TESTING CRIMINOLOGICAL AND SOCIOLOGICAL EXPLANATIONS FOR THE FORMATION OF HATE GROUPS

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by
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ABSTRACT

Title: Testing Criminological and Sociological Explanations for the Formation of Hate Groups Using Simulations Modeling.
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The purpose of this dissertation is to employ simulation modeling to test theories of group formation as they pertain to hate groups: groups whose hate ideology may or may not condone violent criminal behavior. As of 2010, there were 1002 hate groups known to be active in the United States. Previous examinations of hate groups have assumed formation. This dissertation uses simulation modeling to test Hamm's (2004) criminological theory of collective hate and Weber's (1947) socio-political theory of charismatic leadership. Simulation modeling is designed to create a computer simulation that simplifies people and their interactions to mimic a real world event or phenomena. Three different experiments were tested using five models of hate group formation. These experiments test the importance of personal and societal levels of hate in group formation and the influence of charismatic leadership. These experiments also tested hypotheses regarding the number of groups that form, the speed of formation and group size. Data to test these hypotheses was collected from fifteen thousand model iterations. All three models successfully generated hate groups. Hate groups were generated at all levels of societal hate. An in-depth understanding of how hate groups form may assist in slowing the proliferation of these groups and decreasing their appeal.

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CHAPTER ONE

INTRODUCTION

The purpose of this dissertation is to empirically examine the formation of hate groups: organized groups that profess racist, bigoted or prejudiced ideology; and to answer the question: *"what causes hate groups to form?"* Specifically, it expands upon the use of simulation modeling in the discipline of criminal justice by using this methodology to test Hamm's criminological theory of collective hate and Weber's socio-political theory of charismatic leadership.

Because hate groups exist in all fifty United States, it is important to understand how these groups form. Understanding what elements of the aforementioned theories are vital to hate group development may enable the creation of programs aimed at addressing these factors to prevent further proliferation of these groups. It may also allow for the creation of intervention programs, perhaps focused through community and educational models with members of defunct groups.

This research is needed because hate groups and their rhetoric may inspire their members and/or sympathizers to engage in hate-motivated crimes. In 2008, hate-motivated crime was the highest it had been in seven years, with 7,783 hate crime incidents reported, encompassing 9,168 offenses and directly involving 9,691 victims. Of these reported hate crime incidents, 58% were crimes against persons and 46% were crimes against property (FBI, 2009).

In previous examinations of hate groups, the fact that the hate group existed was taken for granted. How the group formed was only addressed through conjecture of theory, if it was addressed at all. Therefore, this dissertation argues for the need to develop an understanding of how hate groups form and gain membership. It uses simulation modeling to isolate and test

theory-based explanations for hate group formation and proliferation. An increased understanding of how these groups form will better inform research on how membership or desire for membership influences individual and/or group behavior.

There are several challenges to studying hate group formation. It is almost impossible and quite dangerous to seek out and monitor potential hate group members and those who could possibly start their own hate group. It is also unethical to manipulate the parameters that may influence hate group formation in the "real world." Agent-based modeling is a computer-based simulation technique growing in popularity in criminal justice studies because it allows for the controlled study of phenomena not amenable to experimental manipulation (Groff, 2007), allowing one to observe the "growth" of a hate group without endangering anyone.

The other problem with simply studying individuals who might form or join a hate group is that there are no guarantees they will do so, and such studies would be prohibitively long and expensive. Thus, hate group formation remains the stronghold of theory, and there is almost no empirical work on this topic. Although there are no guarantees that groups will form as a result of a particular parameter or set of parameters in a simulation model, this technique does allow for cost and time efficient studies of variables associated with hate group development throughout history. There is great variation in the types of hate groups that exist; this dissertation focuses specifically on white supremacy groups, which are the most prevalent type of hate group in the United States and the type with the longest history. Simulation models were built around Mark Hamm's theory of collective hate, which is used to explain the formation of white supremacy groups, and Max Weber's theoretical assertions regarding charismatic leaders, in accordance with a pattern evident throughout history in the development of hate groups in the United States.

Specifically, Mark Hamm (2004) theorized that bonds can be created between individuals through a shared hatred. He asserts that hate groups and hate organizations in the United States, including Neo-Nazis, right wing extremists and militia groups, "arose from an intense collective hatred for the federal government" (Hamm, 2004: 334). Hate, or a belief in a hate group's rhetoric or philosophy, is a defining characteristic of hate group members or potential members in the real world. Therefore, this study uses three types of hate as primary parameters for manipulation: intrinsic, extrinsic, and societal. Intrinsic hate is the individuals' privately held feelings toward a target group, which may or may not be totally revealed through extrinsic hate, or overt expressions of hatred. Extrinsic hate is how the individual expresses him or herself in regards to his or her hate, the language they use, the tattoos they have, and/or the slogans printed on the clothing they wear. The coming together of individuals based on their levels of intrinsic and extrinsic hate is the basis for collective hate. These individual representations of hate are needed to draw the individuals together into a collective hate, where individuals share the same hate beliefs and rhetoric. Societal hate refers to a "background" level of hate held by general society toward a particular target group.

Other factors undoubtedly influence an individual's decision to join a hate group. One of those factors is the presence of a charismatic leader. Weber (1947) theorized that marginalized groups with limited access to power, status or wealth become susceptible to charismatic leaders seeking to challenge the established government or system and that the position of the charismatic leader is one of a symbiotic relationship. The presence and loyalty of the followers and their belief in the charismatic leader, assists the charismatic leader in his or her maintenance of his/her position and power (Weber, 1947). In this vein, hate groups may represent anyone who believes that the target of their hate has some influence on their personal life, their real or

perceived failures, or missed opportunities. Weber's (1947) theory of charismatic leadership provides the basis for examining whether the presence of a charismatic leader in the agent-based models influences groups to form.

Relative to hate groups, individuals adhering to a hate ideology often believe that the target of their hate is or has the support of the dominant social, media, and political networks. They believe that the target of their hate is "taking over"; a belief epitomized in the hate mantra popular with skinheads and white supremacist groups known as "The 14 Words." Developed by The Order member David Lane as justification for the beliefs and actions of white supremacists, "The 14 Words" are: "we must secure the existence of our people and a future for white children" (Lane, 1999:1). Although "The 14 Words" alone do not advocate violence or hate crime, they have been a unifying factor among a wide variety of white supremacist hate groups, many of whom advocate violence when necessary to uphold the underlying tenets of this mantra.

Structure of the Dissertation

This dissertation focuses predominately on agent-based simulation modeling as a technique for criminal justice research. Hence, after this introductory chapter, this dissertation is structured as follows:

- Chapter Two provides a review of scholarly literature on group formation and on hate. Additionally, this chapter defines what a hate group is and highlights the importance of hate as a defining characteristic in the simulation models.
- Chapter Three provides a current and historical discussion of hate groups as the phenomena this technique will be used to replicate.
- Chapter Four presents the theories that will be tested in the experiments and provides the hypotheses.

- Chapter Five explains the agent-based simulation modeling technique.
- Chapter Six details the simulation model experiments that were used in this dissertation.
- Chapter Seven provides the analysis and results of those experiments.
- Chapter Eight discusses the conclusions and the impact of this dissertation on agent-based simulation as a methodology for criminal justice research, as well as theory, public policy, and future research.

Summary

Hate groups are prevalent in the United States. The study of hate groups has historically either assumed group formation or paid little attention to what brought a group into being. To this end, there are theories regarding group formation that should be empirically examined, including Mark Hamm's theory of collective hate, which was specifically developed to explain white supremacy hate group formation, and Max Weber's proposition that charismatic leadership can influence the development of marginal group types, like hate groups.

The ethical concerns about and the dangers associated with hate group research, as well as the inaccessibility of hate groups at the moment of their inception, make the case for empirically examining these theories is to use agent-based simulation modeling. Simulation modeling allows for the re-creation of hate group phenomena in a more controlled environment, allowing for the manipulation of theoretically-important parameters that would be impossible to address in the real world.

In order to better understand how hate groups form, one must have clear understanding of hate. The next chapter, therefore, defines hate and illustrates how it may be the most influential factor in hate group formation.

CHAPTER TWO
LITERATURE REVIEW

This chapter provides a review of the scholarly literature on group formation and on hate. Scholarly literature on group formation has focused on mainstream, accessible groups. Hate groups have been researched in historical context and will be discussed in Chapter Four. As a link between this discussion of group formation and the hate groups that are the focus of this dissertation this chapter also includes a review of the literature regarding hate.

Group Formation

Scholarly literature examining group formation has focused on: situational responses (Glick and Jackson, 1970: Breton and Pinard, 1960), homogeneity, heterogeneity, homophily (Merton and Lazerfeld, 1954), benefit, technology, framing, rhetoric, ideology, charismatic leadership (McGuire, 1972: Aghion and Gollier, 2000: Weber, 1947: Popper, 2000: Howell, 1988: Volkan, 1980) and collective identity (Hamm, 2004: Polletta and Jasper, 2001: Olson, 1965: Carroll and Ratner, 1996: Jasper, 1997: Friedman and McAdam, 1992: Klandermans, 1992: and Castells, 1997).

Glick and Jackson, (1970) hypothesized that groups form around a shared situation, such as going to college. Merton and Lazerfeld, (1954) suggest groups form out of the individuals' desire for similarity. Groups form as individuals seek out others who are similar to themselves (Merton and Lazerfeld, 1954). This may be partly due to homogenous groups forming as a response to the differences in a community (Merton and Lazerfeld, 1954). Group formation has been analyzed based on economic models, providing that membership in the group results from the individuals finding a financial benefit from membership in the group (McGuire, 1972: Aghion and Gollier, 2000). Since the advent of the internet, technology has been identified as a catalyst for group formation, especially since the internet gives people the ability to come

together in a virtual place rather than a physical one to exchange ideas (Langman, 2005: Adams and Roscigno, 2005).

Some groups form in a very overt fashion. Sussman (1956) qualitatively examined the creation, disintegration and resurrection of a group interested in weight loss. This group formed in response to a call for members who considered themselves overweight (Sussman, 1956). Potential members were invited to meet at the city hall through a series of newspaper articles announcing the group's formation (Sussman, 1956). If no one had responded to the articles, this group would not have formed. These articles called for specific people to come together based on a shared characteristic at a particular time and place. This is an example of situational response.

Further literature regarding situational response and homogeneity deals with immigration and assimilation (Breton and Pinard, 1960: Blau, 1956: Eisenstadt, 1951). Specifically, Breton and Pinard (1960) found that immigrants were more likely to form groups based on ethnicity when their education and language skills were found to be inadequate for assimilation and when they found employment with individuals who had emigrated from the same country of origin. Inadequate education and unfamiliarity with the local language prevented most immigrants in the study from making contacts outside of their ethnic group and limited the number of employment opportunities (Breton and Pinard, 1960). This study supported other earlier works examining the necessity of homophily[1] in the establishment of groups (Breton and Pinard, 1960). Despite identifying why immigrants developed groups based on their ethnicity apart from the society into which they had immigrated, the study does not shed light on how groups form. It focused on how associations were made between individuals. A better explanation for group formation can be found in studies examining collective identity.

[1]Homophily from R.K. Merton and P.F. Lazarfeld (1954) is a tendency to seek out individuals who possess similar qualities to which the group conforms such as status, ethnicity, norms and values.

Collective identity

One key factor in human group formation is an overt or developed collective identity that draws the individuals together and maintains the group's cohesiveness (Jasper and Poulsen, 1995: Polletta and Jasper, 2001: Jacobs and Potter, 1998; Hamm, 2004: McVeigh, 2006: Berbrier, 1998). Part of the formation of such groups is the call for membership based on this identity or identifying characteristics (Useem, 1972: Jasper and Poulsen, 1995: Langman, 2005: Jasper and Polletta, 2001: Berbrier, 1998).

Polletta and Jasper (2001) argue that it is a collective identity[2] that draws individuals together when examining protest and social movements. Once this common identity is established, individuals mobilize strategically and out of a sense of obligation to support their fellow group members (Polletta and Jasper, 2001). Some draw pleasure from being involved in the cause that they view as part of their identity or as possessing strong roots in their culture (Polletta and Jasper, 2001). These individuals require, for the most part, little or no financial or material compensation for their time and involvement (Polletta and Jasper, 2001). In order to draw individuals into a collective identity, activists may frame a particular cause, such as AIDS or human rights, as a cornerstone of another cultural identity, such as homosexuality or an ethnic minority (Polletta and Jasper, 2001). They then can draw individuals into the movement's identity by appealing to the individual through groups that he or she already claims membership

[2] Polletta and Jasper (2001) define collective identity as "an individual's cognitive, moral, and emotional connection with a broader community, category, practice or institution. It is a perception of a shared status or relation, which may be imagined rather than experienced directly, and is distinct from personal identities, although it may form part of a personal identity." (Polletta and Jasper, 2001: 285) Further, they identify that such collective identities may be developed first by outsiders and then adopted by individuals within the group. Some may use cultural symbols, rituals, and/or clothing to express the collective identity (Polletta and Jasper, 2001). Unlike Hamm's (2004) collective hate, collective identity is viewed as a positive thing, an element of behavior or group cohesion that is beneficial to those involved and the greater community. Polletta and Jasper (2001) take great pains to separate collective identity from any form of ideology; even though, their studies examine political protest and social movements. For more on collective identity see: Olson, 1965: Carroll and Ratner, 1996: Jasper, 1997: Friedman and McAdam, 1992: Klandermans, 1992: and Castells, 1997 .

in as a means of personal identity (Polletta and Jasper, 2001). In some social movements, the successful outcome may be nothing more than the creation of a collective identity from which activists and lobbyists can draw support or present as a sign of political solidarity or social capital (Polletta and Jasper, 2001).

An earlier examination of radical protest movements by Useem (1972) examined not collective identity, but collective response. If a problem is not readily apparent to the larger population, it is difficult to create a social movement to counteract the problem (Useem, 1972). Likewise, social movements need solidarity, cohesion and a shared sense of purpose that can be considered missing in situations where the movement is sparked by leadership, distant either ideologically or in social standing, from the group's recruitment base (Useem, 1972). Similar to theories presented by Coser[3] (1964), Useem (1972) highlights external hostility and internal ritual as binding functions within groups to enhance commitment and develop bonds within the group, similar to that discussed by Hirschi[4] (1969). It is only after these commitments are solidified and an individual distances him or herself from outside attachments that they develop a political or collective identity within the group (Useem, 1972). Useem (1972) further argued that the group identity distances the individual member from larger society, and his or her previous attachments.

[3] Lewis Coser's (1964) analysis of Georg Simmel's functions of conflict identifies a number of these processes, including the solidarity-producing or binding function of conflict; a group that perceives itself to be oppressed by the dominant order will coalesce around a cause or/identity. Coser (1964) also explains how external conflict decreases the tolerance within the group of dissent. Conflict reaffirms group values and helps to distinguish the group and its membership from the enemy or target of its hostility (Coser, 1964). Coser (1964) also highlights the ways in which conflict preserves and strengthens hate organizations through the creation and maintenance of ideologies and the establishment of associations and alliances.

[4] Travis Hirschi's (1969) theory of social bonds, characterized by attachment to one's peers and family, commitment to conventional behavior, involvement in conventional activities and belief in the moral validity of such conventions, is important to the hate discourse in that it can identify how an individual becomes ensconced in a hate group and lifestyle.

These collective identity studies are similar to Hamm's (2004) theory of collective hate, which is described in Chapter Four as a specific collective identity model for hate groups. In order to understand how hate can be a unifying factor for a collective identity, it is necessary to understand hate.

What is Hate?

To understand hate, it is necessary to understand prejudice. Prejudice is a negative response or appraisal of an individual based solely on a defining characteristic (Falk, 2001: Jacobs and Potter, 1998). Hate centers upon extreme prejudice (including both negative affective and cognitive appraisals) towards a stigmatized group (Falk, 2001). This can include hatred directed at one due to one's *gender* (Klein, 2005: Hood and Rollins, 1995: McPhail, 2002: McPhail and DiNitto, 2005: Rayburn, Earlerywine and Davison, 2003: Levin, 1999), *race* (Craig, 1999: Torres, 1999: Saucier, Brown, Mitchell and Cawman, 2006: Martin, 1999: Dixon and Gadd, 2006: Saucier, Hockett and Wallenberg, 2008: Hewitt, 2000: Petrosino, 1999: Rayburn, Mendoza and Davison, 2003: Rayburn, Earlerywine and Davison, 2003: Levin, 1999: Young, 1990), *religion* (Byers, Crider and Biggers, 1999: Baysinger, 2006: Rayburn, Mendoza and Davison, 2003: Rayburn, Earlerywine and Davison, 2003: Levin, 1999), *sexuality* (Hood and Rollins, 1995: Parrott and Zeichner, 2006: Rayburn, Mendoza and Davison, 2003: Rayburn, Earlerywine and Davison, 2003: Levin, 1999: Berrill, 1990), *culture, national origin or ethnicity* (Byers, Crider and Biggers, 1999: Rayburn, Earlerywine and Davison, 2003: Levin, 1999), or *disability status* (Rayburn, Earlerywine and Davison, 2003: Levin, 1999).

Hate is a stronger sentiment than prejudice as it can serve as a catalyst for action against a stigmatized group (Medoff, 1999: Allport, 1955: Staub, 1989: Fromm, 1947). Hate can be situational, influenced, guided or sanctioned by the dominant views of society or an authority

figure. These can be reflected in changes in accepted social norms, such as the Anti-Semitic policies of the Third Reich or the laws governing the treatment of slaves in the Antebellum American South and the Jim Crow Laws of the post-Reconstruction American South (Pettigrew, 1959: Goldhagen, 1996: Milgram, 1974: Olzak and Nagel, 1986: Medoff, 1999). Hatred can include impulse and aggression and may be a key factor in decisions to commit violent or property crimes directed at the hated group (Medoff, 1999: Allport, 1955). Although not everyone who hates someone will engage in violence, hate can be destructive and a brutal tool in the hands of the powerful (Medoff, 1999). Hate is an essential part of decisions to engage in genocidal programs against a social or political out group (Medoff, 1999).

Hate also has a hidden psychological component (Allport, 1955; Staub, 1989; Fromm, 1947). It can be a response related to the low self-image of the hater (Staub, 1989). Engaging in violence against or belittling members of the target group boosts the ego and self-assurance of the hater (Staub, 1989). Hatred possesses a projective-punitive factor (Allport, 1955). The one who hates believes that fault always rests upon the target of his or her animosity (Allport, 1955). The hater can fault the target for his personal misfortune or lack of opportunity as well as greater social problems such as economic turmoil or crime. Blaming the victims lessens the guilt felt by those engaging in violence against the target (Allport, 1955).[5]

Fromm (1947) argues that there are two types of hatred: rational and character-conditioned. Rational hatred is a response to a personal violation, an attack or threat (Fromm,

[5] This is similar to Sykes and Matza's (1957) theory of neutralization that deals with the existence of a series of subterranean values within conventional society and argues that within this subterranean value system, legal codes are seen as inconsistent and vulnerable. Subterranean values can include prejudicial treatment or informal rules of conduct between authority figures and the general population (Sykes and Matza, 1957). Legal codes that are applied in an inconsistent or prejudicial fashion become vulnerable and lose their influence (Sykes and Matza, 1957). If excuses for illegal behavior are accepted; and therefore, an individual is not punished for the behavior, the law becomes neutralized, decreasing an individual's belief that he should adhere to any established laws (Sykes and Matza, 1957). Neutralization can occur at any time, before, during or after a criminal event and includes the denial of responsibility, of injury and/or of the victim, as well as condemnation of the condemner and/or an appeal to higher loyalties (Sykes and Matza, 1957).

1947). Character-conditioned hatred, by contrast, has little basis in reality (Fromm, 1947).The target of an individual's hate may be chosen at random, and the hater then develops a reason to justify his or her hatred (Fromm, 1947). Character-conditioned hate focuses on target groups and avoids personalizing the animosity. The out-group is belittled in the hater's mental and social dialogue until the group and its membership are entirely dehumanized (Fromm, 1947). As a result, the individual then believes his or her hatred and hostility is justified (Fromm, 1947). Dehumanization or deindividuation, in turn, has been shown to be a factor in particularly heinous race-based violent crimes, specifically the lynching of African-Americans throughout the post-Reconstruction South (Mullen, 1986).

Hatred can be situational or culturally specific (Pettigrew, 1959; Milgram, 1974). Individuals learn to hate as they are socialized into their in-groups (Pettigrew, 1959; Milgram, 1974). These in-groups need not be actual hate groups. They can be one's peer groups, family or co-workers (Pettigrew, 1959). In an effort to fit in with these groups and conform to their social norms, individuals learn to hate the groups that their peers and family or co-workers hate (Pettigrew, 1959). Hate can be especially virulent in these situations if these individuals are influenced by an authority figure (Milgram, 1974), possibly more so in the presence or under the influence of a charismatic leader (Weber, 1947). The influence of charismatic leaders will be discussed further in Chapter Four.

What is a Hate Group?

Taking the above literature review into consideration for this dissertation, a hate group is defined as any group of like-minded individuals, united by a common hatred of one or more

target groups, who often support, but may or may not plan, and/or perpetrate hate crimes[6]. It is important to note that an individual need not be a member of a hate group to support, plan, or commit a hate crime. In the past, the perpetrators of many hate crimes were unattached to any well-defined hate group (Torres, 1999). Increasingly, hate crimes are being committed by, if not members of organized hate groups, those who attribute their actions to a particular hate group's philosophy, rhetoric or propaganda (Southern Poverty Law Center, 2008; 2009). Further, some who engage in hate crimes may claim membership to a group that they have not formally joined or were refused membership. This may be done to prove themselves to the group, or to show their own beliefs are in-line with the group's agenda (SPLC, 2008; 2009). Once imprisoned for these crimes, these individuals are provided with a smorgasbord of potential groups to join. Many hate groups have chapters in or have formed within the prison system, such as the United Society of Aryan Skinheads (SPLC, 2009). Hate groups, whether or not they engage in hate crime, hate specific targets.

Summary

Groups form for a wide variety of reasons. One of the most compelling arguments for group formation is collective identity. Collective identity research argues that there is a defining characteristic or belief system that brings individuals together into groups. For hate groups, this defining characteristic is their hatred of a stigmatized or social out group. While hate is difficult to identify and define, the history of hate and hate groups in the United States is without pause. Anyone can find him or herself the target of hate simply due to their outward appearance or perceived membership in a minority or stigmatized group.

[6] Hate crimes are defined as any "criminal act perpetrated against an individual due to his or her actual or perceived race, ethnicity, religion, national origin, disability status, sexual orientation, or gender[6]" (Rayburn, Mendoza and Davison, 2003: 1055).

CHAPTER THREE:

HATE GROUPS IN THE UNITED STATES AS THE PHENOMENA OF INTEREST

This chapter establishes a 3-part justification for the examination of hate groups using agent-based modeling. First, there are hundreds of hate groups (particularly white supremacy groups) operating in the United States. Secondly, these groups possess a long history including periods of violence and crime. Third, even when the history of a group is known, the actual formation and its precursors remain rather inaccessible phenomena.

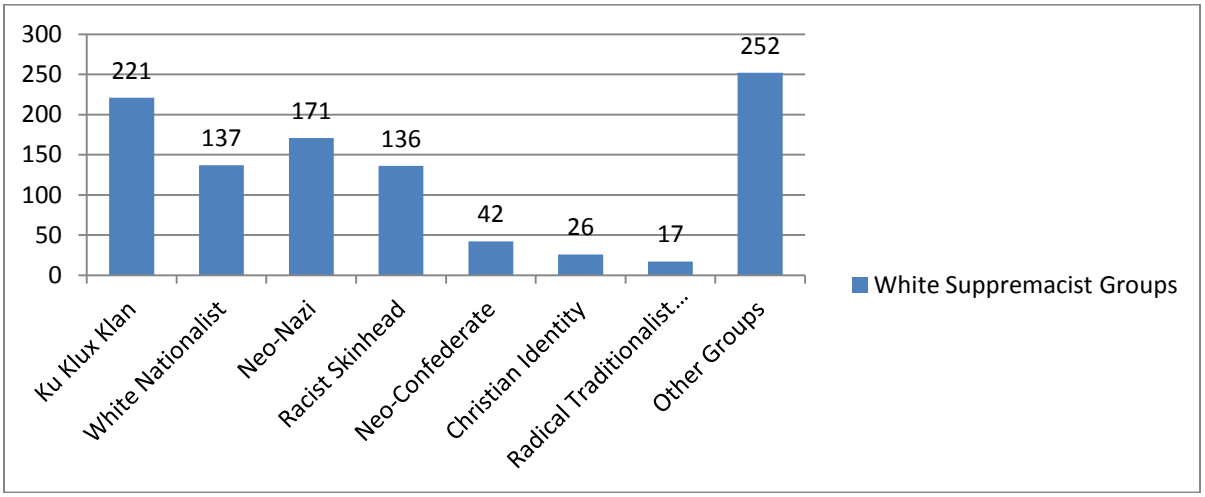
Hate Groups Currently Active in the United States

In 2010, the Southern Poverty Law Center (SPLC)[7] documented 1,002[8] hate groups operating in the United States. Hate groups have chapters in all fifty states and the District of Columbia (see Table 4 in Appendix A). For example, in the 69 square miles that encompass Washington, DC there are twelve active hate groups – four black separatist, two anti-gay, one anti-immigrant, three white nationalist, one general hate and one sect of the Ku Klux Klan (SPLC, 2011). These twelve organizations operate as legitimate businesses, lobbying organizations, and political movements (SPLC, 2011).

[7]The Southern Poverty Law Center has collected information on and kept a count of hate groups since its formation in 1971 (SPLC, 2009). Although there are arguments against using the SPLC counts, the SPLC has the longest running history of tracking hate groups and their activity. SPLC counts of hate groups have been used extensively by scholars including, but not limited to, Krueger, & Malečková, 2003, Blazak, 2001, Adams, & Roscigno, 2005, Ezekiel, 2002, Yousman, 2003, Futrell & Simi, 2004, McVeigh, 2004, McVeigh, Welch, & Bjarnason, 2003, Varsanyi, 2010, and Hughey, 2009. The Southern Poverty Law Center's expertise on hate groups was recognized when its president was called to testify before the U.S. House of Representative judiciary committees in support of the Emmett Till Unsolved Civil Rights Crime Act (HR 923).

[8] The Southern Poverty Law Center does not provide a specific definition for hate groups, however it counts groups that "have beliefs or practices that attack of malign an entire class of people, typically for their immutable characteristics" (SPLC, 2009: 1). The list is derived from "hate group publications and websites, citizen and law enforcement reports, field sources and news reports" (SPLC, 2009:1). The SPLC avoids adding groups based on websites that appear to be the work of one person, but does not provide for a minimum size for defining a hate group (SPLC, 2009). The Southern Poverty Law Center notes that simply being on the list does not mean the group in question is involved in or advocates criminal activity (SPLC, 2009:1).

There are fourteen different categories of hate groups studied by the SPLC, including Ku Klux Klan groups, White nationalists, Neo-Nazi groups, Skinhead groups, Neo-Confederate groups, Christian Identity groups, Radical Traditionalist Catholic groups, Racist music, Holocaust denial groups, Anti-gay hate groups, Black separatist groups, Anti-immigrant groups, Anti-Muslim groups and General hate. The majority of these groups, (75%) may be categorized as white supremacist groups (see Figure 1 below).



Data: Southern Poverty Law Center, 2011

Figure 1: Hate Groups Active in the U.S. in 2010

Ku Klux Klan groups are white supremacist groups targeting an ever-changing list of minority, religious, homosexual, and political groups. The first formed in the post-Civil War era and will be discussed in depth later in this chapter (Wade, 1987: Chalmers, 1981). *White nationalists* are primarily white supremacist or separatist groups (SPLC, 2008). They are typically supporters of eugenic programs and segregation based on race. This category includes groups like the European-American Unity and Rights Organization and Council of Conservative Citizens (SPLC, 2008). *Neo-Nazi* groups are white supremacist groups that espouse many of the same racial and eugenic beliefs as Hitler's Nazi party (SPLC, 2008). *Neo-Confederate* groups, such as League of the South, are a type of white supremacist group that espouse a celebration of

the pre-Civil War American South and the racist ideology prevalent at that time in American history (SPLC, 2008).

Started in the 1960s in Britain as a fascist revolutionary organization, *skinhead* groups developed in the United States in the 1980s and have both racist and non-racist factions (SPLC, 2008: Jacobs and Potter, 1998: George and Wilcox, 1996: Hamm, 1994). Skinheads usually form into small groups or "shock troops" and are typically violent, prone to criminal activity, and highly mobile (SPLC, 2008: Jacobs and Potter, 1998: George and Wilcox, 1996: Hamm, 1994). Examples include Volksfront, Blood and Honour, Berdoo Skinhead Family and many groups that use a city or place name in front of Skins or Skinheads (e.g. AC Skins in New Jersey, Californian Skinheads in California, Old Glory Skinheads in North Carolina, Maryland State Skinheads in Maryland; SPLC, 2010) (SPLC, 2008).

Mostly white supremacist, anti-Semitic, and anti-minority, *Christian Identity* groups maintain that their racist views have a Christian theological base (SPLC, 2008). Examples include Covenant People's Ministry, Kingdom Identity Ministries and By Yahweh's Design (SPLC, 2008). *Radical Traditionalist Catholic* groups are an anti-Semitic faction of Catholicism rejected by most mainstream Catholics and not recognized by the Vatican; they include Tradition in Action and Slaves of the Immaculate Heart of Mary (SPLC, 2008).

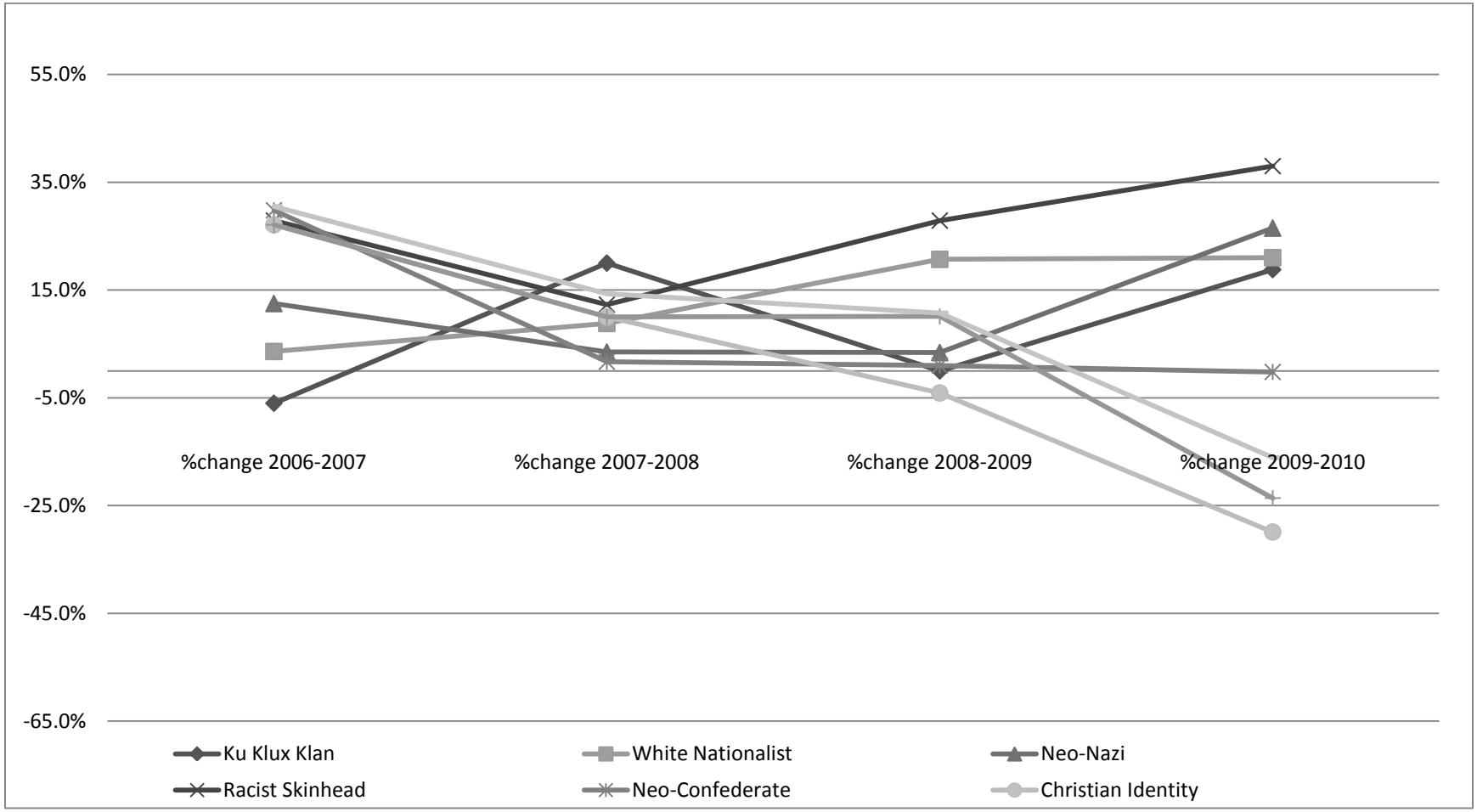
While the *other* category is the largest of the categories presented in Figure 1, the wide variety of groups that are included in this category, on their own, do not out number any of the types of white supremacist groups listed in the figure. By comparison the wide range of other types of hate groups account for about 25% of all hate groups in the United States and the various white supremacist groups, approximately 75%. The *other* category in Figure 1 above is composed of the following types of hate groups: racist music, Holocaust denial, and anti-gay,

black separatist, anti-immigrant, anti-Muslim and general hate. *Racist music* groups specifically refer to bands and organizations related to the music industry that create or distribute racist music, mostly for white supremacist groups (SPLC, 2008). *Holocaust denial* groups are those that deny the persecution of Jews by the Nazis during World War II, such as the International Conspiratological (sic) Association and Campaign for Radical Truth in History (SPLC, 2008). *Anti-gay* hate groups are those that specifically espouse an ideological or theological doctrine against homosexuals, including mostly extremist groups from the Christian far-right, such as Abiding Truth Ministries, Watchmen on the Walls, and Heterosexuals Organized for a Moral Environment (H.O.M.E.) (SPLC, 2009).

