Re-visioning Cogenerative Dialogues as Feminist Pedagogy|Research

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Abstract: We discuss when cogenerative dialogues are a feminist pedagogy|research tool and also the circumstances when this is not the case. When viewed as a feminist pedagogy|research, cogenerative dialogues expose and discuss the unconscious and underlying structures that cause inequities both within and outside the classroom, particularly for girls and women. We raise ethical issues for researchers to consider how and when cogenerative dialogues may cause inequities by silencing students or reinforcing existing power differentials between teachers and students and offer suggestions for future research directions.

1. Introduction

STITH and ROTH (2006) argue that using cogenerative dialogues as a research tool can allow researchers to address critical ethical issues in conducting classroom research. While other research has focused on cogenerative dialogues as praxis in various education settings such as undergraduate and graduate courses in science and science education (MILNE, ELMESKY, LAVAN, MARTIN, SCANTLEBURY, GILMER, & TOBIN, 2006), this paper adds a feminist perspective to that scholarship. Previous work on cogenerative dialogues, along with STITH and ROTH's (2006) paper leads us to pose the following questions: Are cogenerative dialogues inherently a feminist pedagogy? As a research tool do cogenerative dialogues adhere to feminist research ethics? What are unexplored ethical issues and research advantages in using cogenerative
dialogues? We will begin by defining the term feminist pedagogy, then discuss when cogenerative dialogues may be viewed as feminist research and then conclude with highlighting how future cogenerative dialogues could be interpreted as a feminist pedagogy|research. [1]

2. Cogenerative Dialogues as Feminist Pedagogy

2.1 Defining feminist pedagogy

The term feminist pedagogy has different interpretations. In schools of education, feminist pedagogy utilizes Western feminist epistemologies such as liberal, cultural, social, radical, post-modern and post-structuralist to examine pedagogy. The foci for these feminist pedagogies vary depending upon the feminist theoretical framework, but they all include political, critical and praxis-oriented components (WEINER, 1994). Praxis is a key component of a feminist epistemology, as it defines the interrelationship between thought and action upon those ideas. The implementation of a theoretical feminist perspective is summarized in the phrase "the personal is political." For feminists, different perspectives infer differing political and personal agendas, and these agendas influence praxis. [2]

Feminist pedagogy, on the other hand, focuses on instructional aspects, such as classroom and assessment practices, and is a product of Women's studies programs. Using this interpretation of feminist pedagogy, feminist critiques of science suggested teachers and faculty should use pedagogical strategies that would make science more gender-inclusive. For example, in laboratory courses, teachers and faculty could expand students' experiences by using both qualitative and quantitative methods in data collection, include personal experiences of students in discussions, and pose gender as a facet of research questions (ROSSER, 1990). The impact of feminist pedagogy is limited to curricular reforms and to changing classroom practices. [3]

2.2 Considering cogenerative dialogues as feminist pedagogy

Cogenerative dialogues as described and enacted by STITH and ROTH (2006) have characteristics of both interpretations of feminist pedagogy. For example, they report encouraging students' voice, developing a collective responsibility for the events that unfold during lessons, and a focus on the praxis of the teaching and learning of science using a critical perspective. Moreover, as they described the physical arrangement of cogenerative dialogues—participants sitting in a circle, teachers, students and researchers on the same level without physical barriers (e.g. a teacher sitting behind her/his desk) and also the expectation that the participants share a collective responsibility for the classroom practices and events. This arrangement helps afford greater interactions and types of talk among participants. In this regard, cogenerative dialogues also may address curricular issues and changing classroom practices to create equity or more equitable teaching and learning structures. [4]
But are cogenerative dialogues inherently a feminist pedagogy? The theoretical and structural underpinnings of cogenerative dialogue lend support to the suggestion that it is a feminist pedagogy. Feminists re-frame discussions, research and practices to foreground and validate personal experiences as knowledge. The cogenerative dialogue uses the personal experiences of the participants as a frame for discussion and transformation. The structure of a cogenerative dialogue problematizes the hierarchal power arrangement and distribution in schools. That change in structure affords participants’ changes in their agency. In the examples provided by STITH and ROTH (2006), Ian used a cogenerative dialogue to ask the students for strategies to increase student participation during whole class discussions. As reported the subsequent discussion lead the group to focus on respect. Ian validates the students' knowledge about the class, arranges a structure to enhance the participant's agency, and makes changes to the class to promote greater equity; all of these practices could be viewed as feminist. [5]

