populated to major metropolitan areas (Hargreaves, 2009; Jacquet, 2009; Lavelle, 2010a). In the boomtown literature, the extent to which particular impacts occur; how they are perceived by citizens, policymakers, and other stakeholders; and whether and how communities mobilize to address them depend on a number of factors including existing population in an area and rates of population growth; previous experience with energy development; pace and scale of new development; and federal, state, and local regulatory regimes.

One cannot assume that impacts that occur and means through which they are addressed in one state or region are necessarily applicable to other areas (Sumi, 2008). Furthermore, as mentioned in Chapter 3, while the 3 study counties in New York State shared similarities in terms of relatively low levels of current oil and gas drilling activity; a history of development dating back over a century; relatively small populations compared to major metropolitan areas in the southern part of the state; and the fact that the Marcellus Shale runs under each county, they were also different on a number of levels, including the potential scope of Marcellus Shale development should it occur; the amount of land that is already leased for drilling; and the proportion of residents and existence of advocacy groups who are supportive of and opposed to drilling.

How do these factors relate to the generalizability of research findings? The overall goal of this dissertation was to elucidate how an opinion leadership identity and the role, group, and personality-based identity dimensions to which it is tied helps determine how leaders remain informed and inform others about potential impacts of natural gas drilling in New York State's Marcellus Shale. The goal was not only to select individuals who were particularly knowledgeable about this issue, but also to ensure a diverse knowledge base by speaking with individuals from various organizations active in this issue and who are likely to view Marcellus Shale from different perspectives. It is likely – and expected – that the perspectives identified are a function of those who participated and for whom the researcher was able to contact. It is also possible that had individuals from the 3 study counties who had not responded actually done so, or individuals from different counties in New York State or different states experiencing shale gas drilling been interviewed, that they would (1) have been more or less likely to see themselves and/or been seen by others as opinion leaders about Marcellus Shale; (2) have viewed leadership

as more strongly tied to certain role, group, and personality-based identity dimensions over others; and/or (3) have expressed a stronger desire to become informed or inform others about certain drilling-related impacts over others.

For example, compared to the other two study counties, Broome County would potentially see more intense natural gas development in terms of number of wells drilled. Perhaps non-respondents from this area would have endeavored to become more knowledgeable about economic impacts such as the advantages and disadvantages of leasing one's land or the extent of potential job creation and revenue generation for the local economy. Furthermore, perhaps opinion leaders in Pennsylvania would have expressed a strong desire to become informed or inform others about potential water impacts, such as contamination or methane migration, because such instances have been documented in some areas of the state with ongoing drilling in the Marcellus Shale. In addition, given ongoing drilling in Pennsylvania, landowner coalitions and advocacy organizations that are for or against development may be more active or at least more numerous compared to other areas. Consequently, opinion leaders, however identified, may view such an identity as more strongly tied to role and group-based identity dimensions compared to areas where such organizations may arguably not be as active.

These issues speak to how qualitative researchers have defined and sought to achieve generalizability in their research. While constructionist scholars point to the necessarily contextual nature of such research – that "our insight can only be a reconstruction of subjective perspectives of people in specific situations" (p. 3; Charmaz, 2002) - Mayring (2007) suggested that while developing universal laws and statistical rules are arguably not applicable to qualitative inquiry, there is an opportunity to explore how "context-specific statements" may

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apply to "similar situations, persons, and times" (p. 4). Ultimately, this research did not seek to map the various social networks of opinion leaders and non-leaders that likely exist in the context of Marcellus Shale or the characteristics of these relationships. Rather, it sought to explore the relationship among an opinion leadership identity; the role, group, and personality-based identity dimensions to which it is tied; and communication behavior about a complex risk issue with multiple dimensions. In the process, it looked to extend theory in terms of how identity theory can further research on defining opinion leadership; identifying leaders; and examining its relationship to risk information seeking and sharing among other behaviors. Here is where inductive theory building plays an important role. By using emergent interview themes to develop general theoretical statements, one can elucidate processes that define the opinion leader identity-communication behavior relationship that future research can explore in other settings (Shapiro, 2002). Thus, the question is not whether the *present* findings represents the views of individuals in a given area; it is whether these findings *suggest* questions to explore in future research, potentially in other areas facing or already undergoing energy development.