The Black Panther Party, the Nation of Islam and United Nuwaubian (sic) Nation of Moors are a few of the *black separatist* groups operating in the United States and are predominately anti-white and anti-Semitic (SPLC, 2008). They often speak of seeking segregation in favor of blacks (SPLC, 2008). *Anti-immigrant* groups, such as American Immigration Control Foundation, Save our State, and United for a Sovereign America, are nativist groups formed mostly as a response to waves of illegal immigration (SPLC, 2009). *Anti-Muslim* groups were added as a new category in 2010. These groups hold all Muslims responsible for the September 11th, 2001 terrorist attacks on New York City and Washington D.C. and seek to defame the religion of Islam and its practitioners as a danger to the United States (SPLC, 2010).

The category of *general hate* encompasses groups that do not easily fit under the other categories (SPLC, 2008). Examples include the Jewish Defense League, a mostly anti-Arab organization of radical Jews, a variety of anti-Catholic Christian Groups, and other organizations whose ideology is not easily categorized (SPLC, 2008). As new types of hate groups are

identified or unique ideologies are presented by hate groups, the SPLC shifts its classifications of groups into new categories, therefore the groups that are in the category of *general hate* at this moment may be part of a new category within the next few years and depending on the SPLC's classification, other groups from previously established categories may be moved into those new categories as well (SPLC 2009, SPLC 2010). Table 5 in Appendix A shows the frequencies and percentages for all of these categories of hate groups operating in the United States from 2006 through 2010 and how they have increased and decreased in frequency. The most common types of hate groups are Neo-Nazis and the Ku Klux Klan. Both types of groups have fluctuated in recent years, Neo-Nazis being the most prevalent for three years (2006-2008) only to be surpassed by the Ku Klux Klan in 2009. As shown in Figure 2 below, the percentage of increase and decrease for the number of hate groups has fluctuated over time.



Data: Southern Poverty Law Center, 2011

Figure 2 Percent Change for Hate Groups Active in the United States 2006-2010

In 2010, Ku Klux Klan groups became the most prevalent type of group in the United States. All white supremacist groups increased between 2009 and 2010, with the exception of Christian Identity and Neo-Confederate groups. Both of these types of groups may have affiliated or consolidated with either Ku Klux Klan or Neo-Nazi groups due to similarities in beliefs, targets and rhetoric. It is also possible that Christian Identity groups may have been shifted into the Radical Traditionalist Catholic category, Anti-gay category or the newly created Anti-Muslim category based on their ideology and/or rhetoric. Racist skinhead groups increased in number from 78 in 2006 to 122 in 2009, an increase of 56.4%. The number of skinhead groups in the United States tripled between 2002 and 2006 and, as shown in Tables 5 and 6 (see Appendix A), this number continues to rise (SPLC, 2008, 2009, 2010). This may be due to new groups forming after splintering from larger groups. This is problematic because when they were part of the larger group, violence and criminal activities were kept to a minimum because the larger group may have kept strict control over their membership (SPLC, 2008). The new groups have been seen to engage in more violent crimes, possibly vying for power or attempting to prove their strength to current and future membership, as well as the parent group, or because their members represent a more extremist position that advocates violence (SPLC, 2008).

For the current study, white supremacy groups, because they are the most common, have the longest history in the United States and because they represent the groups that are increasing in number over the past few years, will be the focus of the agent-based simulation models aimed at determining how these groups form. Limiting the analysis to this subset of hate groups has the added effect of sharpening the focus on a specific, more homogenous portion of hate groups who have similar ideologies and target similar minority groups. Plus, the 3 parameters examined in this research, collective hatred, societal hate, and charismatic leadership have a well-documented

history for these groups. However, findings may not be generalizable to the other types of hate groups.

The other concern with white supremacy groups in the United States is that their history is perpetual. The history of hate in the United States is virtually without pause (Petrosino, 1999). In early America, simply being white/Caucasian was considered enough by proponents of prejudiced agendas to identify someone as supportive of anti-Native American or anti-African American sentiments or activities (Petrosino, 1999). Native and African Americans have been the targets of hate and/or victims of hate motivated crime since the colonization of America. Every wave of immigration has introduced another population that has been met with stigma, distrust, prejudice and often violence (Petrosino, 1999).

The Ku Klux Klan: a Case Study of the Oldest and Most Prevalent Hate Group in America

The Ku Klux Klan is the oldest organized hate group in America with a well-documented history. This section will describe the history of the Ku Klux Klan. Corresponding elements of the group formation theories (e.g., collective hate and charismatic leadership) discussed in Chapter Four will be highlighted throughout the narrative.

The roots of the Ku Klux Klan (Klan) can be traced to the year following the end of the American Civil War. In June of 1866, after returning to their home town of Pulaski, Tennessee and finding little to occupy their time, six confederate veterans: Calvin Jones, Frank McCord, James Crowe, John Kennedy, John Lester, and Richard Reed; formed a social fraternity (Wade, 1987: Chalmers, 1981). All were college-educated men, and they chose the Greek term *kuklos* or circle as the name for their group. However, as an exercise in obfuscation, they altered the spelling to Ku Klux (Wade, 1987: Chalmers, 1981). The addition of the term Klan was partly due to alliteration and partly due to the Scottish/Irish descent of the original members (Wade,

1987: Chalmers, 1981). The sounds of the name brought to mind the macabre smack of bone against bone, and from here, the idea of dressing in costume and elements of the occult and the supernatural were added as elements to the society (Wade, 1987: Chalmers, 1981: Elliott, 1998). In fact, at one time the original members of the group competed with one another to see who could devise the most outlandish costume, each applying more and more nonsensical mystic symbols than the other and hats that increased the wearer's height by as much as two feet (Chalmers, 1981).

The Klan originally avoided social and political issues, encouraging its members to "have fun, make mischief and play pranks on the public." (Wade, 1987: 34) The founding of the Klan is an example of homophily, (discussed further in Chapter Four) a tendency to seek out individuals who possess similar qualities to which the group conforms such as status, ethnicity, norms and values (Merton and Lazarfeld 1954). That is, all members of the original Klan were confederate veterans, all were college educated, all claimed the same heritage, and all wanted a social connection to help occupy their time.

It is difficult to reconcile the mundane origins of the Klan with the subsequent crime and violence perpetrated by its membership. Though the early Klan engaged in mischief, perhaps a precursor of the criminal behavior to come, the original Klan probably would not have drawn the interest of a criminologist. The first acts of criminal mischief engaged in by the Klan were nighttime rides through the communities of recently freed slaves. These rides, before the reactionary activities of the Klan in response to Reconstruction, were meant to scare the superstitious residents of these communities and may be viewed as harassment and intimidation, though sophomoric in nature.

When the Klan shifted from pranks and mischief to violence and crime, it was a reaction to the installation of a Reconstruction government, viewed by many in the South as the occupation by the victorious North. The conflict between the Klan and the Reconstructionist government, its supporters, and local black communities was instrumental in the Klan's evolution from a social club to a violent organization. As members of the Klan saw the Reconstruction government and its supporters as infringing upon their way of life, they engaged them in violent conflict, attempting to gain or regain power and control through violence and fear.

This change is illustrated by how Klan pranks began to take on an aura of later Klan behavior when the members began night rides through the countryside with torches (Wade, 1987: Chalmers, 1981). The strange costumes and bizarre behavior were then directed at the recently liberated blacks in the area, with Klan members pretending to be ghosts of confederate soldiers or plantation owners back to haunt their prior property (Wade, 1987: Chalmers, 1981). These "hauntings" became increasingly sinister as Congress passed the 1867 Reconstruction Act which divided the South into militarily-controlled zones under congressionally-appointed governments. This Act was in response to the Black Codes passed in most Southern States as an attempt to re-subjugate the black population (Wade, 1987: Chalmers, 1981). At this time, Nathan Bedford Forrest became head of the Klan and, despite his claiming no interest in and a horror of the crime and violence perpetrated by the Klan, for the next 2 years beatings, lynching, murder, rape and other crimes against both African American and white supporters of the Republican party and reconstruction governments were the norm for the Klan (Wade, 1987: Chalmers, 1981). The Klan had members in all Southern states by 1868. However, within a year Forrest

demanded that the Klans disband and destroy their costumes and written records, some complied, and others did not (Wade, 1987).

This call to disband was partly in response to increasing use of State militias to fight Klan activity. By 1871 the Ku Klux Klan Act was passed by congress. This act, specifically designed to dismantle the KKK and end its violent criminal activities throughout the Reconstruction South[9], provided that it was unlawful:

> "if two or more persons conspire to injure, oppress, threaten, or intimidate any person… in free exercise or enjoyment of any right or privilege secured to him by the Constitution or laws of the United States… or if two or more persons go in disguise on the highway [i.e., the Ku Klux Klan], or on the premises of another, with intent to prevent or hinder [the] free exercise or enjoyment of any right or privilege so secured." (18 U.S.C.A. § 241, as cited in Jacobs and Potter, 1998: 37)

This resulted in extensive arrests and prosecution of Klan members. In 1876, when reconstruction ended, the Klan disappeared. The Klan's disappearance is strange, as the Klan could have simply returned to its non-violent origin. For most historians, the Klan's dissolution is explained by the end of the Reconstruction Era and the enactment of Jim Crow Laws. In a sense, the Klan had won the fight and served its purpose (Wade, 1987: Chalmers, 1981).

The Klan saw resurgence in popular culture before it returned to action. In 1905, a historical romance was published as part of a trilogy of Klan related novels, The Clansman was the second book of the trilogy written by Thomas F. Dixon, Jr., and it glorified the Klan. Ten years later it was adapted by D.W. Griffith, for his silent movie Birth of a Nation (Wade, 1987:

[9] After the end of the Civil War, the Federal Government and the victorious Union endeavored to establish order in the defeated South. After allowing the South to establish its own post-war governments, the Federal government found these new governments and their policies, especially those directed at the emancipated black population to be inadequate for the task (McPherson, 2003). The Federal government appointed and dispatched a series of governors and other overseeing politicians into the South to aid in the creation of acceptable policies within the post-war South and to assist in the rebuilding of the towns destroyed by the ravages of war and the reestablishment of order (McPherson, 2003).

Chalmers, 1981; Dixon, 1905). This movie played in sold-out theaters throughout the south and was even screened by Woodrow Wilson in the White House. In April of the same year, a young girl, Mary Phagan, was brutally murdered and the accused, a Jewish businessman named Leo Franks was lynched by a mob when his death sentence was commuted[10] (Frey and Thompson, 2002). This event, combined with the popularity of the Griffith movie, resulted in the Klan's rebirth in Georgia under the guidance of a new leader, William Joseph Simmons; first as the Knights of Mary Phagan and then as the Klan (Wade, 1987: Chalmers, 1981; Frey and Thompson, 2002).

Stone Mountain Georgia became the revival meeting place for the Klan, and it was here that the tradition of the cross burning ceremony for the Klan began (Wade, 1987: Chalmers, 1981).[11] Much like the original founders of the Klan, Simmons devised a series of oaths, rituals and nonsensical names for gatherings, members, officers and activities that he compiled in a volume known as the Kloran (Wade, 1987: Chalmers, 1981). The Klan became integral in the patriotic movement surrounding the American entrance into World War I. Klansmen would parade through the streets shouting for spies to leave town and patriots to buy war bonds (Wade, 1987: Chalmers, 1981). Further, they worked with legitimate wartime organizations as "hired muscle" to scare workers into increased productivity and to chase prostitutes away from military bases (Wade, 1987: Chalmers, 1981). After the war, the Klan gained Northern membership as wartime industries became obsolete and jobs scarce (Wade, 1987: Chalmers, 1981).

[10] The case of Leo Franks is unique in American legal history. It is the first in which the testimony of a black man was used to convict a white man. It also is considered the catalyst for the formation of the Anti-defamation league and it signaled a change in Klan policy from being anti-Black and anti-republican to being Anti-Semitic as well. Leo Franks was found guilty of the rape and murder of Mary Phagan, and sentenced to death, but his sentence was commuted to life in prison by the governor. A mob removed Franks from the local jail and lynched him in the street. Later evidence revealed him to be innocent and that the man who had testified against Franks, Joe Conley was the guilty one. The state of Georgia pardoned Franks in 1986, though the Phagan family still contends he was guilty.

[11] Klan members claim that the lighting of the cross is symbolic of the return of Christ to light the world out of darkness and that Klan members gain strength for their cause by absorbing the light of the flaming crosses into their souls. The use of burning a cross in the yard of a Klan target for intimidation was not employed until the 1950s.

In the early 1920s, the Klan billed itself as a patriotic, American organization, a champion of temperance and a protector of the purity of white womanhood (Wade, 1987). In 1921, the New York World ran an exposé on the Klan, which prompted a series of congressional hearings. However, Simmons charmed the congressmen and the committee adjourned without action (Wade, 1987: Chalmers, 1981). The publicity helped increase Klan membership to over 500,000 and every state had a branch of the Klan, known as a Klavern (Wade, 1987: Chalmers, 1981). Despite an initiation fee of $10 in 1922, the Klan boasted three million members and held extensive influence over local and state elections, both due to their numbers and active voter intimidation (Wade, 1987: Chalmers, 1981). Circa 1928, the Klan reversed its post-Civil War political affiliation with the Southern Democratic Party, due to dislike for recent Democratic nominees who were Catholic, and began to use its influence to support more Republican candidates (Wade, 1987: Chalmers, 1981). Klan members held many high ranking political positions, including Edward Jackson, Governor of Indiana, Clifford Walker, Governor of Georgia, and Roger Mills and Earle Mayfield; U.S. Senators representing Texas (Wade, 1987).

As the women's rights movement gained momentum, women requested membership in the Klan and women's auxiliaries were founded with as many as 500,000 members at the height of the Klan (Wade, 1987: Chalmers, 1981). Cities and towns, especially in the south were completely under Klan control and embattled mayors and governors who did not support the Klan appealed to the Federal government for help to bring the Klan under control. State legislatures begin to pass laws in attempts to curtail the Klan, by making it illegal to wear masks in public (Wade, 1987: Chalmers, 1981).

For example, in 1924 the Klan in Indiana was controlled by David Curtis Stephenson, who maintained his power through a series of quid pro quo relationships with powerful politicos

throughout the state (Wade, 1987: Chalmers, 1981). He required signed statements from all politicians seeking Klan support. When he was convicted of 2nd degree murder in November of 1925[12], Stephenson released all of these documents to the press as revenge for his political cronies' inaction in his court case (Wade, 1987: Chalmers, 1981). Stephenson's murder case would become the hallmark of the fading Klan. The Klan fell from grace in the aftermath of the Madge Overholtzer murder, where the Klan was seen as betraying its membership and their beliefs by engaging in rape and brutalization. Members left the Klan in droves. By 1925, the Klan's internal problems began to signal a new downfall (Wade, 1987: Chalmers, 1981). Simmons was ousted from leadership by Hiram Evans. On August 8th of 1925, Evans led a Klan parade down Pennsylvania Avenue in Washington D.C. with 40,000 representatives of the Klan from around the country. But by 1928, Klan membership had dropped from four million to about 100,000 (Wade, 1987: Chalmers, 1981).

During the Great Depression, the Klan tried to reimage itself as a benevolent organization. It organized a series of free suppers, but it was vehemently against handouts from the government (Wade, 1987: Chalmers, 1981). During this time, the Klan shifted its target list to include communists and unions in an effort to regain membership, and its stronghold returned to the South. The Klan united with the German American Bund associations, the Nazi party in the United States, until the onset of World War II showed this to be an unwise alliance (Wade, 1987). This was further highlighted when the House Un-American Activities Committee investigated the relationship between the Klan and the Bund in 1940, though congress was far

[12] Stephenson was known for an insatiable sexual appetite. In March 1925, he raped and brutalized a young woman named Madge Overholtzer. Ms. Overholtzer had been plied with extensive amounts of alcohol and repeatedly raped and brutally bitten. She attempted suicide, but failed. Stephenson kept her prisoner, and once she was released to her home, there was little doctors could do for her. She wrote a dying declaration vividly describing her ordeal that resulted in Stephenson's conviction. Stephenson had not expected to be convicted and had likewise expected to be pardoned by the governor he had helped elect. When he was convicted and his requests for clemency ignored, he released all his private papers. This court case and the related press was the downfall for the 1920s Klan as it revealed the hypocrisy of the Klan's stance on temperance and women.

more vehement in their questioning of Bund members than Klan members (Wade, 1987: Chalmers, 1981). The Klan expanded its anti-Semitic stance during World War II, by publishing a series of anti-Jew essays written by Henry Ford under the title The International Jew (Chalmers, 1981). Congress repeatedly investigated the Klan during World War II, and in 1944, the Klan, as revived by Simmons, was disbanded. To do this, the Internal Revenue Service placed a $650,000 lien against the Klan for back taxes, so income tax evasion destroyed the national Klan (Wade, 1987: Chalmers, 1981). The Klan disappeared for a few years until it was reconvened by Dr. Sam Green in 1946, who proposed a new plan for the Klan (Wade, 1987: Chalmers, 1981). The Klan would no longer have a national overseer. Each Klavern was now autonomous and various Klan organizations cropped up throughout the South, especially as the Civil rights movement began to gain ground (Wade, 1987: Chalmers, 1981). Another change was that the women's auxiliary Klan organizations were absorbed into the male dominated Klaverns (Wade, 1987). Women now joined the same group as their husbands, as a family unit by the mid-1940s (Wade, 1987: Chalmers, 1981). After Green's death in 1949, he was replaced by Sam Roper, who eventually left and became head of the Georgia Bureau of Investigations, where he spent most of his time investigating Klan activity and violence (Wade, 1987: Chalmers, 1981).

Eldon Lee Edwards attempted to reunite the Klan under a blanket organization, U. S. Klans, in 1953 (Wade, 1987: Chalmers, 1981). Edwards revised the Simmons Kloran and gained notoriety as he began to use television broadcasts to make his case for the Klan as a law-abiding organization interested in maintaining the Southern lifestyle (Wade, 1987: Chalmers, 1981). Klan activity and membership increased after the 1954 Supreme Court decision in Brown v. Board of Education. The Klan held public demonstrations protesting school integration. The 1950s and 1960s brought the Klan new internal strength as the targets of its animosity, mostly

minorities, made gains in the Civil Rights movement. During this time, new leaders gained strongholds in different factions of the Klan, such as Samuel Bowers, a man still revered by the modern Klan.

As civil rights protests and demonstrations increased, so did Klan activity and retaliation. Edwards increased his attempts to gain membership into the Klan and to open new chapters of the U.S. Klans in thirty states (Wade, 1987: Chalmers, 1981). Demonstrations and protests were met with violence; civil rights workers, both white and black were murdered. This activity was supported by blatant racism and bigotry in the governments of most towns throughout the South where politicians and law enforcement were often known supporters or even members of the Klan (Wade, 1987: Chalmers, 1981). Edwards died in 1960 and leadership of the U.S. Klans was shifted to R. L. 'Wild Bill"[13] Davidson. Davidson started his brief career as Imperial Wizard of the U.S. Klan with a November 1960 Klan rally where he is quoted as saying "we will use buckshot if necessary" to stop integration. However, Edwards' widow did not like him and prevented Davidson from using the U.S. Klans' name or materials (Wade, 1987: Chalmers, 1981). Davidson split from the U.S. Klan and created a few other Klan organizations, most of which still have chapters in operation today. His downfall came when he opposed the Klan's anti-integration activities at the University of Georgia. Davidson resigned in 1961 after serving barely a year (Wade, 1987: Chalmers, 1981).

Davidson was succeeded by Robert Shelton, who would become infamous in 1965 by granting an interview to Playboy magazine, despite his public stance against pornography (Wade, 1987: Chalmers, 1981). The Klan shifted its tactics during the 1960s, especially in

[13] Davidson's "Wild Bill' nickname came from his choice of attire (a buckskin jacket) first donned during his days as an insurance salesman. Davidson was considered too high strung and too nervous to actually run the Klan as his predecessors had. The infighting and disparate nature of the various Klan chapters across the South was not something he was equipped to handle. His son, Dr. Robert Davidson believed "Dad was full of shit and probably just used the Klan as a crutch to improve his business and political aspirations."

Alabama, where Birmingham became a key battleground for the Civil Rights movement and the Klan's attempt to maintain the status quo of segregation and racism (Wade, 1987: Chalmers, 1981). The Klan began using bombs made mostly with dynamite to attack civil rights workers and demonstration staging grounds, such as the 16th Street Baptist Church[14] (Wade, 1987: Chalmers, 1981). Because the Klan at this time operated as disjointed units with little communication between them, each Southern state had its own unique problems with the Klan as the civil rights movement progressed and demonstrators attempted to uphold the successes won in court and congress (Wade, 1987: Chalmers, 1981).

In Mississippi, the White Knights of the Ku Klux Klan came under the command of Samuel Bowers. Under Bowers' leadership, the White Knights became known as the most violent faction of the Klan in American history (Wade, 1987: Chalmers, 1981). The most famous of their crimes was the destruction of the Mount Zion Church outside of Philadelphia, Mississippi, and the subsequent murder of three civil rights workers by Klan members in concert with local law enforcement (Wade, 1987: Chalmers, 1981).[15] The Klan responded violently to Lyndon Johnson's signing of the Civil Rights Act (Pub. L. 88-352, 78 Stat. 241) on July 2, 1964, murdering a car full of black soldiers in Georgia[16] (Wade, 1987: Chalmers, 1981). Johnson

[14] The September 1963 bombing of the 16th Street Baptist Church resulted in the deaths of four young girls: Addie Mae Collins, Carole Robertson, Cynthia Wesley and Denise McNair. The bomber, Robert E. "Dynamite Bill" Chambliss, was originally convicted on the charge of possession of dynamite, but this charge was overturned. In 1970, Georgia Attorney General Baxley reopened the 16th Street case and in 1977, Chambliss was found guilty of murder for his involvement in the bombing.

[15] The White Knights murdered three young men, Michael Schwerner, a leader in the council of federated organizations (COFO), Andrew Goodman and James Chaney. In response to Federal pressure about the murders, Bowers responded vehemently that the boys had not disappeared and the Klan had nothing to do with it, that Mississippi was being crucified by outsiders. Lyndon Johnson sent J. Edgar Hoover to investigate. The state of Mississippi, despite overwhelming evidence, refused to indict the Klan for the murders. Members of the Klan would later be charged and convicted under the Klan Act of 1871, and Samuel Bowers served ten years for his involvement.

[16] The murder of Lamuel Penn occurred the same evening as Johnson signed the civil rights act. He was shot at close range inside his vehicle along with two others. His murderers were tried and acquitted in Georgia, but were tried in Federal court in 1966 under the 1871 Klan act and all involved were found guilty of violating his civil rights. This trend of local acquittal and Federal indictment under the 1871 Klan Act would continue throughout the 1960s.

further antagonized the Klan with the passage of 18 U.S.C.A. § 245 in 1968. This civil rights statute was designed to prevent prejudice and/or hate from interfering with an individual's participation in state and local activities, such as serving on a jury, government employment, and use of public amenities or services (18 U.S.C.A. § 245: Jacobs and Potter, 1998).

The Federal Bureau of Investigation and its predecessors used the Ku Klux Klan Act to claim jurisdiction over Klan-related criminal cases, such as arson and murder, which otherwise would not have been handled in Federal Court (Wade, 1987: Chalmers, 1987). The Ku Klux Klan Act was invoked especially when local courts refused to indict Klan members for murder and other offenses, during the Civil Rights movement (Wade, 1987). FBI involvement in investigating the Klan further incited Klan antagonism against the Federal government. Klan members would collect poisonous snakes that they would place in the distinctive cars of the FBI agents, however, the FBI made inroads into the Klan using paid informants, something that would pay off in the investigation of a series of Klan murders during the early 1960s (Wade, 1987: Chalmers, 1981).

In 1965, the House Committee on Un-American Activities convened investigations into the Klan and its affiliate chapters, Robert Shelton as Imperial Wizard was called to testify during which, he responded to 158 questions with the following refusal:

> Sir, I respectfully decline to answer that question for the reason that I honestly feel my answer might tend to incriminate me in violation of my rights as guaranteed under the amendments five, one, four and fourteen of the Constitution of the United States. (Wade, 1987: 357)

Despite popular amusement that a member of the Klan would invoke the fourteenth amendment, the report released by the committee 2 years later was not one of amusement, but one that highlighted the Klan's violent and illegal activities (Wade, 1987: Chalmers, 1981). High

ranking Klan members served prison sentences for contempt of Congress and one committed suicide. The Klan suffered from internal power struggles and legal fees, as well as extensive FBI investigations throughout the rest of the decade, with about 6% of Klan members working as informants for the FBI[17] (Wade, 1987: Chalmers, 1981). By 1974, Klan membership had dropped to approximately 1,500, but it would see resurgence three years later when charismatic leader David Duke arose to leadership of the United Klans of America. Despite David Duke's clean cut image and media popularity, the Klan itself was not entirely behind him (Wade, 1987: Chalmers, 1981). Part of how David Duke drew a great deal of media attention to the Klan and its' revised message, was the work of David Lane, who served as one of his organizers (Hamm, 2007).

Lane later left the Klan to serve as minister of propaganda for The Order under a different charismatic leader, Robert Jay Matthews (Hamm, 2007). Matthews first began recruiting followers in 1972 for a group he called the Sons of Liberty, which swelled to over thirty members and drew media attention (Hamm, 2007). Matthews inspired a great deal of loyalty among members of this first organization, who followed him even after FBI attention forced him to flee (Hamm, 2007). By 1983, Matthews had drawn the first individuals who would serve with him in his new organization, the Order, which would soon gain nearly 50 members and national attention through a series of bank heists designed to fund Matthews' vision of an Aryan revolution (Hamm, 2007). Matthews' eventual death at the hands of the FBI resulted in his elevation as a martyr of the white supremacist movement, the date, December 8th is

[17] FBI investigation of the Klan in the late 1960s was considered elemental in acts of violence; FBI agents raised money from communities targeted by the Klan to pay informants to entrap Klan members, such as the disputed attempted bombing of the home of Meyer Davidson in Meridian, Mississippi. The Klan members involved discouraged the blaming of the FBI for the attempt, stating that "Davidson was 'a high priority target,'…'so the FBI did not lure us into doing something that we had no intention of doing.'" (Wade, 1987; 363)

commemorated by other white supremacist groups, and Matthews' Order is considered a prime example of what white supremacist groups should attempt to emulate (Hamm, 2007).

Klan rallies were being met increasingly with violence and Klan members were being forced away from their rallies and public demonstrations by a vehemently uninterested public (Wade, 1987: Chalmers, 1981). Dissension among Klan members resulted in further splintering of the Klan into militia and patriot-movement groups, many of whom abandoned the robes and trappings of the Klan of the past in favor of fatigues. At this time, the Klan also made alliances with the rising Neo-Nazi movement and attempted to gain membership through protests against affirmative action, reverse discrimination and forced busing (Wade, 1987: Chalmers, 1981). The Klan maintained its anti-Communist and anti-Union stance established during the Great Depression, a stance that resulted in a massacre of union organizers and members of the Communist party in Greensboro, North Carolina in 1979[18] (Wade, 1987).

Duke's leadership of the Klan in the late 1970s gave way to that of Bill Wilkinson in the 1980s, signaling a less media oriented, more violent Klan (Wade, 1987: Chalmers, 1981). By the early 1980s, the Klan and affiliates had opened paramilitary training camps throughout Texas. Organized by Klan member and Louis Beam, these camps were designed to prepare members for a future race war (Wade, 1987). Those trained at these camps were implicated with increases in Klan violence throughout the 1980s with random shootings, and attempted and successful bombings of homes and offices (Wade, 1987).

[18] The Communist party and related groups had previously demonstrated at a Klan event at which Griffith's Birth of a Nation was to be shown and Klan members would be on hand to discuss the Klan, answer questions and seek new members. After the success of disrupting the Klan event, the communists opted to hold a "death to the Klan" rally. The Klan arrived at the rally with Neo-Nazi allies and after a brief scuffle with the rally participants, opened fire on the crowd, killing five. The police were not present at the rally and after the shooting, arrested both the Klan members who remained at the site, as well as the protestors. At trial, members of the communist party and witnesses to the Klan attack, refused to testify as they believed the trial was "rigged" from the beginning. A jury found that the Klan members had shot the demonstrators in self-defense, despite media coverage of the shooting.

The Klan remained a reactionary force throughout the 1980s, adding homosexuals and Asian immigrants to its list of non-desirables and targets (Wade, 1987: Chalmers, 1981). In 1981, after an African American man was acquitted in the death of a white police officer, the Klan called upon its membership to take revenge. This call to arms resulted in the murder of Michael Donald by two young Klan members in Alabama[19] (Wade, 1987). Throughout the 1990s, Klan membership fluctuated at around five thousand members (George and Wilcox, 1996). As of 2007 there were 155 different Klan affiliated organizations across the United States (SPLC, 2008). Klan organizations maintain loose affiliations with neo-Nazi and skinhead groups across the country; maintain websites and limited liability companies (SPLC, 2008). The Klan currently maintains a strong presence in the United States and is likely to endure (SPLC, 2010).

Individuals are drawn to the Klan because they have an intense hate for one or all of the minority or other out groups targeted by the Klan (Elliott, 1998). The Klan added each minority group to its list of targets for a reason. These reasons were diverse, but always based in hate and prejudice directed at that group. These groups became scapegoats in Klan rhetoric and literature used to draw in members. These efforts were also designed to garner the explicit or implicit support of the population, either through membership or apathy to Klan activity against those groups. This collective hatred supports Hamm's (2004) theory that will be discussed in depth in Chapter Four.

[19] Michael Donald was strangled and had his throat slit by two young Klan members. The court case resulted in the first capital conviction for a Klan member. A subsequent civil suit filed by the Southern Poverty Law Center against the United Klans of America brought a seven million dollar verdict and ended the reign of the United Klans of America.

Summary

Without the ability to go back in time, truly examining the factors that sparked the formation and reformation of the Ku Klux Klan is difficult. This does not discount the importance of or exclude historical research, it simply highlights that at the point of formation, and most organizations do not provide a thought out and detailed explanation of why and how they formed their group. That being said, the Klan's history and perseverance provides a fertile background against which to test models of hate group formation. The Klan's history of violence and destruction provide ample warning about just how dangerous a hate group can be when left unchecked. This group alone highlights the importance of understanding how hate groups form, how they gain support and what influence they possess both directly and indirectly over the commission of hate and bias motivated crime. The next chapter presents the two theories that have been tested by this dissertation as possible explanations for hate group formation.

CHAPTER FOUR

THEORY

This chapter discusses the two theories of group formation: Hamm's (2004) theory of collective hate and Weber's (1947) theory of charismatic leadership which are the theoretical focus of this research. These theories were tested using the agent-based simulation modeling experiments laid out in Chapter Six.

White Supremacists, Skinheads, Neo-Nazis, and Collective Hate

Mark Hamm (2004) theorized that bonds can be created between individuals through a "common hatred of social out-groups" (Hamm, 2004: 327). He applies these ideas to the hate groups he identifies as domestic terrorists in the United States, including Neo-Nazis and Right wing extremist and militia groups. This theory has been adapted herein to examine hate groups, the linkage between these domestic terrorist groups and hate groups being easily made, as Neo-Nazi and other Right wing extremist groups adhere to a white supremacist ideology. These groups also "arose from an intense collective hatred for the federal government" (Hamm, 2004: 334). In some of his most definitive work, Hamm has closely examined the American skinhead movement (Hamm, 1994a; Hamm, 1994b). In this research, he has presented a model originated by Jack Gibbs, reproduced in Figure 3 below[20].

The steps in this Gibbs model show the combination of belief, membership, and action that influences a prospective white supremacist's "buy-in" to the collective white supremacist identity. In step 1, the prospective white supremacist begins to identify himself as being the victim of social injustice (Hamm, 1994).

[20] Figure 3 presents the hate group adaptation with a modification that replaces the words terrorist from the original model with white supremacist and terrorism with crime.