Feminist practices focus on providing voice to the disenfranchised, the ignored, the silent, and the powerless. The intent and structure of cogenerative dialogue, also suggests it is a feminist pedagogy because the approach gives voice to all of the dialogue’s participants. As noted on their activity theory diagram, one of the rules for cogenerative dialogues is, "no voice is privileged," STITH and ROTH (2006) situate the importance that individual and collective voice play in both the foundation and methodology of these dialogues. Finding one’s voice is a particularly gendered notion because males are usually encouraged to verbalize their thoughts and ideas, while females are not. Cogenerative dialogues provide students, who typically may not speak in science classes, with opportunities to engage in discussions with their peers and teachers. Other research has found that males continue to dominant classroom discourse, thus providing a space for girls to discuss science is an example of feminist practice. Although in the paper's examples, the discussion focuses on classroom practices or attitudes towards the content rather than the content itself. There is potential for cogenerative dialogues to enable disenfranchised students to begin to interact with the subject matter. We have examples of this occurring in LAVAN's (2006) research with urban girls in single-sex cogenerative dialogues when they examined the role of language in their learning of biology and that often the difficulty in learning the content is because of their fear of the "really big and strange words." [6]

Conscious-raising is another tenet common to feminist pedagogy and cogenerative dialogue. Conscious-raising is a collective and cooperative activity in which the participants are co-responsible for educating others about their perspectives and enacting outcomes. Being able to verbalize one’s experiences, thoughts, ideas, feelings, concerns and issues without being silenced through conformities or restrictions of which types of language are appropriate and which are not. For example, Jasmine’s observation that there no whole-class discussion (turn 2) or Brett’s use of a profanity in turn 23 (STITH & ROTH, 2006). [7]

For girls, raising the consciousness of others is crucial because it can increase awareness about the girls’ backgrounds and capital and how the girls view science. Overtime, these new understandings will afford the teacher opportunities
to gain greater understandings of the teaching and learning practices that maintain equity, and those that particularly enhance girls’ science knowledge. Another strength of cogenerative dialogues is in assisting teachers, such as Ian, who have different cultural and racial backgrounds than their students, to understand girls. This may be particularly important in urban schools where teachers are often culturally and racially different from their students. [8]

Cogenerative dialogues can help participants develop new understandings about themselves and others. The new knowledge and how that knowledge pertains to girls and dismantling inequities could be viewed as feminist practice. For example, women of Color have two key strategies when using their voice, silence and outspokenness (HURTADO, 1996). Women of Color may deliberately remain silent and listen to gain knowledge that can be shared and discussed when they return to their communities. However, FORDHAM (1996) suggests that high achieving African-American girls often “do school” in a quiet, apparently submissive approach as a form of resistance to the low educational expectations of teachers and administrators and as mechanism to attain parental approval and rewards (FORDHAM, 1996). Women of Color also use outspokenness as a strategy to express their ideas and test their knowledge. Cogenerative dialogues can assist teachers to examine these different patterns of engagement with their African-American female students and restructure the classroom to draw on the girls' practices. These dialogues can also assist teachers in understanding the girls' lifeworlds. For example, within the African-American community, caregiver responsibilities can extend past biological children, parents and/or siblings. Women and girls are often placed in the role of othermothers, that is providing the care and nurturing for children, who they may have no direct biological relationship to, and sick relatives or community members. Othermother duties can cause girls’ absence from school (SCANTLEBURY, 2005). Teachers could interpret these absences to a disinterest in school, rather than a fulfilling a responsibility outside of school. [9]