Moreover, it is argued that the opinion leader identity-communication behavior relationship may extend to issues beyond energy development. It is not hard to examine the risk communication literature for issues that involve multiple health, environmental, and other impacts; are arguably 'wicked' problems that involve ethical and moral-based, in addition to scientific, dimensions; where risk information is itself contested; and where scholars are interested in examining how people become informed and inform other about these impacts. Climate change is one such example, as it is expected to impact not only the broader environment but also human health (Maibach, Nisbet, Baldwin, Akerlof, & Diao, 2010). Considerable research, moreover, has explored ways in which ethical and moral-based appeals to

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address climate change have been disseminated via mass media and other channels (Nisbet & Kotchner, 2009) and how awareness of and reactions to climate change impacts are a function of more ingrained, fundamental psychological and sociological attributes such as environmental concern and political ideology (Hart & Nisbet, in press).

Communication scholars have also concentrated on predicting when and how people seek information about climate change and, based on these behaviors, what people come to learn about it (Kahlor & Rosenthal, 2009). As mentioned in the Practical Implications section of this chapter, moreover, Nisbet and Kotchner (2009) have discussed how to effectively identify, recruit, train, and use opinion leaders to disseminate persuasive messages that bridge ideological differences in climate change awareness and concern and motivate people to take action both individually and on the policy support level. How can an identity theory approach to opinion leadership inform these efforts? By examining role, group, and personality-based identity aspects of opinion leadership in relation to risk issues like climate change, scholars can extend research that has largely examined information seeking in a general sense - about climate change in general - to focus on reasons why leaders choose to become informed and inform others about particular impacts. It then becomes possible to identify different types of leaders who may concentrate on becoming and remaining knowledgeable and sharing information about certain impacts based on salient identity dimensions in which they see themselves as leaders.

The opinion leader identity-communication behavior relationship also provides an integrative approach to identifying leaders via both individual-level and group-level approaches based on the specific identity dimension in question (see Weimann, 1994). It also provides a means to understand how, over time, leaders engage in communication behavior and other behaviors to

verify that identity and fulfill relevant personal and social expectations. Finally, it provides insight into how changing patterns of identity meaning are reflected in different behaviors in which leaders engage, from seeking and sharing information to more persuasive and advocacy tendencies. Such change can be, in part, determined by evolving patterns of media, public, and policymaker attention to climate change in general and specific impact in particular (McComas & Shanahan, 1999). This cyclical nature of attention is similar to potentially dynamic perceptions of natural gas drilling impacts over time and throughout pre-production, production, and post-production phases of activity.

This dissertation's theoretical and practical implications make it clear that the future research agenda remains promising. As reflected in the Preface, there is an opportunity to further integrate diverse literatures in an effort to enrich and extend communication theory and practice.

BACKGROUND QUESTIONS

(1) How long have you resided in this area (i.e., the Finger Lakes/Southern Tier region)?

(2) How did you become aware of gas drilling in the MS? What initially piqued your interest?

(3) Overall, why do you care about this issue as much as you do? What interests you the most about it?

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IDENTIFICATION AS AN OPINION LEADER (BY OTHERS)

(4a) I realize that you may not consider yourself an expert on natural gas drilling per se. However, do people come to you for information, advice, or your opinion about Marcellus Shale (i.e., questions/concerns)? Are you the type of person that people come to?

Can you provide examples? Potential Economic impacts of gas drilling? Environmental? Human health?

Do you get the sense there's one issue that on people's minds more than others? Why?

Why do you think they come to you? Do you think it's an important part of how they see you? How important is it to you that they see you that way?

What does being seen in this light mean to you?

<u>Is it because</u>

- Being a member of [ORGANIZATION]? How so?

- A part of your personality (type of person you are)? How so?

- A 'hat' [ROLE] you see yourself wearing? How so?