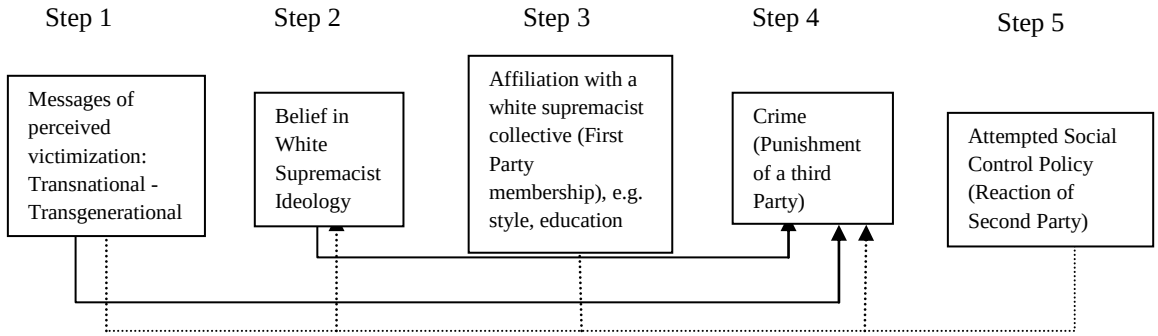


Figure 3 Jack Gibbs Model as adopted and modified by Hamm (Adapted)

He feels that the targets of his hatred and the government are conspiring against him, preventing him from achieving his goals (Hamm, 1994). An example of such a goal could be acquiring employment in a blue-collar field that increasingly hires minorities and immigrants or has begun to shift more blue-collar jobs overseas. The minorities become a target because the prospective white supremacist sees them as having stolen his job. The government becomes a target because they have created trade deals and policies that make it cheaper for manufacturing jobs to be performed overseas.

In step 2, the future white supremacist develops a belief in the ideology of the group. This ideology fuels aggression and supports the view that violence is the best solution to dealing with the target group (Hamm, 1994). The white supremacist dismisses alternative viewpoints and focuses solely on the information that fits his new ideology. As part of this, he may start engaging in vocal disputes with minorities, but physical violence is uncommon during this stage.

A single individual, especially one that is new to the ideology, may not be ready for violence until he or she has become assimilated into the group.[21]

Step 3 is where the white supremacist joins an existing group or attempts to form a new group to spread the message that the hated group is responsible for the victimization of the new white supremacist and any who are like him (Hamm, 1994). This step is essential to the idea of collective hate. This is the step where hate becomes the unifying force among the white supremacists, a foundation around which to form a group. Once formed, the group will begin to act as a cohesive unit rather than a set of individuals. This does not mean that they function coherently in concert with other groups, as groups do not always cooperate and rivalries between skinhead groups are common.

In step 4, the group acts against the hated group, engaging in violence or other forms of hate crime (Hamm, 1994). Much white supremacist rhetoric advocates violence against target groups, both minorities and the government. Similar to strain theory[22], this element of white supremacist involvement echoes back to the first step where a prospective white supremacist identifies minorities and the government as being responsible for his failures or inability to achieve goals. Becoming a white supremacist and engaging in violence and hate crime allows the new white supremacist to "do something" about these feelings of inadequacy and failure.

In step 5, the government attempts to suppress the white supremacist group (Hamm, 1994). As illustrated by the arrows, this attempt by the government or other authority to exert control over the white supremacists can inspire increased feelings of victimization and thereby reaffirm the skinhead's views and strengthen his or her cause. The arrow that connects step one

[21] Among hate groups, skinheads are considered especially violent (Langer, 2003; SPLC, 2008). Certain skinhead factions, such as the Volksfront, have been the focus of investigations by the FBI and Department of Homeland Security, especially due to their propensity towards murder, violent assault, and arson (DHS, 2008).

[22] Agnew (1985) theorized that individuals experience strain and can turn to deviance and crime when their goals and aspirations for their life are blocked or unattainable. This is an expansion of the Anomie theories of Merton (1938) and Durkheim (1893).

with step five, illustrates that an individual may seek to punish the target group and engage in violence without actually going through the process of joining a group.

Figure 4 below, presents a simplification of the process whereby an individual may join or form a hate group consistent with the theory of collective hate.

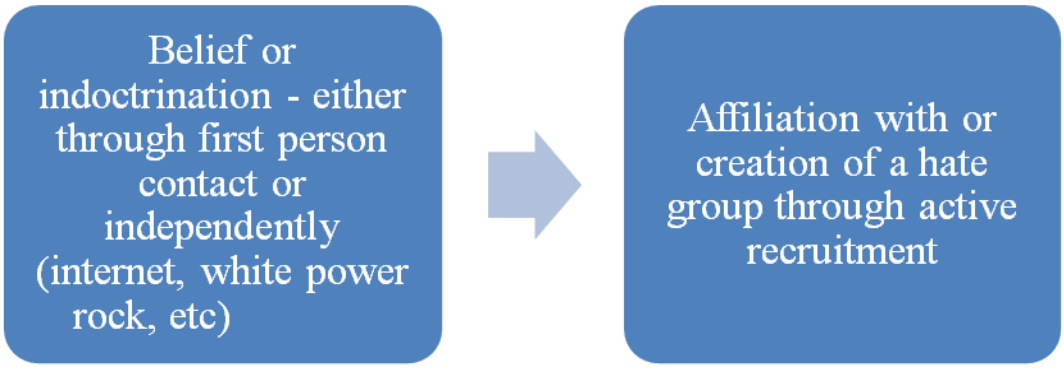


Figure 4 Key elements of collective hate model

Step 1 is belief or indoctrination. Belief is part of the idea behind why individuals who hate one or more particular groups come together. That belief, as a function of their hate, is the unifying factor. Step 2 is this belief leading to affiliation with or creating a hate group of likeminded individuals. Because group formation is the main drive of this research, it is important to understand the different ways that the belief in a hate ideology is established in the individuals who join a group. One way in which an individual becomes indoctrinated in the ideology of a hate group is through the presence of charismatic leadership.

Charismatic leadership as the driving cause of group formation

As noted in the previous chapter, hate groups, such as the Ku Klux Klan and the Order, have had numerous charismatic leaders rise to the forefront of the movement. Much of the scholarly literature regarding how charismatic leadership influences group formation is focused on theoretical explanation and description of these phenomena. Research in criminology has

touched upon the role of charismatic leadership as relevant to studies of ethnic and youth gangs (Brown and Wilson, 2007: Hughes and Short, 2006), Asian organized crime groups (Lindberg, et. al., 1998), and some drug gangs (Paoli, 2004). The origins of theoretical explanations of charismatic leadership are found in Max Weber's (1947) identification of the charismatic leader as one whose authority rested on the population's "devotion to the specific sanctity, heroism, or exemplary character of an individual person and of the normative pattern or order revealed by him (Weber, 1947: 328)."

Charisma is a characteristic based on the leader's beliefs about his position as leader, his power and his destiny, as well as the faith his followers have in him and his message (Ulman and Abse, 1983). This is a symbiotic relationship, the presence and loyalty of the followers and their belief in the charismatic leader, assists the charismatic leader in his or her maintenance of his/her position and power (Weber, 1947). It can be possessed by either positive or negative leaders, megalomaniacs, or saints (Popper, 2000: Howell, 1988: Volkan, 1980). The charisma itself is neutral. It is the power wielded by the individual and the resulting behavior of his followers that makes charismatic leadership dangerous or desirable (Popper, 2000: Howell, 1988; Volkan, 1980).

When a group has a charismatic leader, the group is an extension of its leader and his ideas (Tucker, 1968). Part of the success of a charismatic leader is the historical and socioeconomic factors surrounding their rise to power or acquisition of followers (Tucker, 1968; Wilner and Wilner, 1965). One thing that has made the charismatic leaders of white supremacist hate groups so successful has been their attention to their social and political environment and being aware of their supporters and detractors (Tucker, 1968; Wilner and Wilner, 1965). This social and political environment is the basis for running variants of the proposed models at

different levels of societal hate, simulating varying levels of popular support. Oftentimes the charismatic leader offers hope or deliverance as the draw for followers (Tucker, 1968). If potential followers do not feel hopeless or in need of rescue, they will not follow (Tucker, 1968). Charismatic leaders are often placed in two categories, those who are seeking personal gain and those who use their power to serve or assist others (Howell, 1988; Howell and Avolio, 1992).

Another major aspect of a charismatic leader's sphere of influence is comprised of those who identify with his message. This message may continue long after he is dead. Examples include the rhetoric and ideology espoused by Adolf Hitler which still strongly influences Neo-Nazis and racist skinheads. His message and his views have been accepted by these groups as part of their collective identity. A charismatic leader expands upon collective identity and often highlights the situations facing his followers and elevates them through rhetoric focusing on their homogeneity.

Hypotheses

Hamm's collective hate and Weber's charismatic leadership theories, as discussed earlier in this chapter, were used to create the following hypotheses, each of which was tested using agent-based simulation experiments that are discussed in Chapter Six.

Research Question: Does collective hate influence variations in the attributes of hate group formation?

H1a: The greater the level of hate possessed by the individual agents; the greater the *number* of groups that are formed by the individual agents.

H1b: The greater the level of hate possessed by the individual agents; the greater the *speed* at which groups form.

H1c: The greater the level of hate possessed by the individual agents; the greater the *size* of the groups that form.

Building upon the collective hate thesis as described by Hamm (2007), these hypotheses test whether individuals are drawn together by an intense collective hatred. It is this shared belief that causes groups to form. Because Hamm's theory highlights the idea of a shared intense hatred as the deciding factor for joining a group, the more hate an individual has; the more likely he will agree with other haters and the more likely a group will form.

Illustrative of these hypotheses (and as discussed in Chapter Three), in 1913, a large number of people formed the Knights of Mary Phagan in response to the murder of Mary Phagan. This group formed to lynch the primary suspect, Leo Franks, and perpetuated itself as a hate group targeting outsiders from the North, Jews and other minorities (Frey and Thompson, 1988). It was absorbed into the Ku Klux Klan a year later (Frey and Thompson, 1988: Wade, 1987: Chalmers, 1981).

H1d: The greater the level of societal hate; the greater the *number* of groups that form.

H1e: The greater the level of societal hate; the greater the *speed* at which groups form.

H1f: The greater the level of societal hate; the greater the *size* of the groups that form.

At points in history when a hate ideology was widely accepted by society (e.g., the Antebellum South, the Post-WWI United States, Nazi Germany, and to a certain extent, the American South during the Civil Rights Era), hate groups witnessed rapid growth in membership and in popular support. Hate groups do not form in a void: they form within the larger fabric of society. Although hate groups may form in the absence of societal support, history shows that groups like the Ku Klux Klan and skinheads are more likely to form in areas where and at times when there is some level of social acceptance of their views. The higher the levels of societal

hate, the more social support the hate groups are afforded. Also a larger pool of potential members is available for recruitment into existing or formation of new groups.

Illustrative of these hypotheses are the American South after the Civil War and during the Civil Rights Era which saw a proliferation of Ku Klux Klan groups during times when it was socially acceptable to hate minorities and governmental actions designed to increase the rights and freedoms of minorities, especially African Americans.

Research Question: Does the presence of a charismatic leader influence variations in the attributes of hate group formation?

H2a: The presence of a charismatic leader will increase the *number* of groups that form.

H2b: The presence of a charismatic leader will increase the *speed* at which hate groups form.

H2c: The presence of a charismatic leader will increase the *size* of the hate groups that form.

These hypotheses are based on the first tenet of Weber's (1947) theory of charismatic leadership. Weber (1947) asserts that groups need, or are formed due to their members' susceptibility to charismatic leadership. The presence of a charismatic leader in the environment gives a group someone to coalesce around. Because the group has a specific focal point, the speed at which the group forms should increase. The draw or influence of a charismatic leader, as a focal point for group formation also should increase the number of individuals who join that leader's group.

Illustrative of these hypotheses is Adolf Hitler who inspired Nazi hate groups to form within Germany where he had some direct influence (Goldhagen, 1996; Gellately, 2001; Kershaw, 2008). Even after his death he still inspires groups both in the United States and abroad (Fritzsche, 2008; Kershaw, 2008; Hamm, 1994; Ezekiel, 2002). For example, California White Aryan Resistance formed around Tom Metzger who was inspired by Hitler. His supporters in

skinhead and neo-Nazi groups actively recruit new members across the country, distributing pamphlets and recordings of white power rock to potential recruits (Langer, 2003).

H2d: The greater the level of societal hate; the greater the *number* of groups that form around the charismatic leader.

H2e: The greater the level of societal hate; the greater the *speed* at which hate groups that form around the charismatic leader.

H2f: The greater the level of societal hate; the greater the *size* of the hate groups that form around the charismatic leader.

Charismatic leaders are nested within a larger society. A leader cannot lead if there is no one to follow him; his charisma is partly maintained due to the existence of his loyal followers. A charismatic leader cannot rise to power or gain followers if his message is not favorably received. The charismatic leader's presence has historically been seen as a catalyst to group formation, and given the right social and political climates, a charismatic leader's rise to power can be very rapid. Even in situations where a charismatic leader is not seeking political power, this catalytic element of their presence does appear to result in the quick acquisition of supporters and followers. The charismatic leader's presence and rhetoric often has some influence or sway over the beliefs of those around him. This is not to say that everyone in the presence of a charismatic leader is immediately under that person's thrall. Some individuals react negatively to the message of a charismatic leader.

Because of this, the level of societal hate is important to consider. In a society with low average hate, there would be fewer individuals who are likely to be influenced by the charismatic leader's message. However, the higher the level of societal hate, the more receptive the members of that society would likely be and the more supporters that leader is likely to acquire. Although a charismatic leader may draw together a small group of supporters when societal hate is low, he

is more likely to draw a large group of followers when societal hate is higher. This mimics the societal and environmental factors present when Adolf Hitler drew his followers together after World War I and the leaders of the Ku Klux Klan drew record numbers of supporters during the 1920s and the Civil Rights Movement.

These hypotheses are best illustrated by Adolph Hitler's rise to power. Hitler held a great deal of influence over the beliefs of his direct followers and the rest of his country regarding their racial superiority and how their supposed inferiors should be treated (Kershaw, 2008). Rallies, public appearances, and radio addresses expanded his sphere of influence until he became a pervasive force in Germany (Kershaw, 2008). However not all Germans followed Hitler. German dissidents attempted to assassinate and sabotage Adolf Hitler, even at the height of his power (Kershaw, 2008).

Summary

This chapter laid the theoretical foundation for the experiments that will be discussed in the next chapter. Although a number of theories have been proposed to explain group formation, this dissertation is focused on two of them: collective hate and charismatic leadership. Collective hate relates to how this strong emotion can act as a catalyst for the decision to become part of a skinhead organization and was illustrated by Hamm (1994:2004). Weber (1947) argued that groups form because they are led by a charismatic leader who draws followers into the group.

CHAPTER FIVE

AGENT-BASED MODELING AS METHOD

This chapter provides an explanation of the terminology and methodology of agent-based simulation modeling. Agent-based models allow for the examination of phenomena, such as hate group formation and the manipulation of theoretical parameters that are thought to be important to the phenomena in the real world (Miller and Page, 2007). In order to better understand how agent-based models can be used to test the hypotheses presented in Chapter Four, it is important to examine how these models work and relate to the "real" world.

Lexicon of Modeling Terms

Table 1 below provides definitions for common terms used in simulation and agent-based modeling. These terms will be employed throughout the dissertation as simulation modeling is explained. The experiments as described in Chapter Six were designed to test the theories of hate group formation, (discussed in Chapter Four), using this method.

Table 1: Lexicon of Modeling Terms

Term	Definition
Agent	Any representation of a real world entity that is the focus of what the simulation is being designed to study. In simulations of human behavior or phenomena, the agents are representations of human beings (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005).
Autonomy	The amount of control an agent has over their decisions, interactions, communication, and/or behavior (Epstein, 2007).
Characteristic	Any attribute, quality or feature of interest belonging to an agent in the simulation. These characteristics may be representations of demographics, such as hate and commitment, as well as any other "human" characteristic (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005).

Table 1: Continued

Term	Definition
Communication	The simulation of discussion between agents. Agents can relay information to one another. It is not the same as an actual verbal conversation between real people, but agents can be programmed to ask questions and give responses to those questions (Epstein, 2007).
Interaction	The relations and contacts between agents. It includes not only communication but also proximity, cooperation, conflict and any behavior of interest that relies on more than one agent (Epstein, 2007; Miller and Page, 2007).
Agent-based model	A type of model that is focused on the behavior and activity of agents, or a model that is simulating human behavior (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005).
Behavior rule	A user programmed command that informs an agent what it can, should or must do. A behavior rule may tell an agent that it must be inactive for the model equivalent of eight hours in order to simulate sleep or a work day. Another behavior rule tells an agent that it can converse with any agent within a set distance; the agent decides which agents within that distance it will converse with (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005).
Decision	How an agent uses or responds to the behavior rules it is given and the situations in which the agent finds itself (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005).
Emergence or emergent behavior	Any agent behavior of interest that is not a direct result of programmed behavior rules or agent characteristics (Epstein, 2007; Gilbert and Troitzsch, 2005).
Experiment	A series of model runs (see below) that examine the effect of particular agent characteristics on the outcome or phenomena of interest (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005).
Landscape or location	The representation of the physical surroundings of the agents within the model, it can be as specific or general as fits the situation of interest (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005).
Log file	The file generated by the simulation that populates with the data created by the simulation model regarding the variables of interest to the user. A log file can be exported to any statistical program for analysis (Epstein, 2007).

Table 1: Continued

Term	Definition
Model	A representation or example of the phenomena being studied (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005).
Random number generator	A computer program or logarithm designed to provide a random number typically used for seeding the model agents with particular characteristics or seeding the agents on to random squares within the landscape. These numbers may also be used to assign random responses to situations, such as agreements between agents or the decision to engage in particular behavior (Miller and Page, 2007: Gilbert and Troitzsch, 2005).
Randomization	The random assignment of characteristics to agents similar to random assignment in a real world experiment (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005).
Reliability	Whether or not the model is working according to how it was programmed over the course of subsequent model runs (Epstein, 2007; Gilbert and Troitzsch, 2005).
Run (AKA Model Run)	A single sequence or cycle of the simulation model from beginning to end, encompassing all the ticks the modeler sets for the time period of the model (Epstein, 2007; Miller and Page, 2007).
Sensitivity analysis	The systematic or random varying of the model conditions and parameters to determine the impact of those parameters on the outcome of the model run (Gilbert and Troitzsch, 2005).
Simulation model	A simplified representation of a real world scenario or phenomena, encompassing the fewest possible explanatory variables that would replicate the behaviors or phenomena of interest (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005). The user specifically programs this in agent-based modeling to include agents, characteristics and behavior rules designed to correspond to a specific theory or set of theories.
Tick	A measure of time within a simulation model. The modeler sets how many ticks constitute any particular period of time, from a matter of minutes, to hours or even days (Epstein, 2007; Miller and Page, 2007). In these experiments 1 tick equals 6 hours of elapsed time.
Verification	Verification is concerned with how the software and programming work, and whether or not there are errors or problems with how the model has been programmed (Manson, 2001).
Validation	Validation concerns how closely the model represented or recreates the situation or phenomena of interest (Gilbert and Troitzsch, 2005: Manson, 2001).

Simulation Modeling Basics

A simulation model (as defined in Table 1 above) distills a social or natural phenomena down to its most basic working parts (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005). It is a "bare bones" representation of the real world (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005). When modeling social phenomena, the model is a representation of a combination of *location* and *people* interacting within that location (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005). The *location* is the environment; it stands for the general milieu in which the model is situated. It can be specified to mirror a city or a rural area or it can be programmed to be very generic, simulating simply an open space in which people interact. The people interacting in the model are referred to as *agents*. Agents are the representation of the "who" or "what' the modeler is investigating. In models of social events or behaviors, agents are computerized representations of human beings (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005). They are given characteristics and behavior rules. In the same model, a variety of agents are included that have randomly assigned start values for characteristics and a specified set of behavior rules to govern the actions and decisions emitted by the agents.

Characteristics are traits that differentiate one agent from another. Starting values for these characteristics usually are randomly assigned at the beginning of a model run. Characteristics can encompass a wide variety of traits and demographics found in the real world. For example, an agent can be assigned a specific profile to mirror a type of person in the real world, such as a college student (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005). However, similar to empirical observations, the more variables or traits added to the mix, the more complex the model and the more likely that the specific interactions that result in the event or behavior of interest will be obscured (Epstein, 2007; Miller and Page, 2007: Gilbert and

Troitzsch, 2005). Thus it is considered in simulation modeling, that less is more. Characteristics can be altered or even removed from the model in successive runs to determine whether or not there is a relationship between the characteristics and the behavior, or whether something else is involved (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005).

Behavior rules guide the agents' activity (Miller and Page, 2007: Gilbert and Troitzsch, 2005). Behavior rules can be complex or simple (Epstein, 2007). A simple rule can be used to move an agent a fixed distance in a random direction. A complex rule would build on that action, asking the agent to take into account it's perception of traffic density and personal energy level before adding in a random factor. Both rules require the agent to do something, but one is far more complex than the other. Behavior rules are not designed to be predictive but rather to represent basic components of decisions (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005). The decisions agents make stem from their consideration of the behavior rule but add a randomly generated number which represents information not included in the model that can change the decision to a different one. The goal of a simulation model is to identify the smallest number of characteristics and simple rules that result in the computerized agents mimicking the "real-world" behavior being studied (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005).

Because some social phenomena take longer to occur than others, time becomes a factor. Behavior rules can be designed to inform agents that they should "sleep" for a certain period of time during each representation of a day. In a simulation model, time also is controlled by the programmer. The modeler makes the decisions about how time will be used in a model (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005). A model is designed to run through a set number of steps. When the model finishes its run, the "clock is up" for the agents in the

model. A model can be run to simulate what the agents do in a brief period of time, such as a few minutes or a longer period of time, like years (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005).

Each run of a simulation model produces data. Data is captured in a separate *log file* for each run (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005). Data can be collected continuously through the model run or only at specific points, such as the beginning, middle, and end of the model run. Data are exported into any statistical program and analyzed (Epstein, 2007).

In terms of model *validation*, a model is typically considered successful if it creates the behavior of interest (Epstein, 2007; Miller and Page, 2007: Gilbert and Troitzsch, 2005). Multiple model runs using the same programming are used to ensure that the model run that resulted in the behavior of interest was the result of chance alone. Multiple model runs using the same programming are used to see whether these replicate the previous model. In order to make certain there is variability between model runs, random number generators are used to assign different levels to variables of interest, as well as the starting location and movement of the individual agents. If the model repeatedly results in the same outcome even across a range of sensitivity testing, it is robust to changes in the tested value.

In terms of model *verification*, the accuracy of the programming code and the logic of behavior rules are typically checked by other modelers in order to identify and correct mistakes in the programming (Manson, 2001). Further, sensitivity testing is used; varying different parameters slightly over initial model runs and the changes in outcome are noted in order to determine the limits of the model's application (Manson, 2001). In order to verify the models used in this dissertation, each individual process was programmed separately and print

statements were used to verify that the processes were running. Further, in watching the model update over the course of the initial individual process runs, key elements of processes were given visual cues, agents and background patches changed color, allowing for a visual assessment of how the model was running, what agent behaviors were in place, whether or not time was being divided properly, and whether agent characteristics were remaining static or changing.

As the processes were created individually, they were verified by Dr. Stephen Frezza (see Appendix F for CV) who checked the programming language against the visual cues designed to highlight the processes and the print statements. The individual processes were then combined, allowing them to cascade into the full model for theory testing. The model at this point was checked again by Dr. Frezza, and all errors in programming language were documented and corrected. The full models in the three experimental conditions (control, collective hate, and charismatic leadership) were run 100 times, each separate from the model runs for data collection. This output was used to verify that the log files were populating correctly and that the data generated by the models was within the ranges set for the different agent characteristics and behaviors of interest. For further discussion of the validation and verification steps used in the creation of the models used in this dissertation see Appendix G.

Each model is an alternative representation of how hate groups might form under different conditions. The variations maintain the simplistic representation of the world inherent in simulation modeling. Each model variation builds on the previous variations in order to make it possible to clearly identify which parameters are being manipulated.

Eight Key Components for an Agent-Based Model

Simulation modeling is an excellent method for theory exploration, especially in situations where data are incomplete, difficult to obtain, or simply nonexistent. This method assists by "providing a research platform for translating theory into models that can be discussed, shared, tested and enhanced with the goal of building scientific knowledge" (Groff, 2007:75). Agent-based models allow for the agent to be viewed as either an individual or a group (Groff, 2007; Gilbert and Terna, 1999; Gilbert, and Troitzsch, 2005). However, simulation modeling can only determine whether a theory or model is a possible representation of real life occurrences and interactions, not whether it is the only explanation (Groff, 2007).

Simulation modeling can be conceptualized as a complex adaptive system in which agents are interactive and "thoughtful," but not omniscient or even highly intelligent (Miller and Page, 2007). A simulation includes eight key elements; 1) information and connections, 2) goals, 3) communication among agents, 4) interaction, 5) payoffs, 6) strategies and actions, 7) cognition, and 8) model focus and heterogeneity (Miller and Page, 2007).

Table 2 (below) details the eight elements of a simulation model. Each element is listed in the first column. To illustrate the interplay of these eight elements, the second column uses real world examples from the Ku Klux Klan. The third column shows how each of these elements was specifically expressed in the programming of the simulation models created for this dissertation. Please note that underlined constructs within the table represent either parameters that were manipulated in the simulation or dependent variables examined within the context of the experiments discussed in Chapter Six.

Table 2: Eight Elements Table: Real World Analogs and Simulation Model Representations

Element	**Real World (The Ku Klux Klan)**	**Simulation Model Representation**
1) Information and connections	Individuals at Klan rallies or Klan functions dress and speak in a specific way; they wear t-shirts that profess their ideology or Klan uniforms that highlight their position in the organization. They carry signs and shout slogans associated with their ideology and condemning their targets (e.g. African Americans, Jews, and Homosexuals). Other hate groups that attend these events may or may not be Klans, such as skin head groups or Neo-Nazis, but their shared ideology, professed through conversations and outward appearance, allows them to know they are welcome. People rely on their interaction with others to make connections.	Agents know the hate they possess and the level of hate possessed by other agents. Agents are randomly assigned a base level of intrinsic hate, which is their true level of hate before any interactions allowing for the tracking of how agents change their level of intrinsic hate based on the levels of extrinsic hate of other nearby agents, the presence of fully formed groups, and so forth. The model relies on the interactions between agents and the connections they make in order to simulate hate group formation.
2) Goals	Throughout history the Klan has had a variety of goals – large goals like preventing desegregation of schools to smaller goals of gaining members in their groups. Highlighted by David Duke's attempts to repackage the Klan to make its message of hate more palatable to a larger population.	Agents have one goal. They are seeking others that possess similar levels of hate and avoiding those who possess a level of hate they see as too dissimilar from their own level.

Table 2: Continued

Element	**Real World (The Ku Klux Klan)**	**Simulation Model Representation**
3) Communication among the agents	Klan members overtly communicate, asking each other about their likes and dislikes, they agree and disagree. Klansmen also look at visual cues, t-shirt slogans, bumper stickers, tattoos.	Agents overtly communicate, asking each other about their level of hate and their agreements and disagreements with other agents.
4) Interactions	As Klan members find others they enjoy talking to at a Klan event, they hang out with each other and talk. They may exchange contact information and business cards – gaining opportunities for future interactions.	As agents agree about levels of hate, they form groups and gain support and status within the model. Support refers to the number of agents that agree with a particular agent, thus increasing the likelihood that a group will form that agrees with the agent in question. Status refers to the agent's position in a newly formed group, as a founding member of the group.
5) Payoffs	In the real world it depends on what the person is interested in. Wild Bill Davidson considered membership in the Klan a bonus as his fellow Klansmen supported his business ventures. David Curtis Stephenson used his power to make political connections, which he thought, erroneously would protect him from conviction and imprisonment.	When groups form, agents are assigned two new characteristics. They gain the beneficial characteristic of commitment to the group and the detrimental characteristic of fear. Commitment maintains the agent's membership in the group and fear influences whether or not the agent leaves the group. Fear is representative of a group becoming more violent or extreme in its beliefs than the agent is comfortable with.

Table 2: Continued

Element	**Real World (The Ku Klux Klan)**	**Simulation Model Representation**
6) Strategies and actions	People at a Klan gathering can stretch the truth to make themselves more interesting or feign interest in the conversation of an important contact, in order to manipulate their current and future experiences and interactions.	The agents have free rein to change their level of extrinsic hate at any time and are given control over whether or not they agree or disagree with their fellow agents no matter how similar their level of hate may be.
7) Cognition	People in the real world are not omniscient, but have varying levels of intelligence – they are for the most part, more intelligent than the agents in a simulation model.	Agents are aware of their surrounding agents and can remember previous interactions throughout the model run. Agents are not omniscient and are designed to be rather simple with few underlying mental characteristics.
8) Model focus and heterogeneity	The real world is far more complex and heterogeneous than a model that has simplified the world to examine one particular phenomenon.	Hate agents are given a variable level of extrinsic hate from 0 to +10. The model is simplified to remove all other background characteristics and focuses solely on collective hate with experiments relating to charismatic leadership. The models are run at different levels of societal hate mimicking the amount of general social support a hate group might find for its views.

In regards to element 1, *information and connections*, agents in the simulation are analogs to individuals in the "real world." No one exists independent of the world. Agents react to what they "know" about the simulated environment around them and to the input they receive

from the other agents with whom they are in contact (Miller and Page, 2007). Agents, like their real-world counterparts, can form networks of relationships and information and are influenced by their experiences and the experiences of their peers. Just like people in the real world, agents may alter their "behavior" to influence each other's actions (Miller and Page, 2007).

Element 2 refers to the *goals* the agents have in the model (Miller and Page, 2007). Because a simulation model is a simplified representation of the real world, this goal is an echo of the motivations people have in the real world. The goals of an agent are reflected in the specific behaviors and interactions that are included in the design of the experiment (Miller and Page, 2007). Importantly, the rules programmed into the model reflect the theoretical assumptions that the models are designed to test, without being deterministic. While rules govern agent behavior, random error terms are used in order to add an element of chance as to whether those behaviors result in the behavior of interest. In the models for this dissertation, an agent is told it wants to meet other agents who have similar levels of hate, the agent is not told to create a hate group. Even when an agent makes enough connections with other agents who have similar levels of hate, there is a random chance assigned to that group of agents that a hate group will form.

Element 3, *communication* among agents, is a further representation of how a model mimics the real world. Very few people can exist in a void without some form of contact or communication with others. Agents communicate with one another, either by action or by providing the other agent with some form of information (Miller and Page, 2007).

Element 4, *interaction*, refers to what an agent does with the information received (Miller and Page, 2007). Agents make decisions about the information they receive and act accordingly, just like people in the real world respond to what they hear, see and believe (Miller and Page,

2007). These decisions translate into action and these actions influence the other agents around them and their simulated environment (Miller and Page, 2007).

Element 5 is *payoff.* Agents engage in behaviors, communicate and interact with a purpose. They want something, just like people in the real world (Miller and Page, 2007). This payoff can be linked to their goals, but this is not necessary. The goal of meeting someone may be easily achieved; however, that person providing further benefit is not guaranteed. Together, agents can change the simulated world in which they live. These changes can positively or negatively impact the agents, causing them to derive benefit from some behaviors and detriment from others (Miller and Page, 2007).

Element 6 focuses on the *strategies and actions* that the agents undertake, similar to the manipulations people in the real world become involved in when they are vying for a resource or playing a game (Miller and Page, 2007). Agents analyze their fellow agents in each situation and may make decisions about their responses based on these perceptions (Miller and Page, 2007). These decisions also may be influenced by previous interactions between the same agents or in events and changes within the model that occurred since the agent's last interaction (Miller and Page, 2007).

Cognition, or thought, is element 7 (Miller and Page, 2007). This element of a simulation model is based on the programmer's decision about how complex to make the agents. Most models have very simple agents with mental processes far more simplified than their real world counterparts (Miller and Page, 2007). Although the agents in the model are a representation of people in real world situations, they need not be identical to the real world (Miller and Page, 2007).

Element 8, *focus and heterogeneity*, refers to the model itself and not the agents within the model (Miller and Page, 2007). The key question here is: Does the model actually encompass everything necessary to recreate the process of interest? Even though simulation models are seeking to explain or recreate complex interactions and phenomena, the model itself should be simply designed to encompass the underlying processes that produce the desired result (Miller and Page, 2007).

Summary

This section examined agent-based modeling as a technique for criminal justice research. Simulation models distill social or natural phenomena down to its most basic working parts. Agent-based models allow for the safe and ethical examination of social phenomena. The next chapter explains how this methodology was used in this dissertation to create models simulating hate group formation based on the theories of collective hate and charismatic leadership.

CHAPTER SIX

METHODOLOGY

This chapter describes in detail the dependent and independent variables used in the models. It lays out the experiments run to test the hypotheses outlined in Chapter Four. The chapter ends with a discussion of the statistical methods used to compare the control and experimental models.

ABM Modeling Platform

There are many different ABM modeling platforms available. Each platform was designed for different purposes and this makes it important to be aware of the specialization of the modeling platform. Because of the wide range of program available, it is necessary to check the various surveys of programs that have been conducted (Castle and Crooks, 2006; Leszczyna, 2004; Tobias and Hoffman, 2004; Nikolai and Madey, 2009). Some of these surveys examine only a few modeling platforms (i.e. Tobias and Hoffman (2004) examined four Java-based platforms). The most extensive is the Niklolai and Madey (2009) survey. Nikolai and Madey (2009) surveyed and compared 53 different ABM modeling platforms. These modeling platforms were rated on five separate characteristics "language required to program a model and to run a simulation, operating system required to run the toolkit, type of license that governs the toolkit, primary domain for which the toolkit is intended, and types of support available to the user" (Nikolai and Madey, 2009, 12).