2.3 Problematizing cogenerative dialogues as feminist pedagogy

Cogenerative dialogues illustrate several aspects of a feminist pedagogy, such as destabilizing power differentials, questioning classroom practices, providing disenfranchised students an opportunity to produce and to voice their knowledge, and as a tool for teachers to explore and learn what practices may enhance students' science knowledge. But if cogenerative dialogues fail to critically examine the underlying structures that cause gender-related inequities, then it is difficult to argue that they are an "authentic" example of feminist pedagogy. Furthermore, cogenerative dialogues may also exploit girls, and in particular, African American girls by relying on their commitment to community and the cultural practice of othermothering, that is placing other's needs before one's own. While Brett does not care if others are included in Ian’s discussions (turn 3), and then proposes what may be viewed as a public, confrontational approach to engaging students in turn 6, Jasmine suggests a strategy (turn 8) that Ian could use to provide all students the chance to talk. Her strategy illustrates an understanding that not all students are comfortable with public oration. [10]
STITH and ROTH (2006) observe that the final step of a cogenerative dialogue, that is the participants' commitment to making changes and then taking responsibility for enacting the changes is missing from the provided excerpt. We do not know if Ian and Jack changed their teaching practice as a result of the cogenerative dialogue. However, praxis defines the interrelationship between thought and action and thus is a key component of a feminist epistemology. A cogenerative dialogue cannot be considered a feminist pedagogy, if after identifying inequities there are no changes in praxis. [11]

Although co-education is the typical education experience for most students, many studies have documented how education that ignores gender can be detrimental to both sexes. Studies of successful women in science have noted that a common characteristic is that the women at some stage in their lives have had a single-sex experience. That experience may have been in an education setting at a K-12 or college level, belonging to an all-girl family or being an only child. As cogenerative dialogues are social processes, they are, as all social processes, inherently gendered (ACKER, 1992). The potential for cogenerative dialogues as a feminist pedagogy could be achieved through single-sex cogenerative dialogues. Including only girls in a cogenerative dialogue may minimize the gendered aspects of the setting. LAVAN's (2006) recent work with girls in urban settings illustrates how cogenerative dialogues can promote practices that enhance the girls' experiences in science. Through the cogenerative dialogues, the girls built social networks and capital that afforded them access to resources in science. The girls supported each other's science learning, used their agency to access resources, such as the teacher, and began to view science as a subject they could learn. [12]

Cogenerative dialogues could be considered a feminist pedagogy if the discussion focuses on inequities, generates local knowledge on nullifying those inequities and that is enacted upon through praxis. If the discussion within a cogenerative dialogue focuses on issues pertaining to girls and/or masculine hegemony that underlies Western society, then they may become a strong example of feminist pedagogy. [13]

3. The Ethics of Cogenerative Dialogue as a Feminist Research Practice

As explored in STITH and ROTH's (2006) paper (given the limited evidence) cogenerative dialogues have the characteristics of feminist research but there are aspects that may not adhere to feminist research ethics. Feminist research foregrounds gender and thus attempts to understand girl's and women's perspectives. Feminist researchers assume and are proactively conducting research that will be transformative, especially regarding women and girls. When considering the research ethics feminists consider the following: (1) situating one's identities; (2) informing one's daily lived experiences; (3) addressing inequalities; (4) representing one's research; and (5) reflecting on new possibilities (KNIGHT, 2000). By being aware and situating one's identity, a feminist researcher can begin to understand the power, oppression, and
interpersonal relationships of the research subject. A person's identity is time and space dependent and varies in different circumstances. [14]

While both the theory and practice of cogenerative dialogue in STITH and ROTH's (2006) paper is to create transformation and afford greater agency of all participants, the focus is not on transforming the lives and identities of the girls. Feminists would argue that this focus is necessary in feminist research. Thus, this is one instance in which the ethics of cogenerative dialogues differ from feminist research. Additionally, although participants in a cogenerative dialogue can impact one's identity, not specifically addressing power hierarchies related to gender ignores the potential for transformation. Specifically addressing gender hierarchies and identities has even greater significance when placed in the context of a science class, a subject area that remains inherently male. The gender of participants is a critical factor in examining who volunteers, is invited, or is coerced (by peers or teachers) to be involved in a cogenerative dialogue. For example, what knowledge may have been produced if Jasmine had not been the only female involved in the dialogue? [15]

Cogenerative dialogues are a pedagogy|research strategy that participants can use to expose and discuss unconscious and underlying structures that cause inequities both within and outside the classroom. As these structures are situated historically and socially, part of their unearthing is a discussion about their roots. Therefore, an important part of the cogenerative dialogue is to specifically discuss these equity issues. In this regards, cogenerative dialogues may be considered a feminist pedagogy and an example of feminist research. But as illustrated by the vignette below, discussions also need to move past meso level, classroom issues to the macro structures that influence the teaching and learning of science. [16]