As an information source, how do you respond to these inquiries? Are you the type of person that seeks people out and keeps them informed? Do you do so in the context of

- Being a member of [ORGANIZATION]? How so? Do you think you would respond differently if you were not a member of X organization?

- A part of your personality (type of person you are)? How so?

- A 'hat' [ROLE] you see yourself wearing? How so?

Overall, do you have a goal(s) in sharing information? Keeping people informed? Answering questions? Educating people? Persuasion? Have people benefited from the information you've shared/discussed?

Do you think they wanted to know more? Why or why not? If so, how do you deal with that?

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IDENTIFICATION AS AN OPINION LEADER (BY SELF)

(4b) Again, you may not consider yourself an expert on natural gas drilling, but do <u>you</u> see <u>yourself</u> as an information source (a 'go-to' person)? Perhaps someone who is (at least) somewhat familiar with MS, who knows a lot about it, etc?

Is it an important part of how you see yourself? How important is it to you?

What does being a "go-to" person mean to you?

<u>Is it because</u>

- Being a member of [ORGANIZATION]? How so?

- A part of your personality (type of person you are)? How so?

- A 'hat' [ROLE] you see yourself wearing? How so?

****

OPINION LEADER (IDENTITY) MEANING

I. Do other people (such as family, friends, or colleagues) expect you to remain informed about

MS? To look for information? Share what you find?

<u>PROBE</u>: About what subject or subjects? Can you provide examples? Potential economic

impacts of gas drilling? Environmental? Human health? Other subjects?

<u>PROBE</u>: Why or why not? Is it by virtue of

- Being a member of [ORGANIZATION]? How so?

If you weren't involved with X, would the need to be informed be as strong? Does being in X

help you stay informed?

- A part of your personality (type of person you are)? How so?

- A 'hat' [ROLE] you see yourself wearing? How so?

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Does this pressure differ depending on these dimensions – in X organization, the kind of person you are, roles you occupy, etc? For example, are you expected to remain up to speed on different KINDS of issues?

II. Do you expect yourself to remain informed about MS?

<u>PROBE</u>: About what subject or subjects? Can you provide examples? Potential economic impacts of gas drilling? Environmental? Human health? Other subjects?

<u>PROBE</u>: Why or why not? Is it by virtue of

- Being a member of [ORGANIZATION]? How so?

If you weren't involved with X, would the need to be informed be as strong? Does being in X help you stay informed?

- A part of your personality (type of person you are)? How so?

- A 'hat' [ROLE] you see yourself wearing? How so?

Does this pressure differ depending on these dimensions – in X organization, the kind of person you are, roles you occupy, etc? For example, do you need to remain up to speed on different KINDS of issues?

Have you found it difficult to stay up to speed on these issues? How so? How do you deal with this?

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(5) How have you come to learn/find out more about these subject(s) you just mentioned?

(a) To what extent have you <u>looked for information</u>? [Can you provide examples)?

(b) To what extent have you come across such information in the course of your daily life, without necessarily looking for it? Tell me about that.

Can you provide examples?

You haven't mentioned environmental, economic, human health issues. What about those?

Do you find that you look for (encounter information)….

- Depend on being a member of [ORGANIZATION]? How so? Tell me about that?

  Do you think you would still look for/get information as much as you do if you were not a member of X organization?

- A part of your personality (type of person you are)? How so?

- A 'hat' [ROLE] you see yourself wearing? How so?

Do you information needs differ depending on these dimensions – in X organization, the kind of person you are, roles you occupy, etc?

How confident are you that you can locate information about [this issue]? Why do you feel this way?

How satisfied were you with the information you've found? Have you encountered situations in which the information was unclear, hard to understand, or left you wanting to know more? Tell me about that.]

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(6) Whom else would you recommend we contact? We are particularly interested in someone who

- Has been an information source for you personally, who you talk to re: MS

- Whom your trust to be informed

- Has helped shape the way you think about Marcellus Shale (and/or change your mind)

- You think would be knowledge, interested in speaking with us

CHAPTER 6: References

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