The program chosen for this dissertation was NetLogo. NetLogo is a simulation modeling program that was designed for examining social and natural events and activities and is well-suited to the simulation of "complex systems that develop over time." (Wilensky, 1999:1) Nikolai and Madey (2009) highlight NetLogo's accessibility, ease of operation and its primary

specialization as one geared towards the general social sciences. Because of this specialization, NetLogo has seen extensive use in the social sciences. Notably, NetLogo has been used to examine political behaviors and situations (Lustick, Miodownik, & Eidelson, 2004; Kuznar, & Sedlmeyer, 2005), as well as for developing an understanding on how communities form, collective identities develop and cooperation between individual and groups (Berman, Nicolson, Kofinas, Tetlichi, & Martin, 2004; Flache, & Macy, 2002; Lansing, 2000; Lansing, & Miller, 2005, Burnett, 2000; Lustik, 2000). NetLogo has also been used to model how stereotypes and norms develop among and between groups (Adams, & Markus, 2004; Agar, 2005; Aoki, Wakano, & Feldman, 2005; Brauer, Judd, & Jacquelin, 2001; Doreian, 2001; Gotts, Polhill, & Law, 2003; Sun, 2001; Gumerman, Swedlund, Dean, & Epstein, 2003; Hastie & Stasser, 2000; Kenrick, Li, & Butner, 2003; Kohler, 2000; Lyons, & Kashima, 2003; Sallach, 2003).

Programming

NetLogo is programmed using the computer programming language Java but modelers use simplified language propriety to NetLogo to program their models (Wilensky, 1999).As presented in Table 3 below, programming is kept rather simple. Programming is divided into procedures; the number of procedures varies depending on model complexity. To give the reader a feel for what a NetLogo program looks like, Table 3 contains four of the procedures used in the models written for this dissertation. The full program can be found in Appendix E.

Table 3: Procedures and Programming

Procedure	Agent programming	Explanation
Procedure1 – Agent characteristics This section assigns the variables of interest to the agents.	turtles-own extrinsichate ;; random 0-10 intrinsichate ;; random 0-10	Turtle is the generic term for an agent in the program. Turtles have extrinsic and intrinsic hate that can vary from 0 to 10.

Table 3: Continued

Procedure	Agent programming	Explanation
Procedure 2 – Set-up for the model This section prepares the model to run the experiment.	to setup clear-all create-turtles 500 set-default-shape turtles "person" ask turtles [setxy random-xcor random-ycor] ask turtles [set color red] ask turtles [set extrinsichate random 10] ask turtles [set intrinsichate random 10] End	In order to run the model: Clear all previous model information Create 500 turtles Make them look like people Spread them out over the screen at random Make them red Assign a random level of extrinsic hate max 10 Assign a random level of intrinsic hate max 10 This ends the set up
Procedure 3 – Agent behavior This section tells the agents what to do.	to communicate ;; turtle procedure if any? other turtles-here with [extrinsichate = [intrinsichate] of myself] [if random-float 100 < agree-chance [set agree? true set color white]]	The turtles are going to communicate Does the turtle detect another turtle Is that turtle's extrinsic hate = its intrinsic hate? If yes, give a random chance that they will agree If they agree, change their color to white

Table 3: Continued

Procedure	Agent programming	Explanation
Section 4 – Log File This section creates a log of the information from the model.	to log-agentset-header	This sets up the header for the variables.
	set-current-directory base-path	This tells the model where to save the file.
	file-open word base-filename "-agenthate.csv"	This tells the model what to call the file.
	file-type "tick-no ,"	This tells the model what the first variable is.
	to log-agentset-variables [tick-no]	This starts filling in the information in the file.
	set-current-directory base-path	Tells the model where to look for the file.
	file-open word base-filename "-agenthate.csv"	Tells the model to open the file.
	foreach sort agents ask? [file-type tick-no file-type " ,"	Tells the model to collect information from each agent by requesting their information and storing it under the appropriate variable.

Random Numbers

Because it is impossible to know or account for the interactions that make up every situation, a degree of randomness is necessary so that some other factor could come into play. Thus, an agent could evaluate an invitation based on the relative difference in hate levels and find it attractive, but once the error term is added, they could decide not to join. The distribution of the random number generator reflects the modeler's best estimate about the probabilities involved. If there is no basis for preferring one over the other, a uniform distribution is often

used because there is an equal chance that any number in the range will be selected. If most of the time a low value is expected (i.e., that random factors are not very important), a Poisson distribution is utilized so that more often, the number generated will be closer to zero. The random term is generated from a normal random number distribution and ranges from X to X. The reason for the random generation of a response is to simulate the interaction between people whose ideology or level of hate is the same, but have different opinions on what should be done or how their beliefs are expressed.

In NetLogo there are eight different ways in which random numbers are used. These are: *random-xcor/ycor or pxcor/pycor, random-seed number, random, random-float, random-exponential mean, random-gamma alpha lambda, random-normal mean standard-deviation,* and *random-poisson mean*. Table 4 below shows the different ways random numbers were used in the experiments. The first, *random-xcor/ycor or pxcor/pycor* is used to place agents within the environment. *Random-xcor/ycor* is used to place the agents at random x and y coordinates anywhere in the model landscape. *Random pxcor/pycor* places agents randomly to the center of patches within the model landscape.

The second, *random-seed number* is used to provide an integer for a pseudo-random number generator. This use of random numbers was not used in this model. *Random and random-float* are used to report a number of zero or greater to a point pre-set by the programmer. In this dissertation, *random-float* was used for agreements and disagreements and for error terms in group formation. *Random* was used to assign numbers within a range for extrinsic hate, motivation, susceptibility, and in the charismatic leader experiment, the charismatic leader's level of charisma. *Random* was also used after agreements or disagreements were made between agents to separate the agents and cause them to seek out other agents. In this second case, agents

were given the command *random* 360, causing both agents to turn away from each other and move away at the random angle assigned by the program in order to seek out another agent. When the distribution of numbers is more important, NetLogo provides a series of options *random-exponential mean, random-gamma alpha lambda, random-normal mean standard-deviation,* and *random-Poisson mean*.

This dissertation used *random-Poisson mean,* where mean was replaced with 2, 4, 6, or 8, depending on the level of societal hate for the model run. This means that intrinsic hate was randomly distributed according to a Poisson distribution centered on the level of societal hate in the model. When societal hate was allowed to change based on agent behavior, this does mean that, when compared to the real world, dramatic changes in levels of societal hate could happen in a short time frame, if on day 100 half the agents had not made an agreement, they could all change their intrinsic hate at the same time and cause significant changes in the societal hate of the model. Because of this, the fluctuation of societal hate in models where it has been allowed to vary due to agent behavior is noted in the log file and the data are collected for future analysis and research. In model runs that were absent of societal hate, where societal hate was not included, intrinsic hate was treated like extrinsic hate and declared as random for the intrinsic hate range.

Table 4: Random Numbers in the Model Experiments

Random Number Generator	**Experiment**	**Use in Model**
Random-xcor/ycor	Control Collective Hate Charismatic Leadership	Is used in the set-up of all models to place the agents within the model landscape.

Table 4: Continued

Random Number Generator	Experiment	Use in Model
Random-float	Control Collective Hate Charismatic Leadership	When agents are determining whether or not they agree when all other factors are accounted for (+/- 1 intrinsic to extrinsic hate) and when groups are about to form (random-float, klan-chance).
Random	Control Collective Hate Charismatic Leadership	Extrinsic hate, susceptibility, motivation. In the charismatic leadership experiment this is also how the Charismatic Leader's charisma is assigned.
Random-poisson mean	Control Collective Hate Charismatic Leadership	When societal hate is systematically set (2, 4, 6, or 8) at the beginning of a model, this random number generator is used to assign levels of intrinsic hate around that societal average.

Model

The purpose of the model designed for this dissertation was to test theories of hate group formation. Hate group formation has been examined through theory and retrospective. Although some histories exist for well-known hate groups, such as the origins of the Ku Klux Klan, the proliferation of hate groups in the United States and elsewhere over the past ten years increases the need to understand how hate groups form. The structure of the model is simplistic. Individual agents in the model are designed to represent ordinary people. There is nothing extraordinary about the people who form or join hate groups, they are every day, ordinary human beings.

Therefore, the agents in the model are the same. The agents are stripped down versions of these ordinary human beings; they have an internal belief system (intrinsic hate), an external representation of their views (extrinsic hate), motivation, and susceptibility to charismatic leadership (in models where a charismatic leader was included). They do not have social status, education, or economic status, as these characteristics distract from the core problem. Hate group members have, historically, been drawn from all social and economic strata and from a variety of educational backgrounds. The environment was also minimalist and will be discussed in the next section. The temporal scale of the model was a one year period, a very brief period of time for hate group formation, or any type of group formation, but a manageable period of time, as the SPLC measures the number of active hate groups in the United States on a yearly schedule. For the agents in the model, this scale was subdivided into 6-hour blocks, measured by one tick of the model's run time. The agents' motivation process was directly tied to these ticks.

Motivation is one of the key processes in the model. When the model is programmed to motivate the agents, it is the start of all other processes. Motivation is divided into three categories. The most motivated agents are active 18 hours a day, the second category of agents are active 12 hours a day and the least motivated agents are active only 6 hours a day. When the motivation process begins, the agents who are motivated to be active during that time period begin the communication process. Those who are not motivated to be active during that time period do not initiate the communication process.

The communication process governs the interaction between agents. The agents are programmed to look for other agents within their current patch who present themselves (extrinsic hate) as having similar beliefs (intrinsic hate). When an agent finds another agent who fits this qualification, the agent approaches that agent and they discuss their beliefs. This process is

within the communication process, where the agents compare their views (intrinsic hate to extrinsic hate). The agents are not mind readers, so they are comparing the external representation of each other's beliefs (extrinsic hate) to their own internal beliefs (intrinsic hate). The next step of this process is the agreement/disagreement process.

The agreement/disagreement process takes place when the agents have made this comparison of beliefs and are determining whether or not they agree with each other. In some cases, the two agents will appear to agree on the surface (extrinsic hate of Agent 1 = extrinsic hate of Agent 2), but this façade does not reveal their internal beliefs and they immediately disagree and seek other connections. In other cases, the agents will agree on the surface and internally (extrinsic hate of Agent 1 = intrinsic hate of Agent 2). These agents are most likely to form a connection. However, everyone knows there is more to making a connection with another person than shared beliefs. Because of this, the process for agreements has a random chance associated with it. The program essentially "tosses a coin" to determine whether or not this connection has been made. If the connection is made, both agents keep track of who it was they agreed with and seek out other connections. If the connection was not made, the same process as the immediate disagreement comes into play.

If an agent does not manage to make any connections over the course of 100 days, a new process comes into play. The agent is given the opportunity to change its mind (intrinsic hate). There are no core rules that govern how the agent changes its mind (intrinsic hate), but if the agent chooses to change, all internal characteristics of the agent change (intrinsic hate, motivation, susceptibility). Although most people change their mind more than three times a year, the idea here is that intrinsic hate is a long-held core belief, not a transient dislike that may change with time and experience.

Whether or not an agent is making connections after each agreement or disagreement, the agents are given the option of changing their outward appearance (extrinsic hate). This process allows the agent to reset their extrinsic hate to any amount. This allows an agent to change their outward representation of their beliefs up or down, in turn giving themselves an increased likelihood of forming connections. The agents want to make connections, because they are representations of human beings, which are social animals.

When an agent has tallied a total of five or more connections (agreements), the group formation[23] process comes into play. The group formation process does not require that the agents be in close proximity to each other when the tally reaches five, just like a group of friends deciding to form a club may contact each other by phone, text message or via social media (e.g., Twitter, Facebook). The agents are alerted to their possibility of group formation. This does not mean a group forms instantly, just as with the agreement process, the group formation process also has a random component. The model once again "flips a coin" to determine whether or not the group forms. If the group does not form, the agents keep their agreements, but continue seeking further connections. If the group does form, the agents populate a group agent and are given new characteristics as group members, commitment and fear. These new characteristics in combination with the agent's intrinsic hate give the agents the option of staying with the group or leaving the group. A group can gain members from this point as its members make new

[23] Though the group was developed based on a series of connections, it is not a social network model. A social network model establishes pre-existing links between agents and then uses the agents' pre-existing connections to form new connections (Carroll & Ratner, 1996: Dorien, 2001: Friedman & McAdam, 1992). These pre-existing connections run contrary to the basic tenets of Hamm's (2004) collective hate, that people are drawn together by an intense collective hatred. This collective hatred is not theorized as being based in a pre-existing network of friends or acquaintances, but more in the synchronistic coming together of people with similar views and beliefs. Therefore, in these models, while agents bring in their connections, these connections are established in a more free-flowing fashion than a structured social network model.

connections. No behavior rule governs how many groups the agents can join, as their real world counterparts can certainly have more than one group affiliation.

The processes in place when the group is populated are the option of changing intrinsic hate and dropping out of the group. The option for changing intrinsic hate comes after the agents have been populated in a group and the group has stayed together for ten days. The agents are then given the option to increase or decrease their intrinsic hate, to radicalize or become disenchanted. When the agents choose to increase or decrease their intrinsic hate, they also reset their internal characteristics (motivation and susceptibility).

The second process in place when a group has formed is the agents dropping out of the group. When these agents joined groups they were given two new characteristics, *fear* and *commitment*. *Commitment* is randomly assigned. Each agent determines how much *fear* it has based on the difference between the level of hate possessed by the most extreme member of the group and their level of commitment. So, if Agent 1 has a level of commitment of 4 and the most extreme member of the group has a hate level of 7, Agent 1's level of fear is 3.

The decision to leave the hate group is based on the following: if the mean level of hate for the group becomes twice a particular agent's level of fear, that agent will make the decision to leave the group. Therefore, if an agent has a fear level of 3 and the mean level of hate for the group is 6, the agent will leave the group. No matter how much an individual buys into a group's belief system or viewpoint, there is a point at which the group may advocate a position beyond an individual member's comfort zone.

For some agents this can be instantaneous: the minute their levels of fear and commitment are assigned, they may assess the group and leave. Dropping out of the group is governed by a calculation of the agent's characteristics and the group's characteristics.

$$\mu H = 2f$$

Where μH is mean intrinsic hate or the group level of hate and f is the individual agent's level of fear. No matter how much an individual buys into a group's belief system or viewpoint, there is a point at which the group may advocate a position beyond an individual member's comfort zone. For example, a person may absolutely hate a certain segment of the population with a blinding passion, but may not want to engage in acts of violence against those individuals.

When an agent leaves a group, their levels of commitment and fear are documented in the log file for analysis, but they do not retain the commitment or fear characteristics. They are no longer a member of the group, so they are no longer committed to the group. They also have left the situation that was causing or influencing their fear, so they are no longer afraid. They can join another group or even the same group at a later time, at which time they would be assigned a new commitment level and have a new level of fear calculated. If a group's membership falls below three members, the group dissolves.

The only other processes present in the model are those that come into play when there is a charismatic leader in the model. All previously discussed processes are still active in the model. The leader process is based first on the leader agent being assigned a level of charisma above zero. The charismatic leader agent then begins the same agreement/disagreement process as all other agents. The difference here is that the agents' susceptibility comes into the decision as to whether or not to agree with the charismatic leader. An agent makes the same intrinsic hate vs. extrinsic hate assessment, but if their intrinsic hate matches up to the leader's extrinsic hate (+/- 1) it is their level of susceptibility that first determines their agreement rather than a random coin toss. If they possess the highest level of susceptibility they immediately agree, if they possess no susceptibility they immediately disagree. The middle levels of susceptibility are then

governed by the same random coin toss as the agreements and disagreements between regular agents. When an agent disagrees with the charismatic leader, the leader tallies those disagreements and they become a measure of the charismatic leader's lack of support in the society. When an agent agrees with the charismatic leader, they identify themselves as followers of the leader and the leader tallies their agreements and keeps a list of their identification numbers. The agreement tally is then used by the charismatic leader as a measure of his popularity in the society.

When a leader is active in society, his followers are given an extra benefit of changing their internal belief system more often. Those agents can reset their internal characteristics (intrinsic hate, susceptibility, motivation), any amount at ten-day intervals after declaring themselves followers of the charismatic leader. If the agents decide to change their intrinsic hate to a value below the charismatic leader's extrinsic hate, the agent is also given the opportunity to leave the charismatic leader's fold. If they choose to do so, they are removed from the charismatic leader's list of followers and are no longer self-identified as a follower. All group formation processes remain the same.

The model is programmed to keep track of all agent characteristics at every tick of the model. A log file is created at the start of the model run and all information for all individual and group agents is collected from that point until the end of the model run. Group agents that do not populate report zeroes in all columns throughout the model run.

Agents

Within these experiments there were two kinds of agents; individual people and groups. Each model contained 500 individual agents. These agents were given the characteristics listed in Table 5 below. The models that contained a charismatic leader included a charismatic leader

agent. This agent was given all the same characteristics as the individual agents with the only difference being that individual agents were assigned a charisma of zero and the charismatic leader's charisma could vary from one to five.

Table 5: Individual Characteristics

Individual Characteristics	**After Individual becomes a group member**	**After Individual leaves a group**
ID** Intrinsic hate RP(0-10) Extrinsic hate R(0-10) Motivation R(1-3) Charisma (0) R(1-4)* Susceptibility R(0-4)*	Group ID** Commitment** Fear **	Dropout ID**

* In the charismatic leader experiments
** Included in the model but not used as an independent variable

When an agent leaves a group, their levels of commitment and fear are documented in the log file, but they do not retain these characteristics. They are no longer a member of the group; therefore, they are no longer committed to the group. They also have left the situation that was causing or influencing their fear; therefore, they are no longer afraid. The agent is then given a drop-out ID that tracks which groups they have left. These agents can join another group or even the same group at a later time. If they do so, they would be assigned a new commitment level and have a new level of fear calculated.

Group agents serve as place-holders for the groups that will be formed by the individual agents. Each model contained 100 of these group agents. The group agents were given the characteristics listed in Table 6 below.

Table 6: Group Agent Characteristics

Group Characteristics
ID***
Group mean Hate**(≥5)
Number of members*(≥5)
Group mean Commitment***
Group mean Fear***
Number of drop-outs***

* Used to determine dependent variables: number of groups that formed and size
** Used to determine dependent variables: number of groups that formed, level of hate
*** Included in the model but not used as an independent or dependent variable

Group agent's characteristics are populated when a group is formed.

Environment

As previously stated, the environment in a simulation model is developed by the programmer. It can be very complex, simulating a bustling metropolis with streets and hubs or simply an open field. The environment design for this simulation model was kept simplistic. The open field landscape was determined to be the best option to prevent interference from environmental factors that could change agent behavior. Therefore, the landscape for the model was composed of patches. Each agent was randomly assigned to a section of a patch at the start of the model run and from that point the agents were able to move to any patch they wanted as they interacted with other agents. This prevented situations where the location at which the agents interacted had more influence over group formation than the individual agent characteristics. Further, hate groups have historically existed in all 50 states, in both rural and urban areas, as well as internationally and in the nebulous environment of the internet. In this environment, the agents are randomly distributed across the landscape. This does affect their earliest conversations with other agents, but as the model run progresses, they are free to move

throughout the landscape and speak with whomever they encounter who "looks" like a good prospect based on their extrinsic hate.

Data

Simulation modeling by its very nature is extremely data rich. Based on what information the modeler decides to collect, each model run can produce thousands of data points. In the programming for a simulation model, the programmer sets up a log file with the variables of interest and the number of times the data should be recorded. Data are usually of three varieties, *the value of a characteristic (i.e., intrinsic hate 5), a count of some action or behavior (i.e., agreements 12)* or *a list (i.e., the agent ids of a series of agents in a group).* The majority of the data collected for this dissertation was of the first two varieties. In this dissertation, data were recorded for all variables at each tick of the model run. Each model run in these experiments produced a log file for individual agent data and a second for group data. The 5,000 experiment iterations testing the charismatic leadership hypotheses also produced a log file for leader data. The 15,000 iterations used to create distributions of results produced a total of 15,000 individual agent log files, 15,000 group log files and 5,000 leader log files for a total of 35,000 individual log files[24].

[24] All total there were 500 agents in each model and 730,000 data points per model, yielding a total of 10,950,000,000 individual data points of agent data. These data points included information regarding each agent's level of intrinsic and extrinsic hate at any given time, the group or groups they joined and the group or groups they had left if they dropped out of a group. There were 100 possible hate groups that could be populated per model and 146,000 data points per model, yielding a total of 2,190,000,000 data points of group data. These data points included the number of members, the mean intrinsic and extrinsic hate of each group, as well as a list of agents who had joined and a list of agents who had left the group at any given time. There was only one leader present in 5,000 model runs and for those model runs 1,460 data points per model, yielded a total of 7,300,000 data points of leader data. These data points included the charismatic leader's levels of intrinsic and extrinsic hate at any given time, as well as the number of followers and detractors the leader had come in contact with over the course of the model run. Because these data sets together were large enough to be unwieldy, the data within the log files was used to create cases in the analysis dataset. The log file for agent data, group data, and where applicable, leader data were matched up for each model iteration and then the data from each of these files was used to create a single data set where each model iteration became a single case within the data set. Each case included the pertinent individual, group, and where applicable, leader information that related to that model run as needed for the analysis outlined in the analytic

The log files were designed such that the variables of interest and the unique identifier for each individual agent in the agent log files and the group identifier in the group log files were listed across the top of the spreadsheet and the tick number at which the data were collected was listed down the left hand side of the spreadsheet. Therefore, at each tick in the model, the agent log file recorded the individual agent's value on all characteristics, as well as the number of agreements and disagreements the agent had made up to that point and whether or not they had joined a group, left a group or stayed in a group. The group log file recorded the group characteristics at each tick of the model, listing the identifiers of agents who had joined a group, left the group, as well as their averages on the individual agent characteristics. The leader log file recorded all of the leader characteristics at each tick, including the agent identifiers for all individual agents who decided to follow the leader as well as the number of agreements and disagreements the leader accrued. An example of a hypothetical agent log is provided in Table 7 below. Log files can become very large depending on the length of time the model iteration is running, the number of characteristics or actions that the file is programmed to keep track of, and the number of agents included in the model. That was the case with the log files used to collect data from the model runs documented here.

Table 7: Log File Example

Tick	AgentID	Intrinsic Hate	Extrinsic Hate	Agreements	Disagreements
12	23	8	5	4	6
12	24	6	6	5	7

plan at the end of this chapter. The full data sets for individual agents, groups, and the charismatic leader have all been preserved in order to provide the data necessary for the future research agenda outlined in the final chapter.

In Table 7, *Tick* refers to the time in the model, in this case, the last six-hour block of the third day. *AgentID* is the unique identifier for the agent in the model. *Intrinsic Hate* is their assigned level of intrinsic hate, as this is only the third day this value is stagnant at this point and will not have changed. *Extrinsic Hate* is that agent's assigned level of extrinsic hate, also stagnant at this point. *Agreements* is a count of how many agents that agent has agreed with over the past three days. Agent 23 has agreed with four other agents. These agreements are counted at each tick: three ticks earlier, Agent 23 may have only had two agreements. *Disagreements* is a count of how many agents that agent has disagreed with in the past three days. Agent 26 has not disagreed with anyone in the past three days, while Agent 25 has disagreed with nine other agents over the past three days. Outside of the dependent and independent variables, the log file also tracks data on agent characteristics or behaviors that are not intended for later analysis. In the models programmed for this dissertation, this includes the characteristics that are given to agents when they join a group.

The first characteristic is the *Group ID*, this is a number that which group the agent joined the group in question and designates the order in which they joined. The agent is then randomly assigned a level of *Commitment* that determines how likely they are to stay in the group. Third, the agent is given the characteristic of *Fear*; *fear* is calculated by the difference between the agent's level of *commitment* and the highest level of intrinsic hate in the group. *Commitment* and *Fear* are characteristics that give the agent an option for leaving a group they have joined. These characteristics and these options are in place to maintain the model's similarity between the simulation and the real world, where people choose to stay with or leave groups for a variety of reasons. This prevents the groups themselves from becoming static and does influence the dependent variables of number of groups and size, as detailed below.

Dependent Variables

The dependent variables of interest for all models were *number of groups that form*, the *speed* at which groups form, and the *size* of the groups that formed. The dependent variables with their conceptual and operational definitions are listed in Table 8 below.

Table 8: Dependent Variables

Dependent variable	Conceptual Definition	Operational Definition
Number of groups	The number of groups that formed	A group with a minimum of 5 members with an average intrinsic hate of 5 or higher
Speed	The amount of time it took for groups to start forming	The first day that a group formed The average number of days for all groups that formed
Size	The number of members in a group	The largest group formed in the model The number of groups that formed above the minimum number of members

Number of groups is conceptualized as the number of groups that form over the course of a model run. *Number of groups* is operationalized as the number of groups of five or more agents that come together and form a group with an average intrinsic hate of 5 or higher.

Operationalizing these groups as needing an intrinsic hate of 5 or higher is based on the lowest level of societal hate used as an experimental condition in the models. The lowest level of societal hate used as an experimental condition in the models is 2; therefore, a group with an average intrinsic hate of 5 has a level of hate within their group of 2.5 times the level of societal hate. When societal hate is 4, these groups are those whose hate is 1.25 times the level of societal hate. The concern occurs when societal hate is 6 or 8, where these groups have less intrinsic hate

on average than the society; however, increasing the average hate required for a hate group to be counted in these situations would mean that the number of groups could not be compared across levels of societal hate. For this reason, the requirement of an average intrinsic hate of 5 or higher remains constant.

Speed is conceptualized as the amount of time it took for groups to start forming. This variable is operationalized in two different ways. The first is the first day the first group formed. This gives a snap shot of when groups started to form. The second is the average number of days, under the experiment conditions; it took for the groups to form. These two measures of *speed* give a good idea of what is happening in regard to time in the model. Groups can start forming within the first day, this may be due to a series of agents whose levels of hate are compatible being randomly assigned to the same patch within the model environment, giving them an advantage towards group formation, similar to a group of potential skinheads all frequenting the same bar at the same time. To offset this type of accident of circumstance, the average amount of time it took for all the groups to form gives a picture of all the activity in the model.

Size is conceptualized as the number of members in a group. Just like *speed*, *size* is operationalized in two ways, the largest group that formed in the model and the number of groups larger than the minimum group size. The first measure gives an idea of how big the biggest group became over the course of the model run. The second measure looks at comparing how many of all the groups that formed were larger than the minimum set by the program at the end of the model run. This second measure was preferred to a measure of the average number of members in all groups as the number of groups with only the requisite five founding members typically outnumbered the larger groups and would have skewed the mean. This second measure was taken at the end of the model run to account for changes in group membership over the

course of the model run, where groups may have had more than the requisite five members at one point during the model and lost members to drop-outs by the end of the model run. This also assured that no group was counted more than once.

Group Formation

A group is defined as having a minimum of five members. The decision to make groups this size is to differentiate between the idea of a few friends who share a belief and an organized group. The number five was chosen to represent a hypothetical group with some internal structure, similar to a club with positions for a president, vice president, secretary, treasurer, and general membership. In order for the group to be counted as a hate group, the average intrinsic hate of the group must be five or higher. While groups may form at lower levels of average intrinsic hate, these groups are not counted in the analysis of hate group formation unless the average level of intrinsic hate in the group increases to the 5 or higher point during the model run.

As agents interact within the model, they make connections based on which agents share their views. Each agreement between agents begins a tally toward group formation. Once five agents are connected, the model randomly generates whether or not the group will form. If the chance generated a no response, the group did not form, though the connections remained intact. This represented those groups that may have had enough people in agreement, but for unknown reasons did not form. If the chance generated a yes response, everyone who is connected through agreements was then populated into that group. An agent does not need to agree with every agent in the group. Once formed, groups are seeking new members and attempting to retain the members they already have. Within the group, as agents change their views based on interactions

with one another and group membership, the relationships become more pronounced. However, should a group's membership fall below 3 members, the group is dissolved.

Independent Variables

The independent variables of interest are the characteristics of the individual agents. These variables are listed in Table 9 below. The independent variables of interest for all models were *intrinsic hate*, *extrinsic hate,* the *societal level of hate,* and *motivation*. When a charismatic leader was present in experiments for testing the second set of hypotheses, the *presence of the charismatic leader,* as well as, his level of *charisma* and the *susceptibility* of other agents to his message become independent variables of interest as well. Each independent variable is examined for its individual effects. Combined effects are not examined in the analysis. Random assignment for independent variables changed depending on which experiment was being used. In experiments where societal hate was part of the model, a Poisson distribution was used. When societal hate was not part of the model, random assignment was normally distributed. Due to the varying levels of societal hate, the Poisson distributions were skewed positively when societal hate was higher and negatively when societal hate was lower. Societal hate is both an experimental condition and an independent variable. The experiments were run at set levels of societal hate that were systematically changed between model runs, 1,000 each at societal hate 2, 4, 6, and 8, as well as 1,000 runs without societal hate included in the model for all three experiments, control, collective hate, and charismatic leadership.

Table 9: Independent Variables

Independent Variable	Conceptual Definition	Operational Definition	Type of Agent	Hypothesis
Intrinsic hate	The core personal belief in a hate ideology	Randomly assigned levels from 0-10	All	All

Table 9: Continued

Independent Variable	Conceptual Definition	Operational Definition	Type of Agent	Hypothesis
Extrinsic hate	How the agent displays their beliefs	Randomly assigned levels from 0-10	All	All
Societal hate	The societal level of hate	Set at levels 2,4,6,and 8	n/a – model parameter	H1d-f, H2 d-f

As you will recall, collective hate is a reflection of two levels of individual hate, *intrinsic* and *extrinsic.* Intrinsic *hate* was conceptualized as the core personal belief of an agent, reflective of the extent to which agents had levels of hate commonly espoused by those adhering to a white supremacist ideology. Agents with lower levels of *intrinsic hate* have little-to-no core personal buy-in to the white supremacist ideology. Those with higher levels of *intrinsic hate* have an increasingly more substantial buy-in to the white supremacist ideology. They are "true believers," individuals with an unshakeable belief in the tenets of the white supremacist ideology. Operationally, *intrinsic hate* was an interval level variable with values ranging from 0 to 10. A zero reflects an absence of *intrinsic hate*; whereas a 10 reflects the greatest amount of *intrinsic hate* possible. Figure 5 below shows the relationship between intrinsic and extrinsic hate and a person's beliefs and behavior.

Intrinsic hate is the level of hate that an agent has developed, presumably based on life experience or social or familial norms (or by prior exposure to others with similar levels of hate and/or a charismatic leader). This is the type of hate that influences agents to either agree or disagree with others when contrasted with the other agent's extrinsic hate. Agents are comparing the outward representation of other agents' hate level (i.e., the other agents' extrinsic hate level) to their own personal, core beliefs (i.e., their own intrinsic hate level)

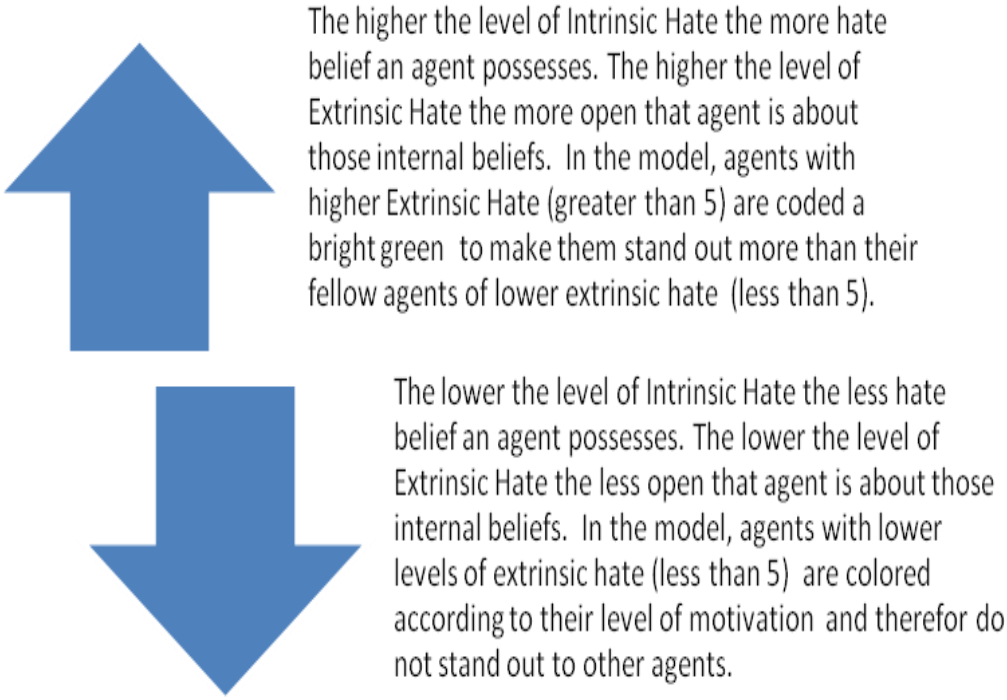


Figure 5 Intrinsic and Extrinsic Hate Levels in the Model

If the agent asking about the individual agent's agreement has an extrinsic hate that is more than ±1 of the individual agent's intrinsic hate, the agent immediately disagrees. The ±1 range was chosen in order to adhere closest to the ideas of the theory of collective hate, any range larger than ±1 would have created groups with members with widely disparate opinions and beliefs. If the membership has such widely varying opinions and beliefs, they would not be representative of the intense collective hatred theorized by Hamm (2004). If the asking agent's extrinsic hate falls within that range, the agent being asked "considers" what the asking agent is "saying." The final decision is based on an equation that weighs the relative difference between the two agents and incorporates a random term representing unknown factors. In other words, as per Figure 6 below, two agents may come into contact, perceive each other to have similar views (+/- 1 extrinsic hate) and begin a conversation. Over the course of that conversation, the agents weigh what is being said against their internal views and beliefs (± 1 intrinsic hate). This conversation is based on geographic proximity; that is, the agents have to come in contact with

one another. This contact is established by the two agents standing next to each other in the same unit of the model environment.