The turns reported in the paper lend support to this idea. Jasmine notes that only a few students speak in whole class discussion (turn 2). In cogenerative dialogue she suggests to change the structure in order to allow more students to get involved (turn 8). In doing so, she articulates her perceptions of students and the role of respect. She illustrates the "outsider within" perspective noting, that "some students get more respect from other students" (turn 10) and that Ian's discussions of respect have not changed students' attitudes "someone who is disrespectful doesn't care enough to think about it" (turn 16). However, there is a lack of critical focus on respect and from the evidence provided this issue is given a superficial response, as participants do not examine the underlying issues of race, power and gender. [17]

The issue of representing one's research is challenging with cogenerative dialogues. On a local level, the criteria of feminist research ethics is achieved through the teacher and students acting upon the knowledge produced from the cogenerative dialogue. For example, the students or the teacher can re-present the knowledge and outcomes back to the class and enact changes to the teaching and learning practices. However, how the research is presented outside of a local level can be problematic. What input did the students have to STITH
and ROTH's (2006) paper? Did they choose the examples used? How did the participants decide on the topics that were foregrounded in the cogenerative dialogue? Would they have focused on respect as a critical issue in the class? STITH and ROTH (2006) discuss the ethics of their roles as researchers, their responsibility to the participants but not the ethics of students as researchers and the re-presentation of the research, so in this regard the study does not align with feminist research ethics. [18]

STITH and ROTH (2006) suggest that cogenerative dialogues are advantageous over other research approaches such as interviews or other "removed methods." However, feminist research methodologies propose that "interviews" can be more like conversations. So while cogenerative dialogues add a dimension to reflecting on teaching and practice for students and teachers, a drawback to the technique is the unknown influence of the power differentials and gendered dynamics on the discussion. [19]

However, cogenerative dialogues clearly are forums where participants can reflect upon new knowledge and continue to build upon that knowledge. They focus on addressing issues inequities and using the participant's lived experiences to produce that knowledge. Thus on many criteria, cogenerative dialogues adhere to feminist research ethics and at a local level are an excellent example of the genre. [20]

4. Underexplored Aspects of Cogenerative Dialogues as Feminist Pedagogy|Research

We have discussed how cogenerative dialogues may be viewed as a feminist pedagogy|research. And, as a pedagogical practice, they can improve the science learning experiences of students, especially girls, by affording new resources and opportunities to develop supportive social networks and different types of capital. Similarly, when cogenerative dialogues focus on inequities, produce local knowledge from participants' lived experiences and present that research within the local community, they also can be considered to have characteristics of feminist research and the ethics associated with that practice. It was not STITH and ROTH's (2006) intent to conduct a feminist study. However, if cogenerative dialogues are to be considered feminist pedagogy|research, a few issues must be raised. In this section, we have represent cogenerative dialogues as a dialectic between pedagogy and research, that is, pedagogy|research, and we frame our thoughts about if, how, and when this pedagogy|research is feminist. [21]

Firstly, should the participants only be female? What if there are mixed genders in the group, but the discussion focuses on issues of gender and/or the gender role stereotypes that may be impacting the praxis in the class? The aspect of cogenerative dialogues of giving students' voice is a feminist stance. But is this approach "feminist enough?" We propose that one version of cogenerative dialogues as a feminist pedagogy|research, may mean that the dialogue would only have females as participants, focus on the gender aspects of the class, or
the females' experience in the class. These cogenerative dialogues may be particularly salient in science class as the structure of the subject and the material inherently privileges males over females. Males may be viewed as having more authority and knowledge in the subject and their voices may be unconsciously privileged by others—both students and teachers. [22]

If cogenerative dialogues are feminist pedagogy/research, then the foci of the discussion would be the girls' experience in the science class. For example, LAVAN (2006)'s research with a female science teacher and girls in a school setting comparable to Ian's, found that the cogenerative dialogues built solidarity between the girls and teacher. This afforded greater learning opportunities and achievement for the girls in the classroom. Secondly, the social networks girls build through the cogenerative dialogues became resources for their learning in the classroom. Over time, the girls increased participation in the classroom, they began to rely on and advocate for each other in the classroom, and draw on the science content discussed in cogenerative dialogues. [23]

In a feminist cogenerative dialogue, the participants collectively resolve inequitable classroom structures, the teacher and students can examine and make changes to the local classroom environment that afford greater learning opportunities for the participants, especially girls. Ultimately, we expect that as with the girls' practices, the practices gained by the teacher will transfer to the classroom and afford both all participants greater agency. Thus, as the teacher gets to know the girls in cogenerative dialogues, s/he will begin to recognize certain types of capital as being beneficial to student learning. Overtime, the teacher will begin to restructure the classroom to draw on this capital. For instance, as the teacher begins to understand the importance of social networks for girls in the science classroom, we expect to see restructuring of the classroom that emphasizes the importance of these networks. [24]

Through this restructuring of the classroom, girls may assume different roles. For example, girls teaching one another, instead of being othermothers to boys, or that participation of girls during whole class increases. In turn, as the girls take on new roles in the classroom, we expect to find the production of new resources for both the teacher and other students. For instance, as we begin to see greater participation from the girls, what they say and how they explain content become resources for the teacher and their peers' learning. [25]

4.1 Using cogenerative dialogues to redistribute power

Setting of the rules implies a privilege and a voice. Ian described his pattern of going about this. This practice to us presents a paradox, to start cogenerative dialogues someone, and in Ian's case and in our own experience, must act agentically and change the structures. But one needs power to act agentically and the initial stages of introducing and using cogenerative dialogues need the very power differentials that Ian and others seek to de-construct by use of the cogenerative dialogue. Ultimately, the students should have the agency and are equally empowered as the teacher to "call" and insist upon a cogenerative
dialogue. As the research continues to develop in this area, the questions we may explore are: Can the participants in a cogenerative dialogue ever be equal? What are the implications if a teacher refuses to participate in a cogenerative dialogue? What if the students have a cogenerative dialogue without him/her—then the stakeholders will not be represented? [26]

4.2 Using Black feminist theory to re-vision cogenerative dialogues

Students and teachers develop local understanding but can these local understandings be separated from larger cultural structures such as gender and/or sex role stereotyping and the intersection of those ideologies with race? In settings such as where Ian taught, which have predominantly African American students, researchers can utilize Black feminist theory to understand how different types of knowledge and roles impact African American girls. The expanded view of knowledge includes using dialogue in assessing knowledge claims, an ethic of caring, and an ethic of personal accountability (COLLINS, 1991). For example, we can closely examining Jasmine's comments about who speaks in class and why some students get greater respect than others. However, there is often difficulty is raising these issues in a cogenerative dialogue. Because most often people tend to have sensitive discussions with people of like backgrounds and social positions, but it takes time to develop trust and understanding with a group of people. [27]

4.3 The potential of cogenerative dialogues to exploit participants

There is an emphasis on an ethic of care about the individual and the group in feminist research and ethics within Black feminist theory (COLLINS, 1991). The ethic of care in the pedagogy|research of cogenerative dialogues has heretofore has been ignored by researchers. LAVAN's (2006) research is beginning to document the importance of caring for between girls in an urban science classroom. However, as researchers we must also be cognizant of how cogenerative dialogues may also exploit African American girls by relying on their ethic of care, commitment to community and the cultural practice of othermothering, that is placing other's needs before one's own. Thus, cogenerative dialogues have the potential to be an effective strong pedagogy|research tool with African-American students, but as researchers and teachers we should examine our reliance on girls to provide the insights and perspectives on the classroom. Feminist standpoint theory assumes that the socially oppressed can access knowledge unavailable to the socially privileged, particularly the knowledge of social relations. As members of a socially oppressed group girls have an insight to the social order through their personal experiences but are also separated from the privileged groups to exist as outsiders. In one regard, African-American girls are the "outsiders within" and often have focused more on the sociocultural aspects of the learning environments than their male peers. As we broaden the settings in which cogenerative dialogues are used as a research tool to give to the oppressed voice, we also need to consider the different groups in our classes and who may be more
privileged. But as feminists researchers we need to recognize that girls are likely to place community needs before individual needs [28]