For example, two potential Klan members meet on the street. They are both wearing t-shirts with a logo from a popular white power rock group and have similar tattoos. They strike up a conversation, based on this perceived common ground. Over the course of their conversation, one of the potential Klan members decides that the person he is conversing with is a little more extreme than fits his internal belief system, perhaps he hates minorities and has done a little vandalism, but the person he is talking with is discussing his desire to attack minority children at a local YMCA and kill as many as possible. This discussion has extended beyond the one potential Klan member's internal views, his core beliefs, his intrinsic hate. If this violent Klan member approached him about a new group that was forming, the nonviolent Klan member would be disinclined to join it.

In the model, the programmer tells the agents to look at the other agents nearby and seek out those agents whose extrinsic hate (their outward appearance or profession of hate) is within +/-1 of their own intrinsic hate (their internal core beliefs). When the agent spots another agent that fits this criterion, the agent is instructed to communicate with that agent. The agents communicate by exchanging information about their extrinsic hate, in other words they size each other up as to whether or not they agree on their hate ideology on the surface. If they agree on the surface, the agent who has been approached considers the other agents views internally. That is, they compare what this agent is presenting to them through their extrinsic hate with their internal views, their intrinsic hate. If the extrinsic hate falls within +/-1 of the agent's intrinsic hate the agent decides whether or not they agree. This agreement is contingent on a random chance, an error term that is presented by the model. This allows for two agents who have the

right values on their characteristics, intrinsic vs. extrinsic hate to disagree, based on some non-programmed factor, such as bad hygiene or a repulsive habit.

Intrinsic hate is not something that an agent can vary at random, but it can change based on situation or experience, specifically when the conditions listed in Table 10 are met. There is not a set limit on how much an agent can change their levels of hate when they comply with the time limits set by the behavior rules. Each model runs for 1 year, 365 days, the decision to allow intrinsic hate to change (when not in the control model) after 100 days without an agreement was made based on the idea that this is someone's core internal belief system feeding their intrinsic hate, it would take a long time for them to change this internal system, so nearly 1/3 of the model run. The change in intrinsic hate is left up to the agent; they are given the option of resetting their internal variables (intrinsic hate, motivation, and susceptibility) at these time points.

After 100 days without making any agreements, an agent may increase their intrinsic hate to replicate someone who finds this lack of agreement bolstering to their beliefs – as though they are saying, no one agrees with me because they are all delusional or supporters of the thing I hate. An agent may decrease their hate, replicating someone who finds this lack of agreement as a sign that there might be something amiss with their beliefs – similar to the experience of someone who developed an intense hatred for a racial or ethnic group that they had never encountered and changed their mind after learning more about that group. The time periods for group members or those under the charismatic leader's thrall are far shorter.

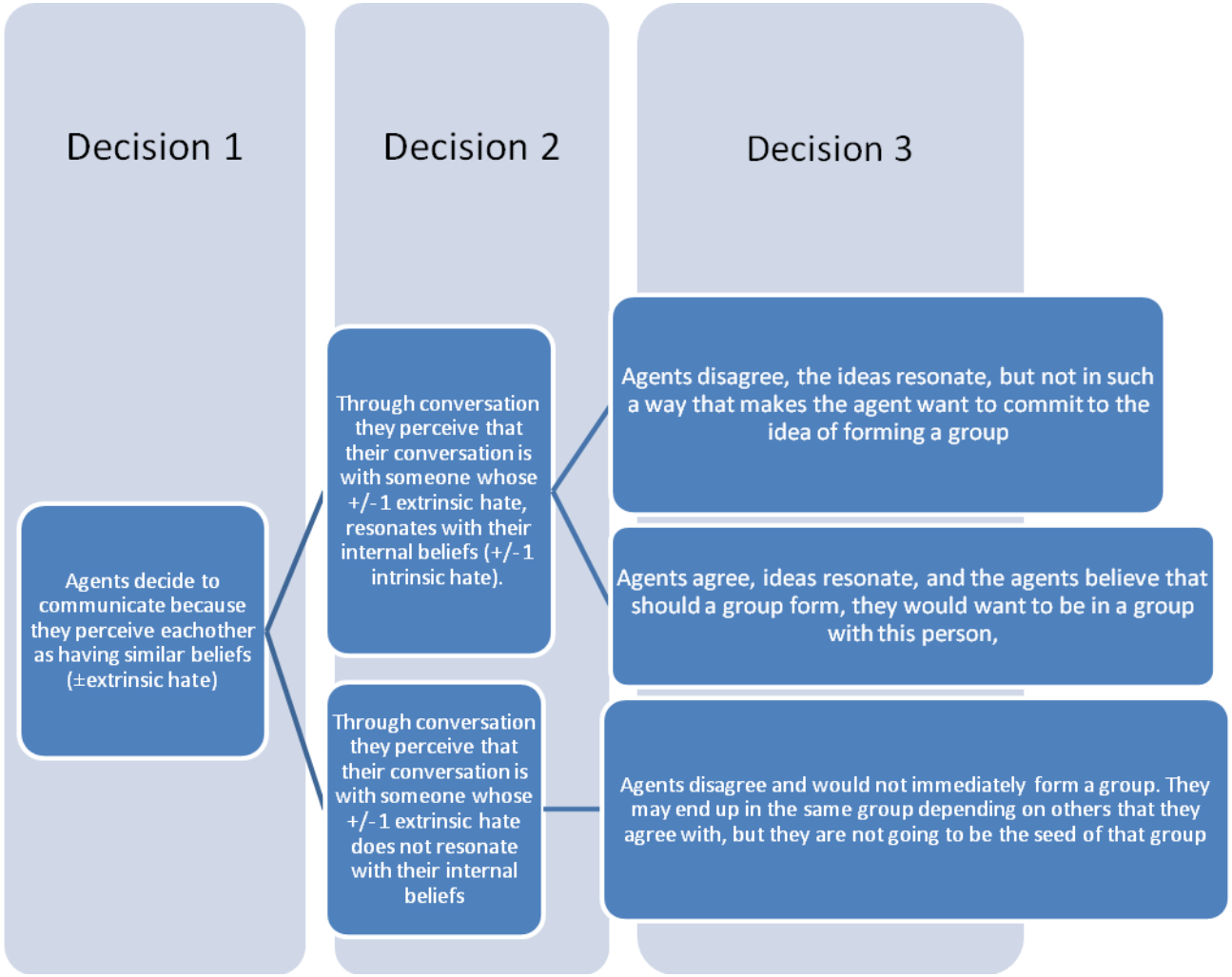


Figure 6 Agent communication and agreement and disagreement decisions

Groups are prone to radicalization from within and strengthening of belief systems (Simmel, 1955). Therefore, for group members this decision to change intrinsic hate is 1/10 of the time as compared to when they do not have any agreements. For those who increase their intrinsic hate, these are those members who become increasingly radical, those who decrease their intrinsic hate are those who are made uncomfortable by the group's viewpoint and distance themselves from the group. In the case of the agents following the charismatic leader, the increase in intrinsic hate are those who are riled up by the leader's message, those who decrease their intrinsic hate are those who are being put-off by the leader's message.

Table 10: Conditions for Changing Perceived and Intrinsic Hate

Conditions for changing *extrinsic hate*	**Conditions for changing *intrinsic hate***
Unless otherwise noted in an experiment, agents have full autonomy over their *extrinsic hate* and can change their level of *extrinsic hate* up or down, any amount without fulfilling any conditions	After 100 days without an agreement, an agent can raise or lower their level of *intrinsic hate. See Figure 7.*
	After 10 days of membership in a hate group, an agent can raise or lower their level of *intrinsic hate*. *See Figure 7.*
	After 10 days in the presence of a charismatic leader, an agent can raise or lower their level of *intrinsic hate*. *See Figure 7.*

If an agent changes its level of *intrinsic hate*, the new level of *intrinsic hate* is maintained until the agent enters into a situation where one of the conditions in Table 10 is satisfied. This change is triggered by the number of days that an agent does not register an agreement with another agent or the number of days it has been a member of a hate group. The agent is given the option to reset its intrinsic hate; therefore, the level of intrinsic hate can increase or decrease any amount. The agent decisions based on these conditions are laid out in the decision tree of Figure

7, below. Figure 7 below simplifies the decisions in the model; it does not lay out every possible decision or situation that takes place in the model. This figure is designed to show steps that are of the most importance in the decisions that relate to changes in intrinsic hate as laid out in Table 10. It does not provide a full list of any theorized motivations behind agent behavior or reasoning that the agents may have in increasing or decreasing intrinsic hate.

It should be noted that nothing in the programming code for the models biases an agent towards group membership. Group membership is based on agreements. The only influence that may affect an agent's potential for group membership is the agent's motivation. How motivated an agent is will affect how many opportunities that agent has to make agreements. However, Figure 7 does not include the motivations or susceptibility of the agents; it looks only at one of the characteristics of the agents, intrinsic hate.

Extrinsic hate was conceptualized as the way in which the individual agents present themselves to others. This represents the extent to which they outwardly show support for a white supremacist ideology. Agents with lower levels of *extrinsic hate* would be perceived by other agents as having little or no interest in a white supremacist ideology. Those with higher levels of *extrinsic hate* would be perceived by other agents as having increasingly more interest and support for a white supremacist ideology. Operationally, *extrinsic hate* is an interval level variable with values ranging from 0 to 10, where zero reflects no *extrinsic hate* and 10 reflects the greatest level of *extrinsic hate* possible. *Extrinsic hate* is randomly distributed; this is not a uniform of normal distribution.

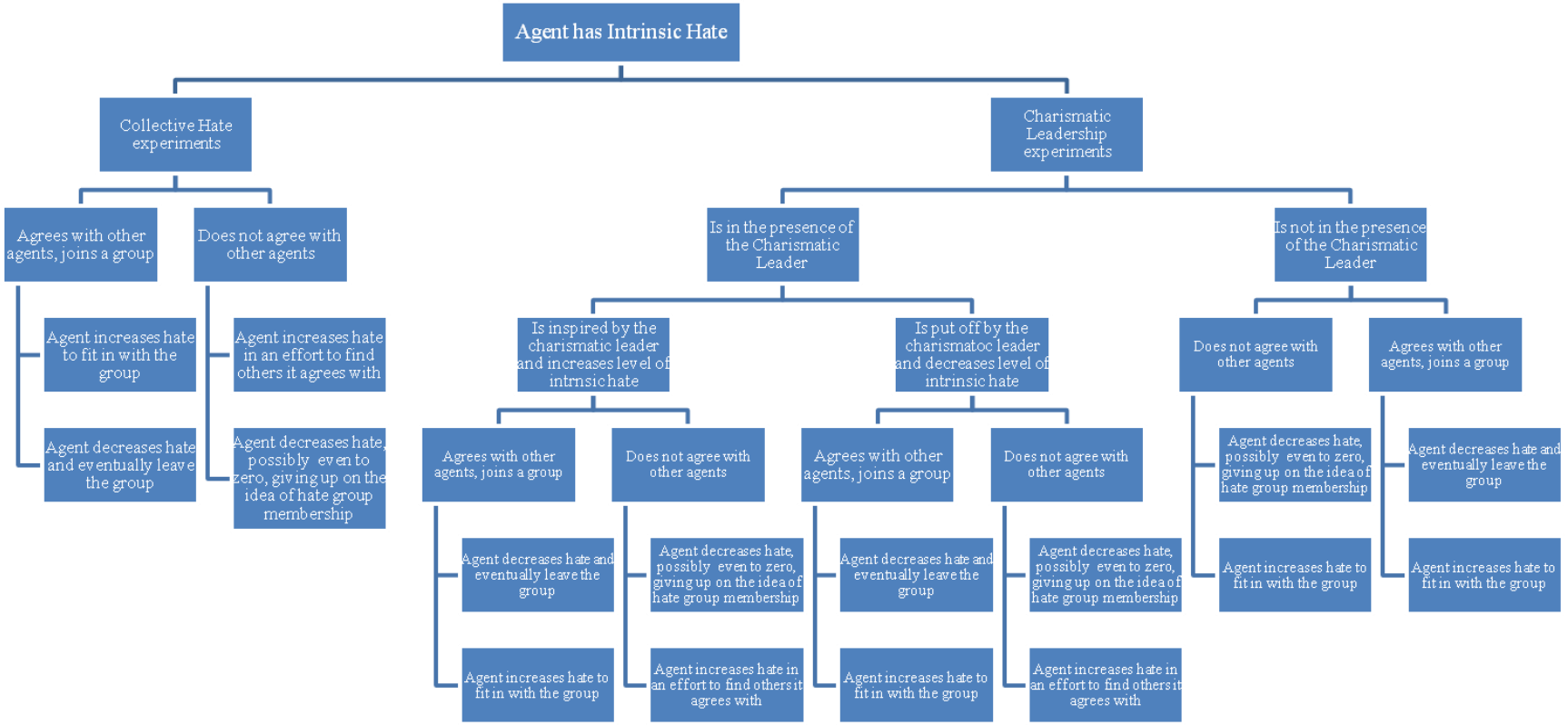


Figure 7 Agent Decisions Regarding Changing their Levels of Intrinsic Hate

As per Table 10 above, extrinsic hate can be varied at any time in all experiments except the control experiments. The reasoning behind this is that extrinsic hate is how the agent presents itself to its surroundings. This is similar to changing clothes or carrying a sign. It is the same as choosing different vocabulary or a different story when talking to another person. Because of this, the agents are given the opportunity to change their extrinsic hate after each evaluation of the agents that are in closest proximity. The agents are asked if they see any other agents in their surroundings that have extrinsic hate that is +/- 1 of their intrinsic hate and are asked to pick one and communicate with that agent. If an agent finds someone or more than one person, that agent may not choose to change its extrinsic hate, if they do not find someone the agent may change its' extrinsic hate. This choice is completely under the agents' control in both the collective hate and charismatic leadership experiments. In the control experiments, extrinsic hate, just like all other characteristics, remains static.

Societal hate was conceptualized as the degree to which the society in which the agents are interacting accepts the presence of white supremacists and their ideology. Lower values of *societal hate* are representative of less support for white supremacists and their ideology. Higher levels of *societal hate* are representative of a society that is more accepting of white supremacists and their ideology. Operationally, *societal hate* is an interval variable with values ranging from 0 to 10. It was calculated as the mean of the intrinsic hate possessed by all 500 agents present in that specific model.

Societal hate during the control experiments was held at fixed values of exactly 2, 4, 6, and 8 for the entire experiment. Any societal hate lower than 2 would be indicative of nearly Utopian societies, at level 0, the average hate for the society would be 0, at level 1, the average hate would be 1, this would result in hate being too rare a phenomena in the society to really

measure. Likewise, societal hate higher than 8 results in societies so saturated with hate that it becomes increasingly difficult to separate out the formation of hate groups, the society itself would be an informal hate group. Utopian societies and societies completely saturated with a hate ideology are nonexistent in the real world and as simulation models attempt to recreate real world phenomena, these extremes would be outside the model scope. In all other experiments, the level of *societal hate* was allowed to increase and decrease, reflecting aggregate changes in the individual agents' levels of intrinsic hate. In all models when societal hate was allowed to vary and reflect aggregate changes in the individual agents' levels of intrinsic hate, no matter what the starting point was, societal hate increased and decreased over the course of the model run.

These changes in societal hate were recorded in the log file. Societal hate did not always increase, and it did not always decrease over time. When societal hate started lower, it tended to increase over the course of the model run rather than decrease, when it started higher, it tended to decrease rather than increase. Variation in *societal hate* was recorded in the log files for all experimental models. In the analysis, *societal hate* at the starting point, the set *societal hate* at the beginning of the model, is used to differentiate between the model runs. While the changes in *societal hate* and the ending *societal hate* are recorded, for comparison purposes, the models are analyzed based on the level of *societal hate* with which they started. Beginning societal hate was used in the analysis because it was the common starting point, this allowed for the direct comparison of the control condition and the two experimental conditions. Because societal hate could vary substantially within the same model run under the experimental conditions, this choice was made to maintain uniformity in the data set. Time series analysis can be used in future examination of the data to make a more nuanced examination of the effect of changing

societal hate on hate group formation in individual model runs. The levels of societal hate used in the control models are loosely defined and presented in Table 11 below. The literature on societal hate is limited to explanations of Nazi Germany and levels of societal hate have not been presented in previous research. These levels are not concrete representations but are provided in order to give the reader a point of comparison between the real world and the simulations.

Table 11: Societal Hate

Level of Societal Hate	**Definition**
Societal Hate 2	When the mean level of hate in the society is 2, the society is rather accepting of differences, very little social unrest. Individuals with higher levels of hate are a minority in society, similar to most large urban areas in the United States currently.
Societal Hate 4	When the mean level of hate in the society is 4, the society is accepting of differences, but there may be pockets of social unrest. Individuals with higher levels of hate are still a minority in society, similar to the current anti-immigration movement in Arizona.
Societal Hate 6	When the mean level of hate in the society is 6; the society is rather intolerant of differences, increasing amounts of social unrest. Individuals with higher levels of hate are a small majority in society, similar to the United States during the Civil Rights Era.
Societal Hate 8	When the mean level of hate in the society is 8, the society is intolerant of differences, and there is a high likelihood of social unrest. Individuals with higher levels of hate are a majority in society, similar to Nazi Germany at the height of World War II.[25]

[25] While to most individuals Nazi Germany has all the trademarks of a society completely saturated with hate, however due to the presence of individuals who willingly risked and sacrificed their lives in opposition to the Nazi

Based on the analytic plan outlined later in this chapter, some agent characteristics and behaviors are of interest as covariates, as presented in Table 12 below.

Table 12: Covariates of Interest

Covariate	Conceptual Definition	Operational Definition	Type of Agent	Hypothesis
Motivation	How active the agent is over the course of a day	Randomly assigned levels from 1-3	All	All
Popularity	How much support does the charismatic leader have	Count of the number of supporters	N/A	H2 a-f
Charisma	How charismatic the leader is	Randomly assigned levels from 1-4	Leader, all other agents have charisma 0	H2 a-f
Susceptibility	How susceptible to the charismatic leader an agent is	Randomly assigned levels from 0-5	All	H2 a-f

Motivation was conceptualized as the level to which an agent actively sought out relationships with other agents, how motivated the agent was to seek out individuals who might agree with his hate beliefs. Operationally, *motivation* is an interval level variable with values of 1(equivalent to 6 hours of inactivity), 2 (equivalent to 12 hours of inactivity) and 3 (equivalent to 18 hours of inactivity). Each agent was inactive for at least 6 hours and as many as 18 hours. The decision to provide agents with at least 6 hours of inactivity was that this would account for at least a minimum amount of time that a person in the real world would spend asleep. An agent that is inactive only 6 hours is highly motivated because they are active for 18 hours. This is equivalent to someone who interacts with others for most of the time they are awake. This is not

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regime and those whose accounts of life under the Nazis express the prevalence of coercion and fear that influenced the behavior of everyday citizens, it is not possible to rank Nazi Germany as the epitome of societal hate (Goldhagen, 1996; Gellately, 2001; Kershaw, 2008).

static over the course of the model run. If an agent chooses to change its level of intrinsic hate, as per Table 10 above, the model also randomly reassigns a level of motivation. The motivation may be the same as before, or it may increase or decrease. An agent may increase their level of intrinsic hate, but the model may decrease their motivation. The model randomly assigned a third of the agents to each level of motivation. See Table 13 below for explanations of the different levels of motivation. These explanations are provided solely for the purpose of a reference that explains individual agent behavior in real world terms.

Table 13: Levels of Motivation

Levels of Motivation	**Equivalence in the Real World**
Motivation 1	Actively seeking others 18 hours out of every day. This is someone who is very extroverted and interacts often with others, a real "people person."
Motivation 2	Actively seeking others 12 hours out of every day. This is someone who is friendly but not immediately classified as an extrovert and interacts often with others, but also likes to be left alone from time to time.
Motivation 3	Actively seeking others 6 hours out of every day. This is someone who is friendly, but not very active. They interact occasionally with others, but prefer to be left alone most of the time.

Popularity was conceptualized as how much support the charismatic leader found among the population. Operationally, *popularity* is an interval variable without a preset range of values. It is a count of the number of supporters the charismatic leader acquired over the course of the model run. This count is taken at the end of the model run in order to allow for agents who

changed their position from supporter to non-supporter over the course of a model run to be removed from the count.

Charisma was conceptualized as the amount of sway or influence possessed by the charismatic leader. The symbiotic relationship between charismatic leader and his followers is addressed in the behavior rule, allowing agents to change their *intrinsic hate* due to their status as followers. Operationally, *charisma* is an interval variable with values ranging from 0 to 4. Only the charismatic leader can possess a level of *charisma* greater than 0. A value of 0 represented no *charisma*, and a value of 4 represented the highest possible *charisma*. The different levels of *charisma* are presented in Table 14 below with real world equivalents. These explanations are provided solely for the purpose of a reference that explains an individual agent characteristic in real world terms. Weber (1947) says nothing regarding levels of charisma; therefore, these levels of charisma are designed to be a parameter that will be manipulated in the charismatic leader model. The model was given the range of 1-4 for the charismatic leader's level of charisma and assigned a stagnant level of charisma to the leader at the start of the model run.

Table 14: Levels of Charisma

Level of Charisma	**Equivalence in the Real World**
Charisma 0	This is not someone repulsive, but just a regular person, not a leader.
Charisma 1	Someone with a little charisma, fun or interesting to be around, some good ideas.
Charisma 2	Someone who can draw anyone into conversation, but does not have a set group of followers, can influence some decisions.
Charisma 3	Someone who has a small group of followers around them at all times and has some control over the activity of the group.
Charisma 4	Someone with a large group of followers and the ability to sway others to their way of thinking and the activities they wish to be involved in.

Susceptibility was conceptualized as how likely an agent is to be influenced by the charismatic leader. Operationally, *susceptibility* is a Likert scale; an ordinal level variable with values ranging from 0 to 4. A value of 0 represented someone who was put off by a charismatic leader, and a value of 4 represented the highest possible *susceptibility* to the charismatic leader. The different levels of susceptibility and an explanation of what this means in the models is presented in Table 15 below. Because Weber (1947) hypothesized that some people are more susceptible to charismatic leaders than others, agents were given varying levels of susceptibility. Susceptibility was presented to the program as a range from 0-4 and the program randomly assigned each agent one of the numbers in the range at the start of the model run. If an agent decided to change its intrinsic hate, according to the behavior rules in Table 10, the model generated a new level of susceptibility within that range.

Table 15: Levels of Susceptibility

Level of Susceptibility	**Explanation**
Susceptibility 0	Not susceptible: the charismatic leader has no direct influence over the agent.
Susceptibility 1	Not very susceptible: the charismatic leader has little direct influence over the agent. There is something about the charismatic leader that the agent does not like.
Susceptibility 2	Neutral: the agent could go either way; the charismatic leader does not immediately sway the agent in either direction.
Susceptibility 3	Somewhat susceptible: the agent is interested in what the charismatic leader has to say and is likely to follow. There is something that the agent likes about the charismatic leader.
Susceptibility 4	Very susceptible: the agent is a true believer in what the charismatic leader has to say, is inclined to join any group that professes the charismatic leader's ideology and is easily influenced to do anything the charismatic leader wants.

The next section details the control and experimental conditions used to generate data to test the hypotheses more fully described at the end of Chapter Four.

Control Condition

In the control condition, the agents were unable to alter their extrinsic or intrinsic levels of hate. Also, unlike subsequent experiments, agents in this condition were randomly assigned values for their levels of *extrinsic* and *intrinsic hate* that they were not able to alter. Societal hate was systematically assigned, and because intrinsic and extrinsic hate were not allowed to vary over the year modeled, this means that societal hate remained constant during each model. Intrinsic hate, which is the basis for societal hate was randomly assigned using a Poisson distribution centered on the level of societal hate as the mean. See Table 16 below for the conditions present in the control model concerning societal hate and agent characteristics. When societal hate was low; the intrinsic hate of all agents was skewed to the low end. When societal hate was high; the intrinsic hate of all agents is skewed to the high end. The dependent variables measured included number of groups that form, speed of group formation, and group size. The control condition (which represented what would happen in the absence of the ability to vary hate and form a collective identity (i.e., collective hate) and in the absence of a charismatic leader) across different levels of societal hate provided data for comparison to the experiments described next.

Table 16: Control Model and Conditions

Control Model	Conditions	Use in Analysis
No Societal Hate	Societal hate was not included in the model. All agents were randomly assigned levels of extrinsic and intrinsic hate that could not vary over the course of the model run.	Analysis for hypotheses 1a-1c and 2a-2c
Societal Hate 2 Societal Hate 4 Societal Hate 6 Societal Hate 8	Societal hate was set at level 2 and did not vary over the course of the model run. Societal hate was set at level 4 and did not vary over the course of the model run. Societal hate was set at level 6 and did not vary over the course of the model run. Societal hate was set at level 8 and did not vary over the course of the model run. .	Analysis for hypotheses 1d-1f and 2d-2f For all societal hate conditions, all agents were randomly assigned levels of extrinsic and intrinsic hate that could not vary over the course of the model run. Intrinsic hate was randomly assigned using a Poisson distribution that used the level of societal hate as its mean.

Experiments:
Manipulating Collective Hate, Charismatic Leader Presence, and Societal Hate

Using the behavioral rules shown in Table 10 and Figures 6 and 7, the experiments described in this section were used to generate data to systematically manipulate variables central to Hamm's and Weber's theories of group formation. This included models for four theory-based experiments (2 manipulating collective hate and 2 manipulating the presence of a charismatic leader) with each having a total of 1,000 model runs. The first model set for

collective hate provided data for determining whether a simple relationship existed between collective hate and the 3 dependent variables (e.g., number of groups, speed of group formation, size of group; H1a, H1b, H1c, respectively, see Table 17).

The second model set for collective hate added societal hate as a potential moderating variable. For these, the collective hate model was run at each level of societal hate (i.e., 2, 4, 6, and 8) for each of the 3 dependent variables. This provided data to test whether higher levels of societal hate intensified the relationship between collective hate and the 3 dependent variables (H1d, H1e, H1f, respectively, see Table 17). The model sets for charismatic leadership followed the same logic as those described above for collective hate. In the first set of models, collective hate was allowed to vary and whether a charismatic leader was present as well as the leader's level of charisma varied. This provided data to test whether there was a simple relationship between presence of a charismatic leader while continuing the "real world" equivalency of allowing hate to vary (See Table 17, H2a, H2b, and H2c, respectively). In the second set of charismatic leader models, societal hate was added as a moderating variable providing data for testing the hypotheses that higher levels of societal hate would increase the relationship between the charismatic leader and the dependent variables (H2d, H2e, and H2f, respectively). Each model was allowed to run to simulate activity within 1 year (i.e., 1,460 ticks). Images that show examples of what these experiment models looked like when they were running and explanations of what was going on at that time in the model can be found in Appendix D.

Conceptually, each experiment represented the same set of agents situated in different virtual worlds free to change their levels of intrinsic and extrinsic hate. Some virtual worlds contained charismatic leaders and some didn't. Some virtual worlds placed the agent within a societal context that ranged from low to high hatred.

Table 17: Hypotheses and Experiments

Hypothesis (dependent variable)	Experiment	Parameters
Control Condition		
Comparison for H1a-H1c	Control	Random assignment of fixed intrinsic and fixed extrinsic hate. Societal hate not included.
Collective Hate Model Set 1		
H1a: Number of Groups	Collective Hate	Random assignment of intrinsic and extrinsic hate. Societal hate not included.
H1b: Speed of Formation	Collective Hate	Random assignment of intrinsic and extrinsic hate. Societal hate not included.
H1c: Size of Groups	Collective Hate	Random assignment of intrinsic and extrinsic hate. Societal hate not included.
Control Condition		
Comparison for H1d-H1f	Control	Random assignment of fixed intrinsic and fixed extrinsic hate. Societal hate included at levels 2, 4, 6, and 8.
Collective Hate Model Set 2		
H1d: Number of Groups with Societal Hate	Collective Hate	Random assignment of intrinsic and extrinsic hate. Societal hate included at levels 2, 4, 6, and 8.
H1e: Speed of Formation with Societal Hate	Collective Hate	Random assignment of intrinsic and extrinsic hate. Societal hate included at levels 2, 4, 6, and 8.
H1f: Size of Groups with Societal Hate	Collective Hate	Random assignment of intrinsic and extrinsic hate. Societal hate included at levels 2, 4, 6, and 8.
Control Condition		
Comparison for H2a-H2c	Control	Random assignment of fixed intrinsic and fixed extrinsic hate. Societal hate not included.
Charismatic Leader Model Set 1		
H2a: Number of Groups with Charismatic Leader	Charismatic Leadership	Charismatic leader in model. Random assignment of intrinsic and extrinsic hate. Societal hate not included.

Table 17: Continued

Hypothesis (dependent variable)	Experiment	Parameters
H2b: Speed of Formation with Charismatic Leader	Charismatic Leadership	Charismatic leader in model. Random assignment of intrinsic and extrinsic hate. Societal hate not included.
H2c: Size of Groups with Charismatic Leader	Charismatic Leadership	Charismatic leader in model. Random assignment of intrinsic and extrinsic hate. Societal hate not included.
Control Condition		
Comparison for H2d-H2f	Control	Random assignment of fixed intrinsic and fixed extrinsic hate. Societal hate included at levels 2, 4, 6, and 8.
Charismatic Leader Model Set 2		
H2d: Number of Groups with Charismatic Leader and Societal Hate	Charismatic Leadership	Charismatic leader in model. Random assignment of intrinsic and extrinsic hate. Societal hate included at levels 2, 4, 6, and 8.
H2e: Speed of Formation with Charismatic Leader and Societal Hate	Charismatic Leadership	Charismatic leader in model. Random assignment of intrinsic and extrinsic hate. Societal hate included at levels 2, 4, 6, and 8.
H2f: Size of Groups with Charismatic Leader and Societal Hate	Charismatic Leadership	Charismatic leader in model. Random assignment of intrinsic and extrinsic hate. Societal hate included at levels 2, 4, 6, and 8.

It is akin to being able to see how different people would react in different conditions and situations that were selected for analysis based on the review of the literature on hate group formation and the theories of collective hate (Hamm, 2004) and charismatic leadership (Weber, 1947). Although the models encompassed increasingly complex representations of the conditions for hate group formation, they still were far simpler than the real world. Each experiment was built on the previous experiments to make it possible to clearly identify which parameters were being manipulated, how many groups formed, how quickly these groups formed and how large they became. The analytic strategies used to examine each of these hypotheses are described next.

Analytic Plan

All data generated by the log files of the experiments was analyzed using the statistical analysis program SPSS. The data were analyzed using a series of one way, 2x4 and 3x4 ANCOVAs as detailed in Table 18 below. ANCOVA or analysis of covariance was designed to expand upon the ideas of the ANOVA, which compares means of multiple groups as well as the interaction effects within those groups through the analysis of their variance (Harlow, 2005). ANCOVA expands on this type of analysis by allowing for the inclusion of covariates, factors that may influence or predict the outcome, but are not considered part of the main experiment. In the analysis of the data produced by the collective hate experiments, the covariate of interest is motivation, how much time did the agents spend seeking connections. In the charismatic leader experiment analyses, the covariates of interest include not only motivation, but the charismatic leader's level of charisma and the susceptibility of the agents to that charismatic leader.

Table 18: Analytic Plan

Experiment	Hypotheses	Method	Included Factors and Covariates	Dependent Variable
Collective Hate	H1a-H1c	One-way ANCOVA	Experiment as between groups factor (Control v Collective Hate) Motivation as Covariate	H1a: Formation H1b:Speed H1c:Size
Collective Hate	H1d-H1f	2x4 ANCOVA	Experiment (Control v Collective Hate) and societal hate as between groups factor Motivation as Covariate	H1d: Formation H1e:Speed H1f:Size
Charismatic Leaders	H2a-H2c	One-way ANCOVA	Experiment as between groups factor (Control v Collective Hate v Leader) Motivation, charisma, popularity, and susceptibility as Covariates	H2a: Formation H2b:Speed H2c:Size
Charismatic Leaders	H2d-H2f	2x4 ANCOVA	Experiment as one factor (Control v Leader) Societal hate as the second factor Motivation, charisma, popularity, and susceptibility as Covariates	H2d: Formation H2e:Speed H2f:Size

Summary

This chapter laid out the agent-based simulation modeling experiments designed to test Hamm's (2004) theory of collective hate and Weber's (1947) theory of charismatic leadership. The dependent variables of interest are the number of groups that form, the size of those groups, both the largest group and the number of larger groups, and the speed of formation, both the starting point of formation and the average number of days in which groups formed. The covariate of interest for the collective hate hypotheses (H1a-H1f) is motivation. For the charismatic leader hypotheses (H2a-H2f) motivation is a covariate of interest, but also susceptibility, the charismatic leader's level of charisma, and the leader's popularity. These covariates are parameters that were manipulated in the simulation models associated with their respective hypotheses. Each model was run 1,000 times absent of societal hate and 1,000 times each at varying levels of societal hate for a total of 5,000 model runs per experiment. The next chapter details the results of the experiments and the ANCOVA statistical analyses.

CHAPTER SEVEN

RESULTS

This chapter details the results of the statistical analysis. It is divided into four sections. Each section provides the ANCOVA analysis for one of the four sets of hypotheses tested in this dissertation and detailed in Table 18 in the previous chapter. The ANCOVA allows for the analysis of the main effects and interactions for the primary independent variables (i.e., collective hate, charismatic leadership and societal hate) net the influence covariates on the outcomes of interest, including group formation, group size, and speed of formation. The order in which the results are presented below follows the same order as the hypotheses.

Hypotheses 1a-1c

This section provides the results of the ANCOVA analyses comparing the control condition to the experimental collective hate condition. These ANCOVAs test the first set of hypotheses, those dealing with collective hate only. Societal hate is not considered in these analyses. For this section and the rest of this chapter, the effects of interest when present are represented by the symbols provided in Table 19 below. For example, in the results tables that follow, a statistically significant effect of the model condition on an outcome will be marked as A "significant main effect for model condition".

Table 19: Effects and their Representations in for ANCOVAs for H1a-H1f Results Tables

Effect of Interest (H1a-H1f)	Representation in Effects
Significant main effect for Model condition	A
Significant main effect for Societal hate	B
Significant Model condition X Societal hate interaction	AxB
Motivation as a significant covariate	C
Significance level p<.1	†
Significance level p<.05	**
Significance level p<.001	***

Findings for the first hypothesis, H1a, as presented in Table 20, show the number of hate groups formed was significantly associated with model condition (control versus experimental) [$F(1, 1{,}997) = 55.0$, $p<.001$], as well as motivation [$F(1, 1{,}997) = 4.1$, $p<.05$]. In this analysis, the experimental model was consistent with expectations. That is, the experimental models produced significantly more hate groups than the control models.

For the second hypothesis, H1b, which examined group size as the dependent variable (first based on the largest group formed), there was a significant effect for the experimental condition [$F (1, 1{,}997) = 260.8$, $p<.001$], and a marginally significant effect for motivation, [$F (1, 1{,}997) = 2.3$, $p<.1$]. Because of the exploratory nature of this research, the marginal effects become important for guiding future examination of model parameters. In this situation, the idea that motivation is marginally significant, means that this is a parameter that in future research should be kept in the model and further manipulated, perhaps with smaller time increments, 4 hours rather than 6 or as larger increments, agents active for a week and then inactive for 2 or 3 days. The control model produced the largest group when compared to the experimental condition. This finding is contrary to theory, because it was expected that the largest groups would have been seen in the experimental models rather than in the control models. The

individual log files showed that agents did not leave groups in the control models but they did frequently leave groups in the collective hate models. The net effect of this was that groups became larger than those in the experimental models because the group never experienced member attrition. That is to say, the control groups kept growing because no agents left the group or groups that they joined and more agents were added to those groups throughout the model run.

When group size was operationally defined as the number of larger groups formed (i.e., groups that were larger than the requisite 5 members needed to define a group), a marginally significant effect for the experimental condition was observed [$F (1, 1{,}997) = 2.4$, $p<.1$]; however, motivation was not a statistically significant covariate. The control models produced slightly more larger groups than the experimental condition. This does not meet expectations, as the experimental condition was expected to produce larger groups and more of them. The individual log files showed that agents frequently left established groups in the experimental condition, making these groups slightly smaller than their control model counterparts.

In the last analysis for Hypotheses 1a to 1c, the ANCOVA examined the relationship between experiment type and how quickly the groups formed (i.e., H1c). The first of these analyses examined at how quickly groups began to form operationalized as the number of days that elapsed before the first group formed. In this analysis, there was a significant effect for the experimental condition, [$F (1, 1{,}997) = 3.8$, $p<.05$]. The first group that formed in both the control model and the collective hate model formed, on average, on the 12^{th} day of the model run. The experimental condition produced its first hate group slightly earlier than the control model.

When looking at how quickly groups formed using the average amount of time it took for each group to form aggregated across the entire model run, there was a significant effect for

collective hate, [F (1, 1,997) = 11.5, p<.001]. The control models created groups faster, on average, than the experimental collective hate models. It was expected that the experimental models would produce their hate groups faster than the control model, making this finding contrary to expectations. The log files did not show any particular reason for this pattern of findings. Groups in the experimental model took longer to form, perhaps because of the frequency with which the agents changed their extrinsic hate, something that the agents controlled in the experimental models but were unable to do so in the control models.

Table 20: ANCOVA Analysis for Control vs. Collective Hate H1a-H1c

Variables	Control	Collective Hate	Significant Effects
# of Hate Groups	18.7(94.0)	20.1 (4.4)	A***, C**
Size			
Largest Group	17.1(3.2)	15.0(2.6)	A***, C†
# of Larger Groups	27.0(3.2)	26.8(3.3)	A†
Speed			
Formation of First Group	11.9(4.1)	11.5(3.8)	A**
Average Formation Time	211.3(3.8)	211.9(4.6)	A***

Note: Standard deviations appear in parentheses.

Hypotheses 1d- 1f

This section provides the results of the ANCOVA analysis comparing the control condition to the experimental condition in the models, taking into account the effect of societal hate as outlined in the second set of hypotheses, H1d-H1f. The results of the analyses are presented in Table 21 below. The means and standard deviation are presented in order, societal hate levels of 2, 4, 6, and 8 respectively.

The first analysis examined the effect of societal hate on the number of hate groups that form in the experimental condition (H1d). The analysis showed that there was a significant main effect for model condition [$F(1, 7{,}991) = 618.9$, $p<.001$]. In the control model, societal hate is stagnant; in the experimental condition, societal hate varies across the model run, as a function of changes in agent's intrinsic hate level. Examination of the log files showed that in the experimental models the agents with lower levels of hate were "hesitant" to increase their intrinsic hate past the set societal hate average. This is to say that an agent with intrinsic hate 2 when societal hate was 4 would not increase his hate past 4, no matter what his situation. This was an emergent property of the model. Agents in the experimental models were given full control over increasing or decreasing their intrinsic hate and nothing was programmed into their behavior rules that explicitly capped how much these levels could be increased.

For the next hypothesis, H1e, which examined group size as the dependent variable (first based on the largest group formed), the analysis showed that there was a significant effect for the experimental condition [$F(1, 7{,}991) = 21373.7$, $p<.001$] and motivation as a significant covariate, [$F(4, 7{,}991) = 5.1$, $p<.05$]. The control model always produced the largest group when compared to the experimental condition, regardless of the level of societal hate. This mirrors the same findings as the previous analysis of the largest groups in H1b. The log files showed that when agents were given more control over their intrinsic and extrinsic hate; group membership fluctuated with agents commonly joining and then leaving a group in the experimental models, thus preventing groups from growing to the size seen in the control models.

Examining the number of larger groups, the analysis showed that there was a significant effect for the experimental condition [$F(1, 7{,}991) = 915.2$, $p<.001$], and a marginally significant interaction between societal hate and the experimental condition [$F(4, 7{,}991) = 19.3$, $p<.1$].

Motivation was not statistically significant as a covariate in either analysis for group size. Here the findings followed theoretical expectations, no matter what the level of societal hate; increasingly larger groups were observed in the experimental model as societal hate increased.

The last hypothesis in this series dealt with the speed of group formation. The first analysis examined how quickly groups began forming. In this analysis, there was a marginally significant main effect of the experimental condition [$F(4, 7{,}991) = 2.5$, $p<.1$], as well as a marginally significant interaction between societal hate and the experimental condition [$F(4, 7{,}991) = 1.9$, $p<.1$]. The addition of societal hate resulted in the control models outperforming the experimental models. This results in a counterintuitive finding, as the experimental models were expected to form groups before the control model and did so, when societal hate was not included. The log files showed that this trend may have been due to the agents' constant shifting of their extrinsic hate early in the model runs, as extrinsic hate shifted, the ability to make connections that would lead to potential hate group formation were constantly in flux.

The analysis conducted using the average amount of time it took for each group to form aggregated across the entire model run showed that there was a significant effect for the experimental condition [$F(1, 7{,}991) = 567.5$, $p<.001$]. The control models created groups faster, on average, than the experimental collective hate models. It was expected that the experimental models would produce their hate groups faster than the control model, making this finding contrary to expectations. Because the changing levels of intrinsic hate in the experimental condition are interconnected with societal hate (i.e., societal hate was the average collective intrinsic hate of the agents in the model); the changing levels of intrinsic hate inherent in the experimental condition model had a corresponding impact on societal hate, which in turn

impacted how quickly the groups came together. Motivation was not a statistically significant covariate in either analysis for speed of formation.

Table 21: ANCOVA Analysis Control vs. Collective Hate for H1d-H1f, Societal Hate Effects

Variables	Societal Hate Level	Control	Collective Hate	Significant Effects
# of Groups	2	19.0(3.6)	17.2(3.5)	A***
	4	19.2(3.6)	17.2(3.6)	
	6	19.0(3.4)	16.9(3.5)	
	8	19.0(3.6)	17.2(3.6)	
Size				
Largest Group	2	17.9(3.7)	14.8(2.6)	A***, C**
	4	18.1(3.9)	14.8(2.5)	
	6	18.1(3.7)	14.7(2.6)	
	8	17.9(3.7)	14.7(2.7)	
# of Larger Groups	2	24.8(3.3)	27.1(3.3)	A***, AxB†
	4	24.9(3.0)	27.1(3.3)	
	6	24.9(3.0)	26.9(3.3)	
	8	24.9(3.1)	27.3(3.4)	
Speed				
Formation of First Group	2	12.5(4.8)	12.8(4.3)	A†, AxB†
	4	12.9(4.6)	12.6(4.2)	
	6	12.6(4.6)	12.9(4.3)	
	8	12.6(4.6)	12.9(4.1)	
Average Formation Time	2	132.5(11.5)	138.6(10.3)	A***
	4	133.0(11.5)	138.7(10.6)	
	6	132.8(11.4)	132.3(10.5)	
	8	132.5(11.8)	138.6(10.0)	

Hypotheses 2a- 2c

These sections provide the results of the ANCOVA analyses examining the role that societal hate and charismatic leadership played in the variations observed in each of the 3 dependent variables: number of groups, group size, and speed of group formations. These

ANCOVAs test the third and fourth sets of hypotheses and the manner in which the effects of interest are represented is presented in Table 22 below.

Table 22: Effects and their Representations in for ANCOVAs for H2a-H2f Results Tables

Effect of Interest (H2a-H2f)	Representation in Effects Column
Significant main effect for Experimental condition	A
Significant main effect for Societal hate	B
Significant interaction term (Experimental condition x Societal hate)	AxB
Motivation as a significant covariate	C
Charisma as a significant covariate	D
Susceptibility as a significant covariate	E
Popularity as a significant covariate	F
Significant p<.1	†
Significant p<.05	**
Significant p<.001	***

The results of the analyses related specifically to hypotheses H2a-H2c are presented in Table 23 below. For the first hypothesis, H2a, that examined the number of hate groups formed when a charismatic leader was included in the model, there was a significant effect for the experimental condition, [F (1, 1,994) = 13.3, p<.001], and a marginally significant effect for motivation as a covariate, [F (1, 1,994) = 2.8, p<.1]. The charismatic leader model produced more groups than the control model.

For the second hypothesis, H2b, examining group size (first based on the largest group formed), there was a significant effect for the experimental condition [F (1, 1,994) = 20.7, p<.001]. None of the covariates were statistically significant. The control model produced the largest groups. An examination of the log files showed that agents who agreed with the charismatic leader avoided agreements with agents who disagreed with the charismatic leader. This decreased the number of agents with whom the charismatic leader's followers could form groups. This was an emergent property of the model because the agents were not given any

specific behavior rules to influence their interaction with other agents based on the extent to which the agents supported or disapproved of the charismatic leader. When examining group size based on the number of larger groups formed, nothing was significant. The control model produced more larger groups, but the difference was not statistically significant.

In the last analysis in this series, the ANCOVA tested the third hypothesis, H2c, regarding how quickly the groups formed. The first of these analyses examined how long it took for the first hate group to form. In this analysis, there was a marginally significant effect for the experimental condition, [F (1, 1,994) = 3.1, p<.1]. On average, the first group that formed in the control model and in the experimental condition was formed on the 12th day, with the groups forming in the charismatic leader models slightly earlier.

When looking at the mean formation time for all groups in days, there was a marginally significant effect for the experimental condition, [F (1, 1,994) = 2.7, p<.1]. On average, when looking at all the groups that formed, the average time for group formation was faster in the charismatic leader model, but only slightly.

Table 23: ANCOVA Analysis for Control vs. Charismatic Leadership H2a-H2c

Variables	Control	Charismatic Leadership	Significant Effects
# of Groups	18.7(4.0)	19.9(4.3)	A***, C†
Size			
Largest Group	17.0(3.1)	15.1(2.5)	A***
# of Larger Groups	27.2(3.3)	26.8(3.4)	ns
Speed			
Formation of First Group	11.7(3.9)	11.3(3.8)	A†
Average Formation Time	211.3(4.2)	211.0(4.1)	A†

Hypotheses 2d – 2f

This final section provides the results of the ANCOVA analysis comparing the control conditions to the experimental charismatic leadership condition in the models while taking into account the effect of societal hate, as outlined in the second set of hypotheses, H2d-H2f. The results of the analyses are presented in Table 24 below. The means and standard deviation are listed in sequence, beginning with the condition where societal hate was equal to 2, 4, 6, and 8 respectively.

The first hypothesis in this set, H2d, examined the effect of societal hate on the number of hate groups formed. There was a significant effect for the experimental condition, [$F(1, 7{,}989) = 25.0$, $p<.001$]. The changing levels of intrinsic hate in the experimental condition had an impact on societal hate, which in turn impacts how the groups form in that model. Among the covariates, nothing was significant. In this situation, the control model produced more hate groups when societal hate was included, as compared to the scenario where societal hate was not included. This finding was unexpected, and examination of the log files showed that in some of the model runs where the charismatic leader was included, the charismatic leader started out acquiring detractors before supporters, in these situations the number of supporters eventually acquired by the charismatic leader were outnumbered by the detractors. This decreased the number of hate groups that formed in those model runs, as the detractors often decreased their intrinsic hate at the first opportunity after meeting the charismatic leader. This was an emergent property of the model because agents were not given a behavior rule that would have caused them to decrease their intrinsic hate if they disagreed with the charismatic leader.

For the second hypothesis, H2e, examining group size (first based on the largest group that formed), there was a significant effect for the experimental condition [F (1, 7,989) = 47.2, p<.001]. Of the covariates, there was a significant effect for motivation, [F (1, 7,989) = 11.1, p<.001]. The other covariates were not statistically significant. The control model produced the largest group in all situations. The log files showed a tendency by the charismatic leader's supporters to avoid agents who did not agree with the charismatic leader and to drop their intrinsic hate and leave a group if detractors of the charismatic leader joined that group. This resulted in groups having too much flux in membership to develop into the largest possible groups. The agents were not given any particular behavior rules regarding interaction based on support of the charismatic leader; therefore these behaviors are emergent properties.

When examining group size based on the number of larger groups formed, there was a significant effect for the experimental condition [F (1, 7,989) = 227.9, p<.001]. None of the covariates were statistically significant. In this situation, the charismatic leader model did produce a larger number of large groups, regardless of the level of societal hate. Another explanation from the log files shows there was a trend for groups that formed with more than one supporter of the charismatic leader in the initial 5 members to draw more of the charismatic leader's supporters into the group throughout the model run. There is no programming that explains this behavior; it is an emergent property that helps explain why larger groups formed in the charismatic leader model scenarios.

In the last set of analyses, the ANCOVA tested the third hypothesis, H2f, regarding how quickly groups formed. The first of these analyses examined how quickly groups began to form based on when the first group formed. In this analysis the only significant main effect was the experimental condition and this was only marginally significant, [F (4, 7,989) = 2.2, p<.1],

motivation was also marginally significant as a covariate [F (4, 7,989) = 2.1, p<.1]. The presence of the charismatic leader was expected to speed up group formation, no matter what level of societal hate was evident in the model. This was not the case. When societal hate was added to the models, the experimental condition resulted in the first group forming slightly after the control model's groups. The log files showed that the agent behavior first identified in the explanation for H2e held true at all levels of societal hate. That is, agents who followed the charismatic leader were "disinclined" to agree with agents who disagreed with the charismatic leader. No matter what the level of societal hate, this not only effected group size when societal hate was included in the models, but also increased the amount of time it took for some groups to form because this increased the amount of time between agreements for the charismatic leader's followers.

When looking at the mean formation time for all groups, there was a significant effect for the experimental charismatic leadership condition [F (1, 7,989) = 155.6, p<.001]. None of the covariates were significant. In all instances, the control model produced a faster average time of formation than the charismatic leader model. This is counterintuitive as the charismatic leader's presence was expected to increase the speed of group formation. The log files showed that the agent behavior first identified in the explanation for H2e and identified as a factor in the formation of the first group, held true at all levels of societal hate. That is, agents who followed the charismatic leader were "disinclined" to agree with agents who disagreed with the charismatic leader. No matter what the level of societal hate, this increased the amount of time it took for some groups to form because this increased the amount of time between agreements for the charismatic leader's followers.

Table 24: ANCOVA Analysis for Control vs. Charismatic Leadership H2d-H2f, effects of Societal Hate

Variables	Societal Hate Level	Control	Charismatic Leadership	Significant Effects
# of Groups	2	18.1(3.7)	16.7(3.5)	A***
	4	18.2(3.7)	16.9(3.5)	
	6	17.9(3.6)	16.8(3.6)	
	8	18.1(3.7)	16.8(3.5)	
Size				
Largest Group	2	16.4(3.6)	14.5(2.6)	A***, C***
	4	16.4(3.7)	14.6(2.7)	
	6	16.4(3.6)	14.5(2.5)	
	8	16.3(3.6)	14.6(2.5)	
# of Larger Groups	2	25.9(3.5)	26.9(3.4)	A***
	4	25.9(3.3)	26.9(3.4)	
	6	25.9(3.3)	27.1(3.4)	
	8	26.1(3.5)	27.1(3.4)	
Speed				
Formation of First Group	2	12.7(4.5)	12.8(4.3)	A†, C†
	4	12.8(4.4)	12.8(4.3)	
	6	12.7(4.4)	12.8(4.2)	
	8	12.7(4.3)	12.9(4.3)	
Average Formation Time	2	132.5(11.3)	138.9(10.4)	A***
	4	133.0(11.4)	138.6(10.6)	
	6	132.8(11.3)	138.8(10.2)	
	8	132.5(11.4)	138.5(10.9)	

Summary

This chapter presented the results of the analyses testing the hypotheses set forth by this dissertation. The ANCOVAs found significant effects supporting both collective hate and charismatic leadership in terms of the formation of hate groups, their size and the speed of formation. Support also was found in all analyses for motivation as a covariate. The next chapter discusses these results and their implications.

CHAPTER EIGHT

DISCUSSION

Does collective hate influence variations in the attributes of hate group formation? Does the presence of a charismatic leader influence variations in the attributes of hate group formation? As discussed below, this dissertation has begun to answer these questions. These findings have important implications for agent-based simulation models as methodology, criminological theory, public policy and future research.

The research has identified the following findings:

- The theoretically-informed models of human behavior generated hate groups.
- The experimental models, both collective hate and charismatic leadership produced more hate groups when societal hate was not added to the models.
- For the experimental models, larger groups were more prevalent than in the control model, at all levels of societal hate.
- When societal hate was included in the models, the control model, which gave the agents the least amount of freedom over their levels of intrinsic and extrinsic hate, produced the most hate groups and the largest hate groups.
- Because all models produced hate groups, there was support for Hamm's (2004) theory of collective hate.
- Because the charismatic leader model replicated the charismatic leader's acquisition of supporters, there was support for Weber's (1947) theory of charismatic leadership.

Hate groups formed at all levels of societal hate. There was a significant difference between the control and experimental models, especially when societal hate was included in the models. In cases where larger groups formed, these groups in the real world can have more

moderate views and behaviors than their smaller counterparts; these groups essentially police the behavior of their membership through the overall numbers within the group (SPLC, 2009). Small groups can radicalize faster than larger groups and can also be more inclined to engage in criminal activity (Hamm, 2007). Groups that formed quickly may not have the staying power of groups that formed more slowly, in the case of Robert Matthews nearly a decade passed between when he formed the Sons of Liberty and the formation of the Order, of the two, the Order was far more involved in criminal behavior and acting upon Matthews' supremacist ideology (Hamm, 2007). When societal hate was included, the control models produced more groups and in all cases produced the largest group. Although this seems somewhat counterintuitive, comparison of the control and experimental model log files revealed two factors relating to this difference:

1) When societal hate was included in the models, the societal level of hate established a starting point for the intrinsic hate of the agents in all models. The control model did not allow for the variation of this hate. This hate could vary within the collective hate model, and the agents with lower levels of hate in this model were "hesitant" to change their intrinsic hate when given the option, and rarely did so to a level above the societal average. This means that an agent starting with hate equal to 2 in a model where the societal average started at 4 very rarely increased their level of hate beyond 4. This is an emergent property[26] that held throughout the models. It cannot be explained by the model programming. This opens up new questions to explore within these models and the resultant data. Situations like this one highlight a key difference between simulated and other forms of research: where this result would inspire further interviews in qualitative research or the creation of a revised survey in quantitative research, the changing numbers present in the model log files cannot be asked to elaborate.

[26]An expanded discussion of emergent properties and their relation to ABM can be found in Railsback, S. and Grimm, V. (in press) *Agent-Based and Individual-Based Modeling A Practical Introduction*, Princeton, Princeton University Press.

When societal hate was allowed to change, there was an increased likelihood of groups to form when societal hate was decreasing in the models where societal hate began at higher levels. This is consistent with the real world phenomena where hate groups, particularly Klan groups or groups that form due to a particular political issue, believe that society is becoming too accepting of that which they hate – Klan groups drew increased membership when schools desegregated, in the past two years the SPLC has had to increase the number of categories of hate groups to account for new anti-gay and anti-immigrant groups, forming in reaction to changes in political and public policy. When societal hate started low and was able to change, groups formed as societal hate increased, where more agents started raising their level of hate, this is also similar to the real world phenomena where hate groups form as more people establish a hate of a particular target, case in point anti-Muslim groups after the 9/11 terrorist attacks or anti-German groups in the wake of the American entry into World War II.

2) A second explanation for why the control model produced more hate groups when societal hate was included in the models is that while in the collective hate model agents left groups and joined new groups, agents formed multiple groups in the control model. In these situations, the agents in one group also formed satellite groups. This was not something that happened in the experimental conditions, so in the experimental conditions, the agents likely left the group and joined another rather than maintaining membership in multiple groups.

In the charismatic leader models, the leader's supporters avoided agreements with anyone who did not agree with the charismatic leader. In some cases, this greatly decreased their potential pool of agreements towards group formation. As with the collective hate model, the charismatic leadership model increases the number of opportunities for the agents to change their internal characteristics, this ability increases the likelihood that groups dissolved. Another

potential explanation from examining the log files is that the agents that agreed with the leader would not agree with agents who disagreed with the leader, despite having similar levels of intrinsic and extrinsic hate; this is an emergent property that was not programmed into the charismatic leader model. While this behavior decreased the number of agreements between certain agents, thereby decreasing the likelihood that they would gain enough agreements to form a group it does illustrate balance theory. Balance theory, identified by Heider (1958), argues that individuals make decisions regarding interpersonal relationships in an attempt to achieve a balance state. In this balance state, individuals seek relationships that will maintain a positive agreement on a personal belief or viewpoint, as it relates to a third person or mutual interest (Heider, 1958). Individuals are uncomfortable or experience tension in situations where the views of the members of a group regarding the mutual interest are not in balance, which can result in the dissolution of partnerships or relationships (Heider, 1958).

Similar to the collective hate model, in the charismatic leader model, agents that left a group usually sought out a group that had already formed that was more in-line with their characteristics, making these groups larger. In both the collective hate and the charismatic leader models, this seemed to indicate that once an agent decided to be a member of a group, even if they left that group, they appeared to seek out group membership in an already formed group than begin the process to make new connections to form new groups. This is an emergent property, not programmed into the models. This means that the behavior is not programmed, but that agents who have previously been members of a group appear to be drawn to established groups. Because some agents were more "picky" about which agreements they sought out, particularly those agents who agreed with the charismatic leader to avoid agents who disagreed

with the leader, this resulted in a longer period of time before those agents made enough agreements to form a group.

Implications for Methodology

This dissertation used an innovative methodology, simulation modeling, to study hate group formation. As noted previously, simulation models are usually considered viable if they recreate real world phenomena in ways that "match up" to history and experience. The models in the dissertation, thus, were successful in that they recreated hate groups using a small number of theoretical parameters. They have recreated situations that have been seen, historically, in the real world. For example, hate groups formed around a charismatic leader, something that has been seen throughout American history with White Supremacist groups like the Ku Klux Klan, the Order, and neo-Nazis. Hate groups formed at all levels of societal hate, just like they have in the United States throughout history. Regardless of how accepting society has become of ethnic, cultural and social diversity, hate groups have formed if enough people accept a hate ideology. Hate groups became rather large with a single group encompassing nearly 5 to 6% of the population of the model, similar to membership seen in the 1920's by the Klan in the US and in the 1930s and 1940s by the Nazi party in Germany. Furthermore, these models can provide a basis for additional examination of hate group phenomena.

Regardless, much research into hate groups using this methodology remains and the data collected in this dissertation can continue to be analyzed. Collectively, results of these models provide support for the continued and expanded use of this methodology in the field of criminal justice, especially when the phenomena of interest are inaccessible. The fact that hate groups formed under these simplified conditions cannot be discounted. The purpose of these models was

to see whether hate groups could be formed based solely on hate, following Hamm's (2004) theory of collective hate. Using hate as the primary characteristic, extrinsic and intrinsic, formed hate groups. With respect to the second theory Weber's (1947) theory of charismatic leadership, the influence of a single individual as a catalyst for group formation encouraged those with the same level of hate to form hate groups. Although, in both of these situations the number of hate groups, how large they were and how quickly they formed did not surpass the control model, they still formed.

The unexamined data produced by this dissertation's models may provide a wealth of further information that can be matched to historically known scenarios and situations. All in all, the models are a viable starting point for examining hate groups, as well as other extremist or criminal groups, such as terrorist organizations, violent Mexican drug cartels, and street or prison gangs.

Limitations of Simulation Modeling

As a methodology, simulation modeling cannot replace other forms of research, either qualitative or quantitative. This is because models lack the detail that can be accomplished through qualitative and quantitative research that can get at the purely human element of social phenomena. However, simulation modeling can take these more traditional forms of research in new directions, like when examining something that cannot be measured with a survey, or objectively identified through qualitative means, like hate group formation.

Although the goal of simulation modeling is to use the simplest combination of characteristics and behavior rules to duplicate social phenomena in a computerized environment, it is always possible that the model oversimplifies the situation (Miller and Page, 2007; Gilbert and Troitzsch, 2005). Simulation models should be seen as a springboard for "real world"

qualitative and quantitative research (Gilbert and Troitzsch, 2005). Simulation cannot replace real world observation, ethnographic, historical or archival research, but in situations where real world observation is dangerous or ethically inadvisable, it provides a viable resource for theoretical examination (Miller and Page, 2007; Gilbert and Troitzsch, 2005; Groff, 2007).

Limitations of the Models used in this Dissertation

The models used in this dissertation have identified hate as a primary characteristic of interest and tested two theories; *collective hate* and *charismatic leadership*, in an attempt to recreate the dynamics of hate group formation in simulation. The rigid structure of the control models, specifically the inflexible nature of the model (not letting agents change) had the effect of agents not dropping out of a group once they had joined. This is very different from real world groups and this complicated the comparison with the experimental models.

Human beings are incredibly complex in their thoughts, interactions and responses to the situations in which they find themselves. Though hate groups formed under these conditions, it is still probable that something has been overlooked. Although many human characteristics that are typically considered important were not included (i.e. education level, socio-economic status), this limitation was partially offset by the fact that hate groups form at every level of these characteristics in the real world.

Nevertheless, these models did not include one characteristic that is considered very important to hate groups and that is race. Race was not included as it is an assumed characteristic in Hamm's (2004) and Weber's (1947) theories. Both of theories were designed to explain behaviors and phenomena seen in racially or ethnically homogenous settings. Therefore, all agents were the same race and racial pride was not a characteristic given to the agents. In future

research examining hate group behavior and hate crime, this is a characteristic that will likely need to be included. Also, these models were not designed to examine even simulated responses to a specific "trigger" event that could increase hate group formation, such as a heinous crime, as in the case of the Knights of Mary Phagan.

Further, different types of hate groups, even within the broader category of white supremacist groups form along generational lines. Ku Klux Klan or Neo-Nazi group members may join as teens or as adults up into their 50s and 60s, while Skinhead groups usually are formed by and recruit individuals below the age of 25. The exclusion of age, while maintaining the simplicity of the models, does prevent more careful examination of how subgroups differing in age within white supremacy groups may emerge differently in both simulation and the real world. Finally, societal hate was operationalized as the mean of the intrinsic hate of all agents in the models; societal hate is a relatively new concept and may not relate at all to a mean level of hate in a society. While historians, archivists and ethnographers examining Nazi Germany and the Ku Klux Klan have discussed the role of society and social views on the rise of these groups, no one has sought to measure a society's psychological or emotional level regarding hate. Although, opinion polls on various subjects that are "hot button" issues to hate groups (gay marriage, desegregation, immigration, to name a few) exist, they are fraught with methodological and validity concerns and at best are only a proxy measure of societal hate. Public opinion is fickle. Although many hate groups have been able to increase their membership and support by playing off public opinion, this does not mean that societal hate is the best proxy.

It can be argued that these models could be used to form groups for a variety of purposes by switching intrinsic and extrinsic hate with other characteristics, such as "love of chess." Due to the lack of a means for externally validating the hate group formation models, this can be seen

as a limitation. The same argument can be made for any simulation model, that any characteristic is only a label provided by the modeler and embodies only as much meaning as that label. While this is a limitation of these and other simulation models, the models generated groups that are listed as hate groups, under the conditions provided in the model programming.

The distribution of both intrinsic and extrinsic hate and whether or not they are correlated with one another may be another limitation to this study. There simply have been no real world surveys of hate to enable a determination of how close real world estimations would match those of the simulation. Eleven levels of intrinsic and extrinsic hate may be too many or too few to show the varying degrees of hate that are present in society. Furthermore, the agents may have been given too much freedom over their characteristics, especially evident because this was a driving force in the experimental models that differentiated how many groups formed when agents were given more freedom versus the absence of freedom in the control model.

Implications for Criminological Theory

Results from the models indicate that there was support for Hamm's (2004) theory of collective hate. The support for Hamm's (2004) theory of collective hate, evidenced in both the control and collective hate models supports the idea that collective hate is, at the very least, if not absolutely necessary, is a sufficient condition for hate groups to form. Furthermore, the charismatic leader models produced enough hate groups to warrant further examination of Weber's (1947) theory of charismatic leadership as an influence on hate group formation. Hate groups did form at each level of societal hate and societal hate effects were supported by the analysis. It might be useful to further explore each theory individually and relate the findings to the historical events that influenced the creation of these theories and the foundation of these models.

Collective Hate

These models produced groups at varying levels of hate; and therefore, not only did they successfully model group formation but also hate group formation in a way that appears to support Hamm's (2004) theory of collective hate. The models included three types of hate, intrinsic, extrinsic, and societal. Hate was programmed as the driving force for interactions between individuals and the agents did interact and form groups based on this characteristic. The control model, which was a version of the collective hate model without "free will" to change the values of their internal and external characteristics, was consistent with the theory of collective hate. Perhaps more compelling was that when agents were given "free will" like their real world counterparts in the experimental models, they still produced hate groups. Although allowing agents to have autonomy over intrinsic/extrinsic hate levels is more representative of how people behave in the "real world", the fact that collective hate led to group formation in the control condition as well as the experimental condition provides strong support for this idea. Conceptually it is accurate to say that the exchange between individuals with differing levels of both intrinsic and extrinsic hate represents a "shared belief" in the sense that only those who have similar levels of hate form a group.

Further examination of the data will shine more light on which types of hate and at which level they influenced hate group formation. Research conducted by Ramakrishna (2006), with Islamic militant youth has shown that a collective prejudice or bigotry is instrumental in influencing individuals to seek out and join terrorist groups. If hate is the driving force behind hate group formation and hate is being identified as part of the connection between members of terrorist and other extreme groups, the current research is valuable for examining the spread of such groups. Expansion of the models used in this dissertation, to other, more extreme groups,

can examine the dissemination of ideology via media as well as how the internet or other non-person-to-person communication can spread a belief and expand a group's support base. From a different perspective, other emotional connections, such as desire, loyalty or revenge can be modeled to use variations of these experiments to model gang formation or the establishment of criminal or subversive networks, such as child pornography rings, cults or counter-government movements.

Charismatic Leadership

The most striking results were those found in relation to the charismatic leader hypotheses. When societal hate was included, the charismatic leader model produced the fewest hate groups, especially since charismatic leaders were theorized to be a product of the society in which they come to power. This may be due in part to an over-simplified representation of charismatic leadership in the model or this result may actually be echoing history. Historically, charismatic leaders have not risen to power from the ether, and their group dominates the landscape, limiting the proliferation of other groups.