4.4 The contradiction of cogenerative dialogues as a pedagogy|research

Although STITH and ROTH (2006) observe that cogenerative dialogues can ethically lead to meaning, the dialogues also promulgate circumstances that can place teachers into ethically challenging spaces. While a cogenerative dialogue can assist teachers learn more about their students and lead to a better understanding of their students' learning needs, for example, Renee's perception that she "can't do math." However, when students are provided a structure where they can discuss issues that impact their learning. There is a potential that the teacher may learn about the students' lifeworld and be placed in an untenable ethical position. For example, when a student explains that s/he cannot focus on her/his learning because of issues outside of the classroom. Depending on the severity of those issues, the teacher may be under a legal obligation to report the discussion of the cogenerative dialogue. For example, if a student shared being subjected to sexual or physical abuse. There is a naivety in the STITH and ROTH paper, the benefits of cogenerative dialogues for the most part out way the negatives. However, one cannot ignore the potential for learning aspects of students' lifeworlds that teachers are ethically, morally and in some circumstances, legally bound to move from the egalitarian space created by the cogenerative dialogue, to a one where they have a authority, a power and an individual responsibility to act. [29]

5. Coda

Currently, cogenerative dialogues have focused on the types of issues raised by STITH and ROTH. When opportunities arise to further explore the source of inequities, by examining the macro structures that impact the culture in classrooms, the discussions often do move to that level. For example, the discussion of respect reported in the paper may have developed into a cogenerative dialogue about the macro structures that impact the lives of the youth, why respect is such an important facet of their lives, and why the students do not respect each other in the science class. We are working towards this ideal, but it is difficult to achieve for many reasons. First, a deep level of trust must exist among the participants and that trust takes time to develop. Second, the discussion subjects are difficult and the context, for example, meeting at lunchtime, or after school may not be conducive to a conversation that may examine the underlying hegemony of society's inequities. [30]

We would like to conclude with an aspect that is rarely examined, but is critical to our understanding of cogenerative dialogue as a feminist pedagogy|research tool—when cogenerative dialogues break down. In other words, what happens within a cogenerative dialogue when it fails to give voice, to critically examine structures, draw on collective activity or create equity? What types of understandings does examining these break downs afford the teacher, students and researcher? What
inequities are created when teachers and researchers choose to establish and to disassemble cogenerative dialogues? [31]

As we have noted, cogenerative dialogues are rooted in social and gendered processes. Often these processes are difficult to mediate in cogenerative dialogues, as participants come with individual, and different, goals that in some cases are in direct conflict from one another. From our experiences, if cogenerative dialogues are to be successful, all participants must feel safe to discuss contentious topics, "buy-in" to the process, and the goals of the collective. Generally, cogenerative dialogues are modified a number of ways to accomplish this, including as STITH and ROTH (2006) illustrate through their description of the rules and the physical layout of the discussion. Although the intentions behind these modifications are to reduce participants' anxieties about these discussions and at the same time encourage participants to collectively make the structures (e.g., acceptable ways of interacting, expectations, underlying power structures) explicit, there are instances when participants, specifically the girls within heterogeneous groups, do not feel safe enough to share their view points. For example, while it is common practice in cogenerative dialogues to discuss issues, such as relationships with peers or aspects homelives, there are times when the girls do not feel that they can share these experiences because they have not built the requisite social and symbol capital. In these instances, as the girls work to establish social and symbolic capital necessary for interacting within the group, the girls often enact practices that shift the focus of dialogue away from the collective, and toward interactions around attractiveness, sexuality and gaining the attention of the opposite sex. [32]

It is through these types of interactions, as well as those around the absence of voice (e.g. not contributing to discussion because participants feel that they do not have a place to express their perspectives or they believe that the good of the community means sacrificing individual needs) in which cogenerative dialogues break down and teachers decide to disassemble the group. Thus, as we continue to employ cogenerative dialogues in different populations and with purposes, we must begin to consider the impact of breakdowns in cogenerative dialogues. How do these instances in which cogenerative dialogues break down inform our understandings about giving voice, as well as about examining pedagogical and curricular practices that are equitable? How might these new understandings about a critical lack of voice and collective transformation impact the theoretical and methodological foundations of cogenerative dialogues? [33]

References


Scantlebury, Kathryn (2005). Meeting the needs and adapting to the capital of a Queen Mother and an Ol' Head: Gender equity in urban high school science. In Kenneth Tobin, Rowhea Elmesky, & Gale Seiler (Eds.), *Improving urban science education: new roles for teachers, students, and researchers* (pp.201-212). New York: Rowman & Littlefield.


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