Historians and archivists who focus on Nazi Germany highlight a series of events that came into alignment that allowed for the rise of Hitler (Kershaw, 2008). Among these events were Germany's loss of World War I, the shame and degradation of the German people due to heavy reparations and massive unemployment (Kershaw, 2008); increases in crime and immorality, especially in Berlin, the rise of the mysticism movement, the Great Depression in the United States, rising popularity of the Communist Party, civil unrest, weak centralized government and the Reichstag Fire; all contributed to Hitler's rise (Kershaw, 2008).

Weber's (1947) original examination of charismatic leadership was designed to explain the rise and influence of charismatic leaders. The small number of hate groups formed in the

charismatic leader models likely highlights the importance of these other factors when studying charismatic leadership and separate modeling that would allow for thresholds of unrest, unemployment and catastrophic incidents likely is needed. Another explanation from history is that charismatic leaders have sometimes been associated with several different groups, but too many competing groups are detrimental to the leader's sway over his followers, as too many opportunities for in-fighting distract from the leader's message.

Other reasons for why the presence of a charismatic leader resulted in a smaller number of groups can be seen in the early supporters of the Nazi party. While Hitler was a great orator and passionate in his message, his personal habits and mannerisms made him someone that most people would not be comfortable with should they meet him on the street (Kershaw, 2008; Gellately, 2001; Fritzsche, 2008). Weber himself expanded on his original views of charismatic leadership throughout his writings and these variations of charisma idea developed later than the original theory can guide future variations of the charismatic leader model. Charismatic leaders come to the forefront in a wide variety of organizations, not just hate groups. Charismatic leaders have a place in legitimate society and organizations; however, their sway is also seen among more dangerous groups or can be employed in subversive ways.

The groups that formed in this model included the followers of the leader. The leader's followers were given an extra option for changing their intrinsic hate and other internal characteristics. If these agents increased their intrinsic hate, radicalizing in support of the leader's views, they would surpass the intrinsic hate of their fellow agents within a group, resulting in more frequent model calculations of the group's mean intrinsic hate and more opportunities for drop-outs to choose to leave the group. If enough members left, the group dissolved. More experimentation with charisma and susceptibility may help model a group

members' acquiescence in instances of genocide, war crimes, and less violent crimes, such as voluntary participation in Ponzi schemes or fraud.

Societal Hate

Societal hate produced significant effects in the models used in this dissertation. However, the number of hate groups did not increase as societal hate increased. Hate groups formed at all levels of societal hate, but did their best, especially in the experimental models, when societal hate was not included in the model. Unlike in the past, hate groups are not always at their most prevalent when society supports their views. Hate groups can be very reactionary. If society is not supporting the hate group's views it can almost be seen by the hate group that there is a greater need to form additional groups to gather the "believers" together to fight a society that is delusional, in their opinion, for not sharing their views and beliefs.

Hate groups that have formed throughout history have seen increased support and membership when society as a whole appeared to be evolving, such as when Supreme Court cases found in favor of equality and desegregation during the Civil Rights Era (Wade, 1987: Chalmers, 1981). This is part of the conjecture of Hamm's (1994) examination of skinheads that led to his collective hate theory, that potential skinheads perceived society or government as supporting the target of their hatred rather than those blue-collar, white, Anglo-Saxon, Protestants who were the skinhead's family, friends, and neighbors. Although the collective hate and charismatic leader models allowed for the levels of societal hate to vary over time, the level of variance was not examined in the present analysis. Hate groups formed at each level of societal hate; therefore, this change in societal hate likely merits further evaluation. Further examination of the data may show support for changing levels of societal hate to better match the politically and socially reactionary history of hate groups. Societal hate may be different from

societal acceptance of a hate group's presence or activities. Altering societal hate to not be related to the hate possessed by the agents themselves may present a better way to examine the phenomena. Societal hate is a relatively new concept, while it has been linked to the everyday German in the years preceding and throughout the Nazi regime (Kershaw, 2008: Goldhagen, 1996). This merits future examination, especially if one or the other can be used to explain genocide or other atrocities in more recent history.

Implications for Public Policy

While support has been found in this dissertation for the theories of collective hate and charismatic leadership, many more models need to be built and tested before concrete policy recommendations can be made from the findings. This is not to say that hate groups are not a public policy issue. This section examines some of the legislation and policies in place. The existing legislation is supported by this dissertation's preliminary findings.

Currently, little has been done to legislate against hate groups beyond the Ku Klux Klan Act of 1871. Instead, a variety of legislation has passed in order to track and punish hate crime. Not specifically designed as a hate crime statute, 18 U.S.C.A. § 245, similar to 18 U.S.C.A. § 241, was passed to provide a basis for the Federal government to respond to bias, prejudice, and the denial of civil rights not addressed specifically by state or local law enforcement or officials (Jacobs and Potter, 1998). The most well-known of these Federal statutes is the Hate Crime Statistics Act of 1990 (Jacobs and Potter, 1998). Although, this law does not provide any form of compensation for victims of hate crime or any special definitions, prosecutorial powers or specific punishments, it is designed to track how many hate crimes occur annually in the United States.

Other examples of Federal statutes are those designed to prevent hate group members from serving in the military and provide for the recording of hate crimes occurring in relation to the military. Specifically the recording of hate crimes perpetrated by or against military personnel on the basis of race, religion or gender (P.L. 11-84). In 2009, the Matthew Shepard and James Byrd Jr. Hates Crimes Prevention Act was enacted as part of the National Defense Authorization Act for Fiscal Year 2010 (P.L. 11-84). This act expanded the original Hate Crime Statistics Act of 1990 and allows for the investigation and prosecution of hate crime on a federal level (P.L. 11-84 § 4701). However, the punishment of hate crimes, usually through the use of sentence enhancement, has been mostly left to the states. (For a review of state legislation, see Jacobs and Potter, 1998 and Jenness and Grattet, 1996). At times, state hate crime legislation has been challenged in the Supreme Court[27] over concerns about the constitutionality of sentencing enhancement for hate crimes. Further research into hate group formation and then subsequent research into hate group behavior can be used to support sentencing enhancement, especially in situations where the accused claims affiliation with a known hate group.

Recent legislation excluded, the limitations of Federal hate crime legislation has not prevented the Federal prosecution of hate group members. Often, as the result of the arbitrary decisions made by prosecutors, hate group members have been labeled as terrorists, especially in cases involving sedition, treason and overt political actions, or situations that were explicitly political, such as the Oklahoma City Bombing (Turk, 1982: Hewitt, 2000: Smith, 1994: Smith, et. al, 2002)[28].

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[27] *R.A.V. v. St. Paul* ruled a Minnesota ordinance unconstitutional on 1st amendment grounds as it prohibited biased or prejudiced speech. *Wisconsin v. Mitchell* upheld Wisconsin's sentencing enhancement, as it dealt with criminal conduct rather than speech. For an examination of both cases, see Jacobs, James B. and Kimberly Potter (1998) *Hate Crime: Criminal Law and Identity Politics*. New York: Oxford University Press.

[28] Beyond any sort of Federal or state prosecution of hate group members, any sort of legal or social institution, such as the Southern Poverty Law Center can attempt to regulate or counter hate groups and hate crime. The SPLC regularly attempts to counter skinhead and other hate group behavior through law suits.

The current count of 1002 active hate groups in the United States as of 2010 is an embarrassment to the image of a nation that prides itself for its position on fairness, equality and impartiality, the underlying tenets of justice and freedom. It is impossible to legislate against hate. Denying the rights of speech and assembly to groups whose beliefs and messages are not popular with the greater population is unconstitutional and provides the framework for a slippery slope of lost rights.

Although FBI Uniform Crime Reports (UCR) data for hate crime provides detailed information about both the victims and the incident, little information is included about the offenders who committed these crimes. This makes it impossible to provide statistics related to whether a perpetrator was or was not affiliated with a hate group. Membership or interest in a particular hate group or ideology is only available in statements made by offenders at arrest or trial, but are not a part of the UCR record. Therefore, the percentage of hate crimes perpetrated by hate group members, hate group supporters, or individuals with no interest in or involvement with a hate group is unknown. Given that hate groups are well entrenched in American society and history and protected by the Bill of Rights, the presence of a hate group and the proliferation of its rhetoric are influential on the behaviors of anyone susceptible to their message, sometimes to the point of violence. More precise information regarding bias crime would lead to a far better understanding of bias motivated crime. This means that keeping some form of record of hate group affiliation in the UCR data for hate crime could be considered vitally important. Being aware of the dynamics of hate group formation may allow for preemptive action on the part of politicians and law enforcement to discourage hate group formation before it becomes a constitutional issue.

Some populations are more susceptible to the ideology and rhetoric of hate groups than others. Among those susceptible populations are those who are currently incarcerated. An understanding of how hate groups form and gain membership is imperative to the Corrections system. Policy and procedure within the prison system is different from the greater population. It is possible to intercept, evaluate, and censor communication. It is also possible to separate dangerous inmates from the rest of the prison population, either through sanction or isolation. Limiting the access of a charismatic leader to a potential group of followers is not impossible within the prison system. Therefore, if future research shows charismatic leadership as the parameter with the strongest correlation to hate group formation, it would be imperative for maintaining order and safety within the prison system to educate staff and administrators on the dangers of charismatic leadership and the identification of charismatic leaders adhering to hate ideologies, so that such individuals could be isolated from General Population prisoners before they gain enough support to cause problems.

In the community, it is not impossible to educate against hate and to combat the rhetoric of existing groups with fact. The foremost benefit in policy as a response to hate group formation is in the education of the potential hate group member to decrease the likelihood that hate group membership would be seen as beneficial or desirable. Programs currently in place to encourage students to identify and embrace diversity are beneficial in combating a desire for hate group membership as it decreases the likelihood of an individual believing rhetoric that belittles demographic groups of individuals based on those characteristics. While the impact of mentoring or education as having the ability to counteract the effects of charismatic leadership has not been determined, from a collective hate focus, these educational programs certainly have merit.

Future Research

Although these models have examined at hate groups as a whole, the data sets include information regarding hate groups at the most extreme levels. The formation of hate groups in these models based on varying levels of hate provides support for Hamm's (2004) theory of collective hate and a basis for future research.

Because of the rich amount of data produced by these simulation models, there are several relationships and elements that can be examined beyond what was analyzed for this dissertation. Future research can examine just the individual agents and their interactions and characteristics to determine what elements of the models really influenced their behaviors and decisions and then new and expanded models can be developed to examine other hate group phenomena. The first step in the research agenda is to examine the individual characteristics and interaction for an expanded understanding of how the individual decisions made by the agents impacted the results. Secondly, the most extreme groups that formed, groups whose mean hate reached 7 or higher, will be analyzed separate from their less extreme counterparts. After this current data is examined, new expanded models will be constructed.

At a glance, this likely provides some interesting effects to examine as far as comparing the most extreme groups formed with other groups formed by these models. The most extreme groups are considered, in the real world, to be those most likely to engage in crime and violence. The first expansion of the collective hate model will examine the effect of hate group membership on hate crime, adding a race characteristic to the agents and a secondary motivation characteristic, this one based on routine activities theory, as a motivation towards crime. As previously discussed, if these models were able to generate hate groups, it is likely that other hate group or hate behaviors can also be modeled. A future examination using a combination of

simulation models and crime statistics should examine the necessity of a hate ideology or hate group membership in the perpetration of hate crime. This would be relatively easy to accomplish through the addition of a second group of agents as potential targets of hate to the existing models. Although the entire picture regarding hate crime is relatively unknown, hate crimes are a logical step in the continuing research on this subject. (See appendix B for a discussion of hate crime in the United States and trends in hate crime statistics over the past 14 years.)

The second expansion of the collective hate model will be used to mimic the concept of "symbolic threat." In cases where the hater commits a criminal act against a person or a number of people who belong to a particular group, the hate crime also may have a pervasive nature that expands the tally of victims beyond the original target or targets to the larger community. This is the element of hate and hate crime known as "symbolic threat."

Those who commit hate crimes may seek not only to affect the immediate target, but also anyone who is a member of or sympathizes with the target group (Symonds, 1980: Berk, 1990: Rayburn, Mendoza and Davidson, 2003: Rayburn, Earlerywine and Davison: 2003: Herek, Gillis and Cogan: 1999: Garnets, Herek and Levy, 1992: Crenshaw, 1998). They may also hope to attract the attention of the media, others who hate the target group and public officials as well as the wider population of an area (Symonds, 1980: Berk, 1990: Rayburn, Mendoza and Davidson, 2003: Rayburn, Earlerywine and Davison: 2003: Herek, Gillis and Cogan: 1999: Garnets, Herek and Levy, 1992: Crenshaw, 1998). In many cases, the specific target does not matter as long as he or she belongs or appears to belong to the hated group (Herek, 1989: Levin and McDevitt, 2002: Crenshaw, 1998: Berks, 1990: Price, 1977: Medoff, 1999). As such, a criminal act directed at that one person is an act symbolically directed at the group as a whole (Herek, 1989: Levin

and McDevitt, 2002: Medoff, 1999). This behavior should be easy to simplify enough for future simulation models, both as individual and group behaviors.

The second half of the research agenda is further examination of the charismatic leader model, especially in light of the marginally number of groups formed by this model. The individual agreements and disagreements within the models and the time constraints of the model will be systematically altered to determine the effect of varying levels of support and detraction in the population, as well as what would happen if the charismatic leader was given a longer period of time to gain followers. Further experimentation with this model will also examine the effect of non-direct contact with the charismatic leader, where the model would be expanded to include a new characteristic giving the agents varying levels of knowledge of the charismatic leader's message. The model will also be expanded upon to include the target variation proposed for expansion of the collective hate model, as well as an event driven model that will seek to mimic the rise of Hitler based on a series of external events that assisted in his acquisition of support.

Summary

Though simulation models are limited by their simplification of the real world, the uses of simulation modeling in the discipline of criminal justice and other social sciences is limited only by curiosity and imagination. The models in this dissertation recreated the formation of hate groups in a manner consistent with the historical accounts of what has happened as hate groups have changed over time. This opens the door to modeling other hate group and hate motivated behaviors, such as the commission of hate crime.

The rich amount of data produced by these models allows for an expanded research agenda to begin with current data and then to influence new models and the establishment of

future data sets. Because of the effectiveness of intrinsic hate as an element of hate group formation, it is very likely that there will never be an end to hate groups in the United States. Although it is not impossible for individuals to change their core internal beliefs, these changes are usually a very personal and difficult journey and not something that can be affected by policy and legislation. Perhaps it will be possible to affect the formation of these core belief systems through education, but this remains to be seen.

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APPENDICES

APPENDIX A

Hate groups in the United States, by State 2006-2009[29]

State	Land Area in Sq. miles[30]	number of cities w/ pop > 100,000[31]	number of Groups 2006	number of Groups 2007	number of Groups 2008	number of Groups 2009	number of Groups 2010
Alabama	50,744.00	4	22	24	36	32	33
Alaska	571,951.26	1	1	0	0	1	0
Arizona	113,634.57	9	10	17	19	16	22
Arkansas	52,068.17	1	19	18	20	24	29
California	155,959.34	62	64	80	84	60	68
Colorado	103,717.53	9	13	12	15	17	19
Connecticut	4,844.80	5	7	6	5	6	6
Delaware	1,953.56	0	2	2	4	4	5
Dist. Of Columbia	61.4	N/A	7	8	8	9	12
Florida	53,926.82	18	49	49	56	51	49
Georgia	57,906.14	5	49	42	40	37	39
Hawaii	6,422.62	1	0	0	0	1	0
Idaho	82,747.21	1	7	8	7	9	13
Illinois	55,583.58	8	23	23	23	28	29
Indiana	35,866.90	4	16	18	7	17	24
Iowa	55,869.36	2	4	4	8	17	6
Kansas	81,814.88	5	6	7	8	6	6
Kentucky	39,728.18	2	12	13	11	10	15
Louisiana	43,561.85	4	24	22	22	28	25
Maine	30,861.55	0	3	1	1	2	3
Maryland	9,773.82	1	11	7	13	13	17
Massachusetts	7,840.02	5	8	9	13	16	10
Michigan	56,803.82	7	25	26	23	26	35
Minnesota	79,610.08	2	9	7	8	9	7
Mississippi	46,906.96	1	28	28	22	25	40
Missouri	68,885.93	4	23	29	30	31	26
Montana	145,552.43	1	5	6	6	12	13
Nebraska	76,872.41	2	4	3	4	4	8
Nevada	109,825.99	4	12	11	13	15	15
New Hampshire	8,968.10	1	5	4	3	5	5

[29] Counts of hate groups from Southern Poverty Law Center
[30] Department of Commerce, Census Bureau – does not include any area covered by water such as lakes, rivers, etc
[31] Census Bureau, 2007

New Jersey	7,417.34	4	34	34	40	44	47
New Mexico	121,355.53	1	2	2	1	2	3
State	**Land Area in Sq. miles[32]**	**number of cities w/ pop > 100,000[33]**	**number of Groups 2006**	**number of Groups 2007**	**number of Groups 2008**	**number of Groups 2009**	**number of Groups 2010**
New York	47,213.79	5	27	26	24	31	31
North Carolina	48,710.88	8	33	28	30	29	28
North Dakota	68,975.93	0	0	1	1	1	4
Ohio	40,948.38	6	31	28	23	27	32
Oklahoma	68,667.06	3	16	13	19	15	23
Oregon	95,996.79	3	9	11	7	10	15
Pennsylvania	44,816.61	4	27	33	37	28	36
Rhode Island	1,044.93	1	0	0	2	3	2
South Carolina	30,109.47	2	45	45	45	36	30
South Dakota	75,884.64	1	0	0	4	3	2
Tennessee	41,217.12	5	35	38	38	37	35
Texas	261,797.12	28	55	67	66	66	59
Utah	82,143.65	4	1	2	5	6	6
Vermont	9,249.56	0	2	1	2	1	2
Virginia	39,594.07	9	35	34	26	22	29
Washington	66,544.06	5	16	20	12	15	13
West Virginia	24,077.73	0	9	7	14	13	13
Wisconsin	54,310.10	3	12	12	10	8	8
Wyoming	97,100.40	0	2	2	2	4	5

Type of group	Freq. 2006	% of groups 2006[34]	Freq. 2007	% of groups 2007[35]	Freq. 2008	% of groups 2008	Freq. 2009	% of groups 2009	Freq. 2010	% of groups 2010
Neo-Nazi	190	22%	207	23%	196	21%	162	17%	171	17%
Ku Klux Klan	165	19%	155	17%	186	20%	186	20%	221	22%
White Nationalist	114	13%	125	14%	111	12%	134	14%	137	14%
Neo-Confederate	102	12%	104	12%	93	10%	68	7%	42	4%

[32] Department of Commerce, Census Bureau – does not include any area covered by water such as lakes, rivers, etc
[33] Census Bureau, 2007
[34]Rounded to nearest full percent.
[35]Rounded to nearest full percent.

Black Separatist	94	11%	81	9%	113	12%	121	13%	149	15%
General hate	79	9%	32	4%	33	4%	41	4%	46	5%
Type of group	Freq. 2006	% of groups 2006[36]	Freq. 2007	% of groups 2007[37]	Freq. 2008	% of groups 2008	Freq. 2009	% of groups 2009	Freq. 2010	% of groups 2010
Racist Skinhead	78	9%	90	10%	98	11%	122	13%	136	14%
Christian Identity	37	4%	36	4%	39	4%	37	4%	26	3%
Racist Music	0	0	14	2%	13	1%	13	1%	15	1%
Radical Traditionalist Catholic	0	0	14	2%	14	2%	16	2%	17	2%
Anti-Gay	0	0	9	1%	12	1%	14	2%	17	2%
Anti-Immigrant	0	0	14	2%	11	1%	12	1%	13	1%
Holocaust Denial	0	0	7	<1%	7	<1%	6	<1%	7	<1%
Anti-Muslim	0	0	0	0	0	0	0	0	5	<1%
Total	859	99%[38]	888[39]	98%[40]	926	99%	932	98%[41]	1002	99%

Type of group	%change 2006-2007	%change 2007-2008	%change 2008-2009	%change 2009-2010
Neo-Nazi	8.9%	-5.3%	-17.3%	5.5%
Ku Klux Klan	-6%	20%	0%	18.8%
White Nationalist	9.6%	-11.2%	20.7%	2.2%
Neo-Confederate	1.9%	-10.6%	-26.9%	-38.2%

[36]Rounded to nearest full percent.
[37]Rounded to nearest full percent.
[38] Does not add up to 100% due to rounding
[39] New categories were added in 2007 and may account for the drop in the general hate – Anti-Gay (9, 1%), Anti-Immigrant (14, 2%), Racist Music (14, 2%), Radical Traditionalist Catholic (14, 2%), Holocaust Denial (7, <1%).
[40] See above for explanation of missing % - with the new categories added = 100%
[41] Does not add up due to rounding to nearest full percent

Black Separatist	-13.8%	39.5%	7.1%	23.1%
General hate	-59.5%	3.1%	24.2%	12.2%
Racist Skinhead	15.4%	8.8%	24.5%	11.5%
Type of group	%change 2006-2007	%change 2007-2008	%change 2008-2009	%change 2009-2010
Christian Identity	-2.7%	8.3%	-5.1%	-29.7%
Racist Music	n/a	-7%	0%	15.4%
Radical Traditionalist Catholic	n/a	0%	14.2%	6.3%
Anti-Gay	n/a	33.3%	16.6%	21.4%
Anti-Immigrant	n/a	-21.4%	9.1%	8.3%
Holocaust Denial	n/a	0%	-14.2%	16.6%
Anti-Muslim	n/a	n/a	n/a	n/a
All Groups Together	3.4%	4.3%	0.65%	7.5%

APPENDIX B

THE CURRENT STATE OF HATE CRIME

The "dark figure of crime," that is, those crimes not reported to the police and not included in official statistics, is of great concern to criminologists and criminal justice practitioners alike (Skogan, 1977: Biderman and Reiss, 1967). All varieties of crime are subject to some underreporting (Skogan, 1977: Biderman and Reiss, 1967). Estimates of the "dark figure of crime" suggest that approximately 50% of violent crimes and 60% of property crimes are not reported to law enforcement (Skogan, 1977: Biderman and Reiss, 1967). Consistent with this, comparisons of official and self-reported incidents of hate crime show substantial underreporting of these crimes. Using data from the National Crime Victimization Survey, the Bureau of Justice Statistics estimated that from 2000 to 2003, an average of 191,000 incidents of hate crime have occurred each year, encompassing 210,000 hate crime victimizations (Harlow, 2005). The respondents of the National Crime Victimization Survey reported that of these, 92,000 incidents of the 191,000 incidents were reported to the police (Harlow, 2005). This means that 99,000 hate crime incidents, or approximately 48% of hate crimes were not reported to the police.

Hate crimes can be difficult to identify and categorize, resulting in part from a lack of interaction between hate crime victims and law enforcement. Also, in some hate crimes the direct victim is not a person (e.g. a building) and therefore not subject to sympathy (Hood & Rollins, 1995). These cases are predominately vandalism. For example, in the case of the Zimmerman library incident[42], the targets of the crime were books and scholarly journals on

[42] In examining a specific, anti-gay and gender-hate event, the Zimmerman Library Incident, Hood and Rollins, address how hate crimes causing limited damage can have an extensive effect on their target community, but are not always identified as hate crimes by those outside of the target community (Hood and Rollins, 1995). In mid-

gender and sexuality that were defaced, hidden or damaged (Hood & Rollins, 1995). A variety of tables showing hate crime in the United States broken down to detail the offenses encompassed by the UCR reports are presented below.

HATE CRIME STATISTICS

Hate Crimes in the United States 1995-2009[43]

Year	Number of Incidents	Number of Offenses	Number of Victims
1995	7,947	9,895	10,469
1996	8,759	10,706	11,039
1997	8,049	9,861	10,255
1998	7,755	9,235	9,722
1999	7,876	9,301	9,802
2000	8,063	9,430	9,924
2001	9,730	11,451	12,020
2002	7,462	8,832	9,222
2003	7,489	8,715	9,100
2004	7,649	9,035	9,528
2005	7,163	8,380	8,804
2006	7,722	9,080	9,652
2007	7,624	9,006	9,535
2008	7,783	9,168	9,691
2009	6,604	7,789	8,336

Type of Offenses[44]1995-2009[45]

Year	Crimes against persons[46]	Crimes against property[47]	Crimes against society[48]
1995	7,144	2,725	-
1996	7,359	3,330	17
1997	6,873	2,973	15

November, 1994 volumes of gender and gay studies journals were removed from their shelves and hidden, they were replaced with library copies of Nazi publications and those left behind were vandalized with Nazi symbols and anti-gender Statements (Hood and Rollins, 1995). Nazi symbols, other graffiti and vandalism were reported across campus (Hood and Rollins, 1995). The Zimmerman Library incident faded into obscurity when the journals in question were located and replaced and the graffiti removed, no charges were filed and campus officials and local media reclassified the incident as a prank (Hood and Rollins, 1995).

[43] All information taken from FBI UCR reports for Hate Crimes from 1995 - 2008

[44] These numbers are from the number of offenses column, not the number of incidents column

[45] All information taken from FBI UCR reports for Hate Crimes from 1995 - 2008

[46] Includes murder, non-negligent manslaughter, forcible rape, aggravated assault, simple assault and intimidation

[47] Includes larceny, burglary, robbery, destruction, damage, vandalism, arson and motor-vehicle theft

[48] Crimes against society were not reported in 1995

1998	6,305	2,905	25
1999	6,189	3,082	30
2000	6,130	3,241	59
2001	7,768	3,607	76
2002	5,960	2,823	49
Year	Crimes against persons[49]	Crimes against property[50]	Crimes against society[51]
2003	5,517	3,139	59
2004	5,642	3,333	60
2005	5,190	3,109	81
2006	5,449	3,593	38
2007	5,408	3,579	19
2008	5,542	3,608	18
2009	4,793	2,079	26

Breakdown of offenses – Crimes against persons 1995-2009[52]

Year	Murder[53]	Rape	Aggravated Assault	Simple Assault	Intimidation	Other[54]
1995	20	12	1,268	1,796	4,048	-
1996	12	10	1,444	1,762	4,130	1
1997	8	9	1,237	1,800	3,814	5
1998	13	11	1,084	1,706	3,488	3
1999	17	6	1,120	1,766	3,268	12
2000	19	4	1,184	1,615	3,292	16
2001	10	4	1,241	2,154	4,339	20
2002	11	8	1,035	1,791	3,105	10
2003	14	5	920	1,809	2,744	25
2004	5	4	1,040	1,750	2,827	16
2005	6	3	1,062	1,566	2,539	14
2006	3	6	1,178	1,737	2,508	17
2007	9	2	1,116	1,684	2,565	32
2008	7	11	1,025	1,778	2,704	17
2009	8	9	914	1,691	2,158	13

Break down of offenses – Property 1995-2009[55]

Year	Robbery	Burglary	Larceny	Vehicle Theft	Arson	Vandalism, etc	Other
1995	194	96	53	5	62	2,315	26

[49] Includes murder, non-negligent manslaughter, forcible rape, aggravated assault, simple assault and intimidation
[50] Includes larceny, burglary, robbery, destruction, damage, vandalism, arson and motor-vehicle theft
[51] Crimes against society were not reported in 1995
[52] All information taken from FBI UCR reports for Hate Crimes from 1995 - 2008
[53] Murder and non negligent manslaughter combined
[54] The other category was not used in the 1995 report for crimes against persons
[55] All information taken from FBI UCR reports for Hate Crimes from 1995 - 2010

1996	155	140	75	7	74	2,874	4
1997	144	111	95	7	60	2,549	7
1998	118	99	81	3	50	2,549	5
1999	129	112	103	14	48	2,654	22
2000	139	138	114	11	52	2,765	22
Year	Robbery	Burglary	Larceny	Vehicle Theft	Arson	Vandalism, etc	Other
2001	158	149	150	15	90	3,018	27
2002	131	131	151	9	38	2,347	16
2003	107	164	173	15	34	2,618	28
2004	112	146	169	15	44	2,812	35
2005	127	136	221	18	39	2,528	40
2006	142	155	261	25	41	2,911	58
2007	178	159	221	40	22	2,915	44
2008	145	158	224	26	53	2,970	32
2009	124	137	163	11	41	2,465	29

Number of Offenses by bias-motivation 1995-2009[56]

Year	Race	Religion	Sexuality	Ethnicity	Disability[57]	Multiple-bias
1995	6,170	1,414	1,266	1,022	-	23
1996	6,767	1,500	1,256	1,163	-	20
1997	5,898	1,483	1,375	1,083	12	10
1998	5,360	1,475	1,439	919	27	15
1999	5,240	1,532	1,487	1,011	21	10
2000	5,171	1,566	1,486	1,164	36	17
2001	5,290	2,004	1,592	2,507	37	21
2002	4,393	1,576	1,464	1,345	47	7
2003	4,574	1,426	1,430	1,236	40	9
2004	4,863	1,480	1,406	1,201	71	14
2005	4,691	1,314	1,171	1,144	53	7
2006	4,737	1,597	1,415	1,233	94	4
2007	4,724	1,477	1,460	1,256	82	7
2008	4,704	1,606	1,612	1,148	85	8
2009	3,816	1,376	1,436	1,109	99	14

[56] All information taken from FBI UCR reports for Hate Crimes from 1995 - 2010
[57] Anti-mental or physical disability hate crimes were not reports in 1995 and 1996

APPENDIX C

AGENT DECISIONS

Agents who are seeking fellow hate agents

Agent looks for closest agent

Finds agent – evaluates agent

Does the agent possess similar hate (agent's extrinsic hate +/-1)?

If no – seek another agent.

If yes – ask if they agree.

If agree – agreeing agent gains tally toward group formation – seek another agent

If disagree – seek another agent

Agents that are being sought

Agent is approached by seeking agent – evaluate agent

Does asking agent possess similar hate (agent's extrinsic hate +/-1)?

If no – immediately disagree.

If yes – randomized decision

If agree – gain tally towards group formation

If disagree – leave interaction

All Agents

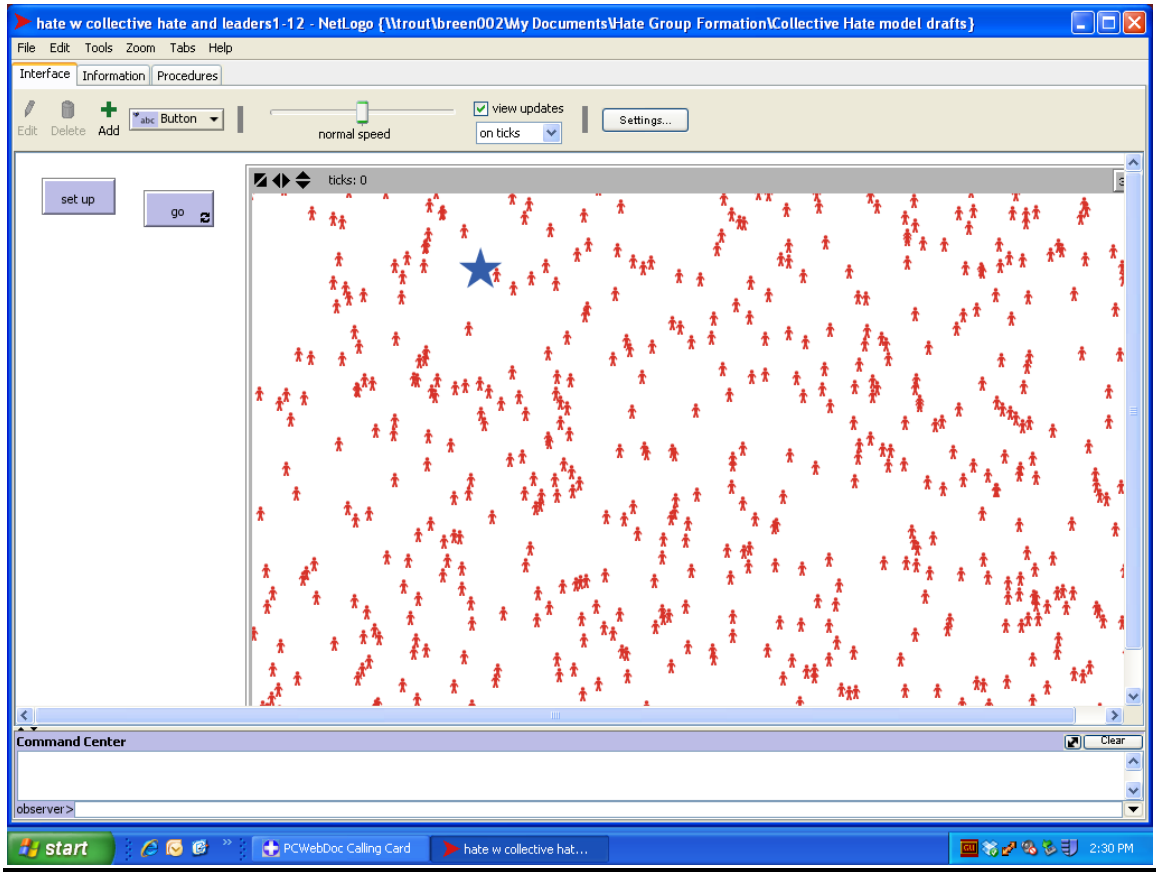
Agent evaluates the level of hate of the three agents closest to itself and within its group if it has joined a group.

Agent can decide to increase or decrease its extrinsic hate at random (may see an emergent tendency to increase or decrease hate in attempts to gain membership)

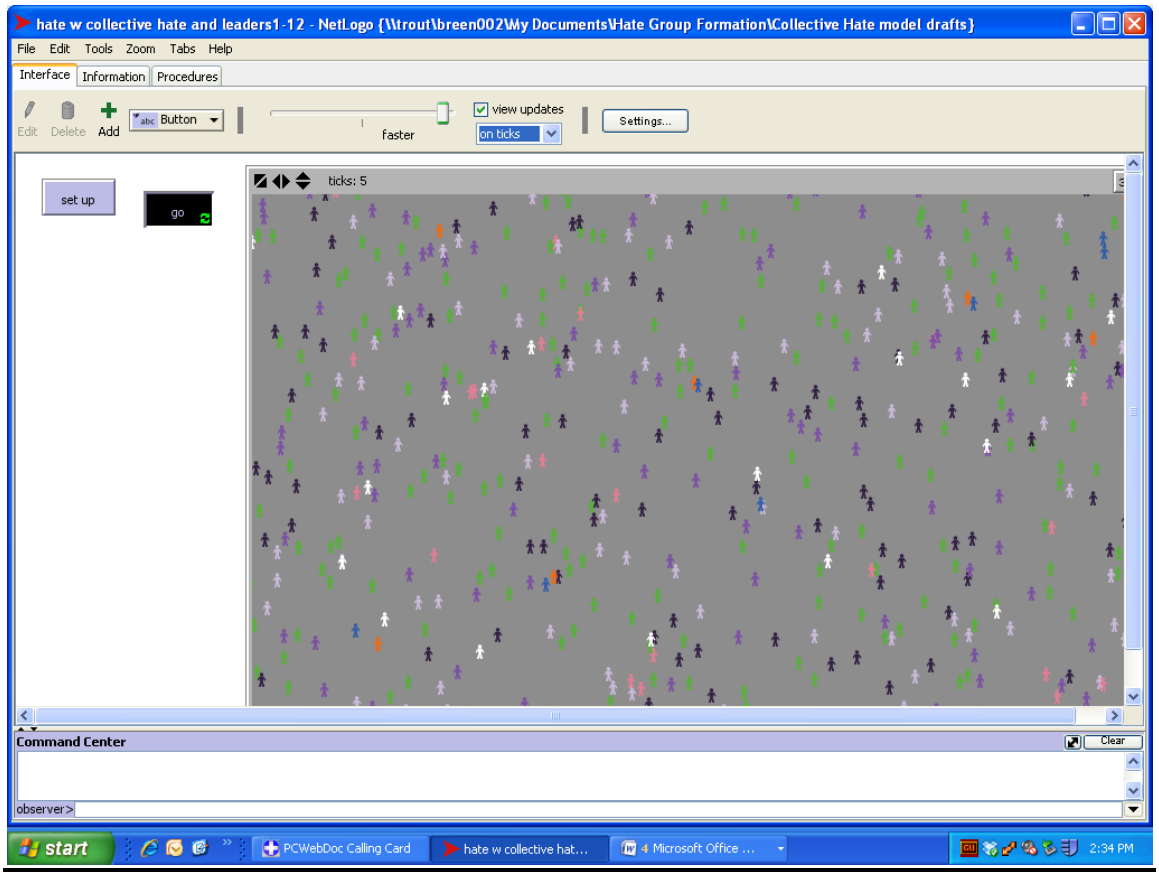
Agents who are members of a group evaluate the group versus their level of commitment and fear – recalculating fear at each evaluation.

Agent can decide to increase or decrease its commitment at random.

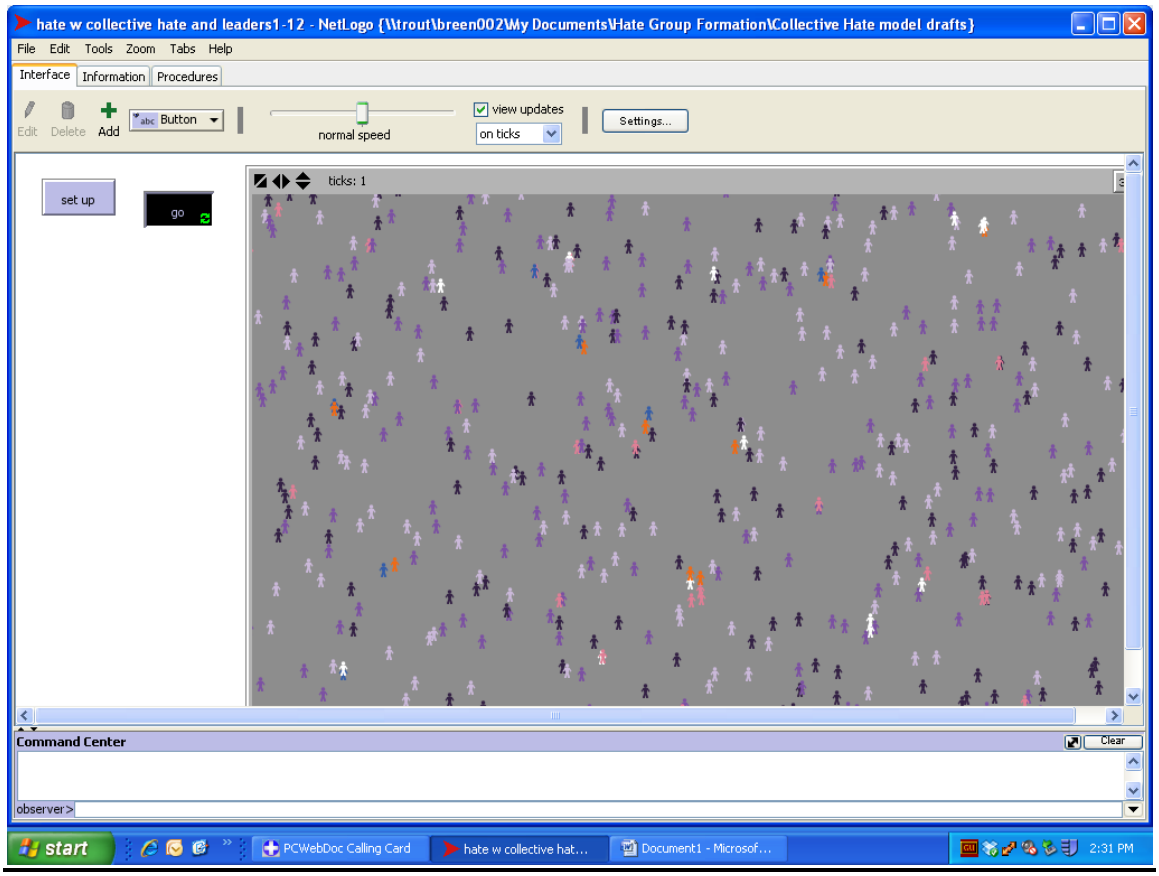
Appendix D



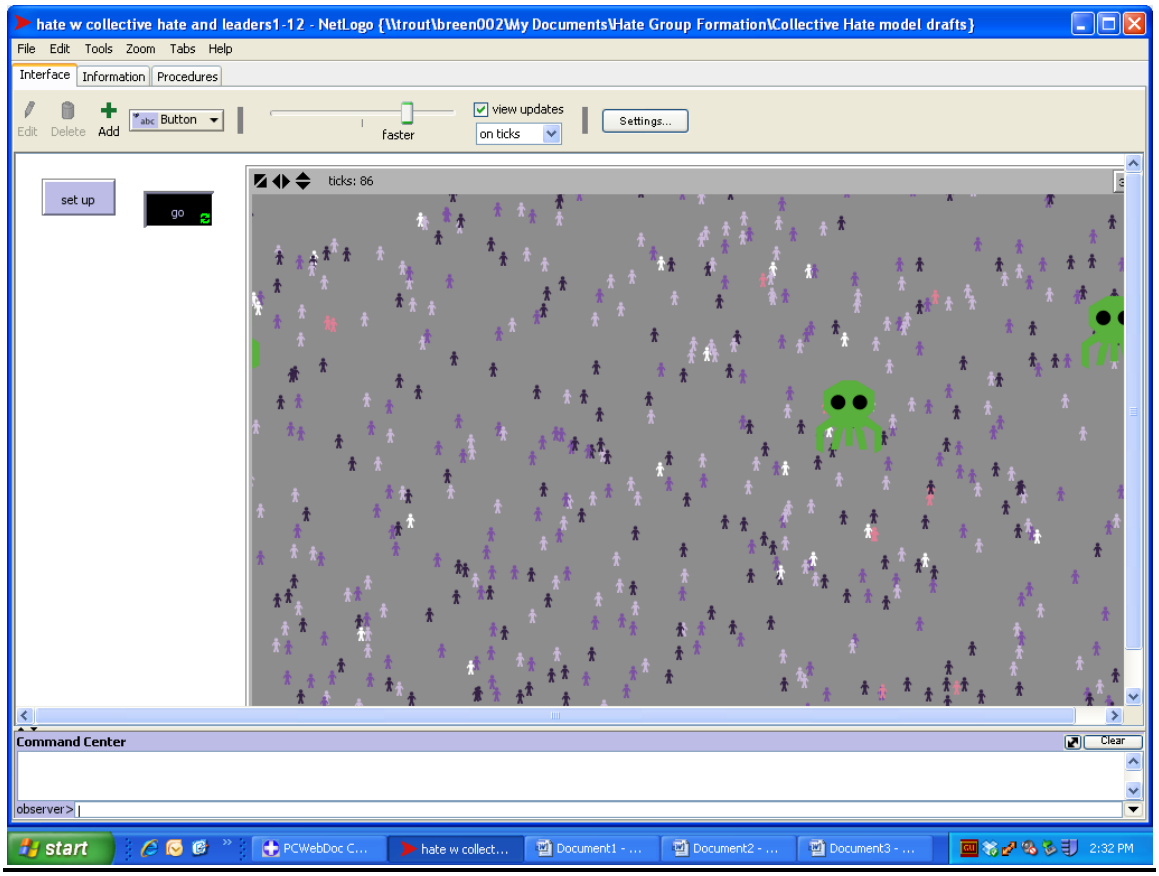
In this screen capture a charismatic leader model has just been set up. The hate agents are at their default setting, represented by the red figures and the charismatic leader is represented by the star in the upper left hand quadrant. Motivation has not yet been applied to the model, so all 500 agents are in attendance. When the model is set to go, by pressing the go button in the tool bar to the left, the agents will change and begin to interact. Over the course of the model run, the agents will change color and move to denote motivation, agreements, disagreements and changes in their extrinsic hate.



This screen capture shows a collective hate model in the early stage of "go." The different shades of purple seen as the majority of agents show agents that are at different levels of motivation, the more motivated, the darker the purple. Interaction between agents also changes their color, though it does not affect their motivation. Agents who are green possess an extrinsic hate greater than 5. Agents who are white have just made an agreement. Agents who are pink have just disagreed with another agent. Agents who are blue have enough agreements to start thinking about forming a hate group. Agents who are orange have just left a group. In this screen capture, the agents who are thinking about creating a group and those who have left are probably in the same group of agreements. The fact that some are appearing orange without a group appearing on the screen shows that the group probably dissolved before it hit a viable formation point.

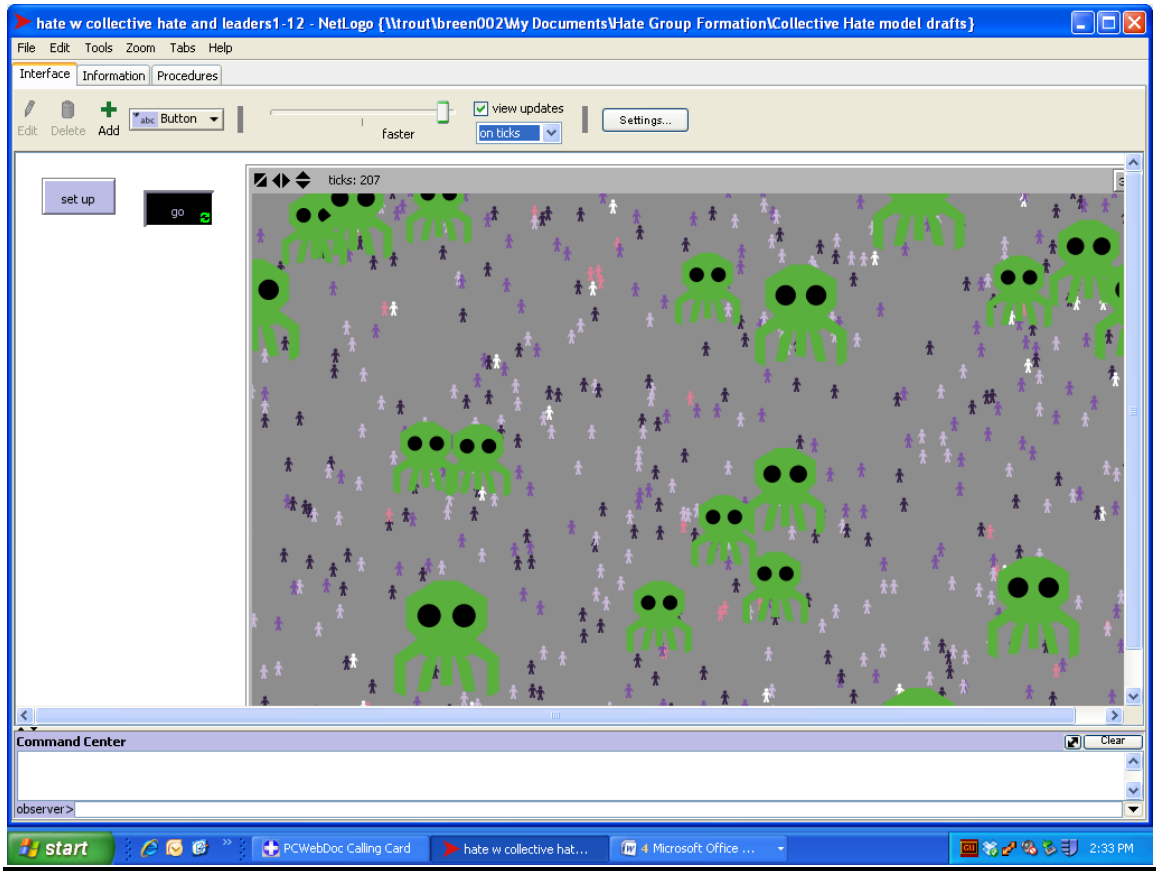


This screen capture shows a similar situation as the previous screen capture. This one however, does not include individuals whose extrinsic hate is five or higher, showing a time where agents have very likely decided to lower their extrinsic hate. White agents are still those who are agreeing with one another, pink agents have just disagreed. Blue agents are contemplating forming a group and orange ones have just left a hate group. The cluster of pink and orange agents towards the center bottom of the screen is very likely a group of agents who came very close to forming a group, possibly the two orange agents agreed with the white agent in the middle, but as the other potential members assembled the disagreements between them resulted in the dissolution of the group rather than its formation.



In this screen capture, hate groups have just formed, identified as the two green "monsters" at the right hand side of the screen. These are new groups, as they are relatively small. The colors of the agents remain the same, white is still recent agreements, pink is still recent disagreements. The shades of purple denote levels of motivation. No blue agents are currently seen in this screen capture as they have gone beyond contemplating forming a hate group to the actual formation point. Because the green "monsters" have appeared, groups have formed. Because no orange colored agents are visible, no one has left these groups. If levels of fear, commitment and hate within the group cause the group to dissolve, these green "monsters" would disappear from the screen and a series of orange agents would be visible denoting the drop outs from the groups. The tick count at the top left hand corner of the model screen shows that this is tick 87, or the afternoon of day 22 (87/4 = 21.75, thus the third six hour block of time,

12pm-6pm, afternoon on the 22nd day.) Therefore, the first groups for this model have formed within the first 22 days of the model run.



This screen capture shows a variety of groups that have formed. The smaller the "monster," the smaller the group, the larger sized "monsters" represent larger groups. Groups can form at any size, so some of these are groups that formed with larger membership and others may have grown to larger membership after formation. The colors of the agents on the screen maintain the same meanings. The lack of blue and orange agents at this point in time shows that at this tick, no one is thinking of creating a new group, nor has anyone left the existing groups. In the upper left hand corner of the model screen the tick number states that this is tick 207. Therefore, by the afternoon of the 52 day (divide 207 by 4, 51.75, thus afternoon (12 pm to 6 pm) or the third 6 hour period of the day), 19 visible groups have formed. Whether these are hate

groups, having an average intrinsic hate within the group of 5 or higher or interest groups, having an average intrinsic hate of 4.99 or lower, cannot be determined simply by looking at the screen. The log file collecting data as the models run will provide that information.

Appendix E

```
breed [agents agent]
breed [leaders leader]
breed [Klans Klan]

globals [
agree-chance
  Klan-chance
societalhate ;; average intrinsic hate of all agents in model (presets at 2, 4, 6, 8)
time-of-day
min-Klan-size
  Klan-limit
leader-limit
  no-agreement-count ;; 100 days
  days-with-Klan  ;; 10 days
days-with-leader
  intrinsic-hate-range ;; changes for each run
base-filename
base-path
]

agents-own
[
id ;; 1-500 identification of the agent
morning ;; used for time-of-day markers, e.g., active in morning
noon
evening
night
extrinsichate ;; random 1-10
intrinsichate ;; random 1-10
in-Klan?     ;; true if an agent belongs to a Klan
   Klan-count  ;; count of how many Klans this agent belongs to
   Klan-list   ;; array of the Klan id's that this agent belongs to
agree?       ;; true if agent intrinsichate +/- 1 of asking agent
disagree?    ;; true if agent intrinsichate +/- 2 of asking agent
commitment    ;; random 1-10 if agent belongs to a Klan
fear       ;;
agreements ;; count agent agreements with other agents
disagreements ;; count agent disagreements with other agents
motivation ;; random 1-3 amount of 6 hour blocks of time agent is active versus inactive
```

```
  leader-list ;; list of the leader agents that I followed at least once...
charisma ;; 0 for all agents except charismatic leader random 1-5
susceptibility ;;  0 for all models without a charismatic leader, if charismatic leader is present
random 1-5
similar-nearby
move-count
tod-count
ticks-in-Klan
ticks-following-leader
]

leaders-own
[
  l-id ;; any identification of leader
extrinsichate ;; random 1-10
intrinsichate ;; random 1-10
agreements ;; count agent agreements with other agents
disagreements ;; count agent disagreements with other agents
motivation ;; random 1-3 amount of 6 hour blocks of time agent is active versus inactive
charisma ;; 0 for all agents except charismatic leader random 1-5
  follower-list ;; list of agents who followed ME at least once.
agree?
disagree?
move-count
tod-count
similar-nearby
]

Klans-own
[
   k-id ;; group identifier
   member-count ;; count of members in the Klan
members ;; turtle ids of members in the Klan
meanhate ;; mean of Klan members intrinsic hate
meancommitment ;; mean of Klan members commitment
meanfear ;; mean of Klan members fear
dropouts ;; turtle ids of the members who left the Klan
]

to setup
```

```
clear-all
setup-globals
create-agents 500
  [
set id who
set in-Klan? false
set agree? false
set disagree? false
set agreements 0 set disagreements 0
set charisma 0
setxy random-xcor random-ycor
set color red
set extrinsichate random 10
set intrinsichate random-poisson intrinsic-hate-range    ;; set intrinsichate random 10
set motivation (random 3) + 1 ;; Want number from [1..4]
set susceptibility (random 4) + 1 ;; Want number from [1..5]
set move-count 0
set tod-count 0
set ticks-in-Klan 0
set ticks-following-leader 0
set fear 0 set commitment 0
set Klan-count 0 set agreements 0 set disagreements 0
set Klan-list n-values Klan-limit [0]
set leader-list n-values leader-limit [0]
  ]
create-leaders leader-limit
  [
set l-id who
set agreements 0 set disagreements 0
set agree? false set disagree? false
set charisma (random 4) + 1 ;; Want number from [1..5]
setxy random-xcor random-ycor
set color blue
set size 3
set extrinsichate random 10
set intrinsichate random-poisson 10    ;; set intrinsichate random 10
set motivation (random 3) + 1 ;; Want number from [1..4]
set move-count 0
set tod-count 0
set follower-list []
```

```
  ]

create-Klans Klan-limit
  [
hide-turtle
set k-id who
set dropouts []
set meanfear 0
set meancommitment 0
set meanhate 0
set members []
set member-count 0
  ]
ask patches [ set pcolor white ]
set-default-shape agents "person"
set-default-shape Klans "monster"
set-default-shape leaders "star"
set societalhate (sum [intrinsichate] of agents / count agents)

end

to setup-globals
reset-ticks
set min-Klan-size 5
set Klan-limit 100
set leader-limit 0
set time-of-day 0
set agree-chance 50
set Klan-chance 25
set no-agreement-count 400 ;; 100 days of no agreements = change to hate
set days-with-Klan 40 ;; 10 days
set days-with-leader 40
set intrinsic-hate-range 6
set base-filename (word "run-" behaviorspace-run-number "-intrinsic-" intrinsic-hate-range)
set base-path "F:\\Leaders"

log-agentset-header
log-Klanset-header
log-leaderset-header
end
```

```
to go
if ticks >= 1460 [ stop ]
set time-of-day (ticks mod 4)
if (time-of-day) = 0 [ reset-motivations
ask patches [ set pcolor grey ]]
motivate-agents time-of-day ticks
motivate-leaders
ask agents [ communicate ]
ask agents [group]
update-agents
log-agentset-variables ticks
log-Klanset-variables ticks
log-leaderset-variables ticks
tick
end

to reset-motivations
ask agents [ ;; clear the time-of-day markers
set morning 0
set noon 0
set evening 0
set night 0
ifelse (motivation = 1)    [ set-TOD-markers (random 1 - 4) set color 118]
[ ifelse (motivation = 2)[ set-TOD-markers (random 1 - 4)
set-TOD-markers (random 1 - 4) set color 115]
[ if (motivation = 3) [ set-TOD-markers (random 1 - 4)
set-TOD-markers (random 1 - 4)
set-TOD-markers (random 1 - 4) set color 112]
      ]
    ]
  ]
end

to set-TOD-markers[n]
ifelse (n = 1)    [set morning 1]
[ ifelse (n = 2) [ set noon 1]
[ ifelse (n = 3) [ set evening 1]
[ set night 1]
       ]
```

```
   ]
set tod-count n
end

to motivate-agents [TOD Current-Tick]
ask agents [
if ((TOD = 0 and morning = 1) or (TOD = 1 and noon = 1) or (TOD = 2 and evening = 1) or
(TOD = 3 and night = 1))
[ ;; Move the agent...
right random 360
if extrinsichate > 5 [ forward 5 set color green ]
forward 1
set move-count (move-count + 1)
set extrinsichate random 10 ;; reset, as this is random...

if ((Current-Tick != 0) and (Current-Tick mod no-agreement-count) = 0) and (agreements = 0)
every 100 days
     [
reset-agent-internal-variables
     ]
if ((ticks-in-Klan mod days-with-Klan) = 0 and (in-Klan? = true)) ;; every 10 days
     [
reset-agent-internal-variables
     ]
if (ticks-following-leader mod days-with-leader) = 0 and ((length remove-duplicates leader-list)
> 1)
     [
reset-agent-internal-variables
     ]
   ]
  ]
end

to reset-agent-internal-variables
set intrinsichate random 10
set motivation (random 3) + 1 ;; Want number from [1..4]
set susceptibility (random 4) + 1 ;; Want number from [1..5]
end

to motivate-leaders
```

```
ask leaders [
set motivation (random extrinsichate)
     Move the leader...
right random 360
ifelse motivation > 5
[ forward 5 set size 3 ]
[ forward 1 set size 1 ]
set move-count (move-count + 1)
  ]
end

to update-agents
ask agents [
set similar-nearby count (agents-on neighbors)
with [extrinsichate = [extrinsichate] of myself]
   ]
end

to communicate  ;; turtle procedure
if (length remove-duplicates Klan-list > 1) [set ticks-in-Klan (ticks-in-Klan + 1)]
if (length remove-duplicates leader-list > 1) [set ticks-following-leader (ticks-following-leader +
1)]

let communicating-agent self
if any? other agents-here with [extrinsichate = [intrinsichate] of myself]
[ if random-float 100 < agree-chance
[ set agree? true set color white set agreements agreements + 1]
   ]
if any? other agents-here with [extrinsichate = [intrinsichate] of myself - 1]
[ if random-float 100 < agree-chance
[ set agree? true set color white set agreements agreements + 1 ]
   ]
if any? other agents-here with [extrinsichate = [intrinsichate] of myself + 1]
[ if random-float 100 < agree-chance
[ set agree? true set color white set agreements agreements + 1 ]
   ]
if any? other agents-here with [extrinsichate = [intrinsichate] of myself - 2]
[ set disagree? true set color pink set disagreements disagreements + 1 ]
if any? other agents-here with [extrinsichate = [intrinsichate] of myself + 2]
[ set disagree? true set color pink set disagreements disagreements + 1]
```

```
leader effects
ask leaders-here with [extrinsichate = [intrinsichate] of myself]
[ ;; <myself> is the asking agent...
ifelse ([susceptibility] of myself > 2)
      [
set color [green + 5] of myself
set color blue
set agreements agreements + 1 ;; leader's agreement count...
set intrinsichate [[intrinsichate] of myself + 1] of myself
set follower-list remove-duplicates (lput ([id] of myself) follower-list)
let my-leaders remove-duplicates (lput l-id [leader-list] of myself )
ask communicating-agent [ set leader-list my-leaders ]
      ]
      [
set disagree? true
set color pink
set disagreements disagreements + 1
set intrinsichate [[intrinsichate] of myself - 1] of myself
let my-leaders remove l-id ([leader-list] of myself)
ask communicating-agent [ set leader-list my-leaders ]
ask communicating-agent [ set ticks-following-leader 0]
      ]
   ]
ask leaders-here with [extrinsichate = [intrinsichate] of myself + 1]
[ ifelse ([susceptibility] of myself > 2)
      [
set color [green + 5] of myself
set color blue
set agreements agreements + 1 ;; leader's agreement count...
set intrinsichate [[intrinsichate] of myself + 1] of myself
set follower-list remove-duplicates (lput ([id] of myself) follower-list)
let my-leaders remove-duplicates (lput l-id [leader-list] of myself )
ask communicating-agent [ set leader-list my-leaders ]
      ]
      [
set disagree? true
set color pink
set disagreements disagreements + 1
set intrinsichate [[intrinsichate] of myself - 1] of myself
```

```
let my-leaders remove l-id [leader-list] of myself
ask communicating-agent [ set leader-list my-leaders ]
ask communicating-agent [ set ticks-following-leader 0]
      ]
   ]
ask leaders-here with [extrinsichate = [intrinsichate] of myself - 1]
[ ifelse ([susceptibility] of myself > 2)
      [
set color [green + 5] of myself
set color blue
set agreements agreements + 1 ;; leader's agreement count...
set intrinsichate [[intrinsichate] of myself + 1] of myself
set follower-list remove-duplicates (lput ([id] of myself) follower-list)
let my-leaders remove-duplicates (lput l-id [leader-list] of myself )
ask communicating-agent [ set leader-list my-leaders ]
      ]
      [
set disagree? true
set color pink
set disagreements disagreements + 1
set intrinsichate [[intrinsichate] of myself - 1] of myself
let my-leaders remove l-id [leader-list] of myself
ask communicating-agent [ set leader-list my-leaders ]
ask communicating-agent [ set ticks-following-leader 0]
      ]
   ]
end

to group ;; turtle procedure
let my-Klan-count Klan-count
let agreeing-agent self
if any? other agents-here with
                        [(extrinsichate = ([intrinsichate] of myself)) or
                         (extrinsichate = ([intrinsichate] of myself) + 1) or
                         (extrinsichate = ([intrinsichate] of myself) - 1) ]
[ if random-float 100 < Klan-chance ;; there will be action to try to form/join Klans
   [
ifelse (my-Klan-count = 0)
[ ;; 'myself' is not in a Klan yet
let agents-that-agree-list (turtle-set self agents-here with
```

```
                    [(extrinsichate = ([intrinsichate] of myself)) or
                     (extrinsichate = ([intrinsichate] of myself) + 1) or
                     (extrinsichate = ([intrinsichate] of myself) - 1) ])
let Klan-count-of-agents-that-agree 0
ask agents-that-agree-list ;; see if any of the agreeing parties are already in a Klan
        [
foreach Klan-list
          [
if (? != 0) ;; add the Klan corresponding to this id to the <Klan-set-of-agents-that-agree' list
            [
ask Klans with [ ? = k-id ]
              [
join-this-Klan agents-that-agree-list
              ]
set Klan-count-of-agents-that-agree Klan-count-of-agents-that-agree + 1
            ]
          ]
        ]
if (Klan-count-of-agents-that-agree = 0)
[ ;; make a new Klan
populate-new-Klan agents-that-agree-list
        ]
     ]
       ]
end

to update-existing-Klan [ KlanID ]
ask Klans with [k-id = KlanID]
  [
;; check to see if anyone should drop out
let maxhate (max [intrinsichate] of members)
;; Determine who should leave the group, now that the group has changed.
let someone_left false

;; ask members [
ask max-one-of members [fear]
        [
if (maxhate >= (2 * fear)) ; see if anyone wants to leave
          [
leave-Klan KlanID self
```

```
set someone_left true
] ;; end if
] ;; end foreach
  ]
end

to leave-Klan [ KlanID someTurtle ]
ask someTurtle [ ;; this turtle is leaving this Klan
set color orange
set Klan-list remove KlanID Klan-list
set Klan-list lput 0 Klan-list
set Klan-count Klan-count - 1
if (Klan-count = 0)
                [
set fear 0
set commitment 0
set ticks-in-Klan 0
set in-Klan? false
                 ]
               ]
ask Klans with [k-id = KlanID]
[ ;; add someTurtle to the dropout list
ifelse (member? someTurtle members)
       [
set members agents with [ member? KlanID Klan-list ]
set dropouts remove-duplicates (lput someTurtle dropouts)
set member-count count members
if (member-count > 0)
         [
set meanhate (sum [intrinsichate] of members / count members)
set meanfear (sum [fear] of members / count members)
set meancommitment (sum [commitment] of members / count members)
         ]
] ;; Pull from this group
[] ;; not in Klan - nothing to do
   ]

end

to populate-new-Klan [ agentList ]
```

```
ask min-one-of Klans [ member-count ]
  [
join-this-Klan agentList ;; should have one clan with nothing in it
  ]
end

to join-this-Klan [ agentList ]
ask self [
let this-Klan-id k-id
ask agentList [ set fear random 5
set commitment random 10
set in-Klan? true
                  ]
ifelse (member-count = 0)
[ ;; Add to an empty clan
set members agentList
ask agentList [ set Klan-count Klan-count + 1
set Klan-list replace-item Klan-count Klan-list this-Klan-id
set color blue ]
set color blue ;; Klan color
     ]
     [
;; Add these agents to a non-empty Klan
set members agents with [ member? this-Klan-id Klan-list ]
ask agentList [
if not (member? this-Klan-id Klan-list)
                    [
set Klan-count Klan-count + 1
set Klan-list replace-item Klan-count Klan-list this-Klan-id
                     ]
                   ]
set color green ;; Klan color
;; beep
     ]
set meanhate (sum [intrinsichate] of members / count members)
set meanfear (sum [fear] of members / count members)
set meancommitment (sum [commitment] of members / count members)
update-existing-Klan k-id
set member-count count members
set size member-count
```

```
move-to max-one-of agentList [intrinsichate]

ifelse (member-count >= 5 ) ;; min-Klan-size)
[ set size member-count ;;(member-count - min-Klan-size + 1 )
          show-turtle ]
[ hide-turtle ]
   ]

end

to log-Klanset-header
set-current-directory base-path
file-open word base-filename "-Klanhate.csv"
  ;;header line
file-type "tick-no , "
file-type "k-id  , "
file-type "member-count  , "
file-type "members  , "
file-type "meanhate  , "
file-type "meancommitment  , "
file-type "meanfear , "
file-type "dropouts "
       file-print ""
file-close
end

to log-Klanset-variables [tick-no]
set-current-directory base-path
file-open word base-filename "-Klanhate.csv"
foreach sort Klans
   [
ask ? [
file-type tick-no
file-type " , "
file-type k-id
file-type " , "
file-type member-count
file-type " , "
file-type word (sort members) ""
file-type" , "
```

```
file-type meanhate file-type " , "
file-type meancommitment file-type " , "
file-type meanfear file-type " , "
file-type word dropouts ""
file-print "";; need to force an end-of-line as recognized by MS Excell
      ]
   ]
file-close
end

to log-agentset-header
set-current-directory base-path
file-open word base-filename "-agenthate.csv"
file-type "tick-no ,"
file-type "id ,"
file-type " intrinsichate ,"
     file-type " extrinsichate ,"
file-type "agreements ,"
file-type "disagreements ,"
file-type " in-Klan? ,"
file-type " fear ,"
file-type "commitment ,"
file-type " motivation ,"
file-type " Klan-count ,"
file-type " Klan-list ,"
file-type " susceptibility ,"
file-type " leader-list ,"
file-type " ticks-in-Klan ,"
file-type " ticks-following-leader ,"
file-print "move-count"
file-close
end
to log-agentset-variables [tick-no]
set-current-directory base-path
file-open word base-filename "-agenthate.csv"
foreach sort agents
   [
ask ? [
file-type tick-no file-type " ,"
file-type id
```

```
file-type " ,"
file-type intrinsichate
file-type " ,"
file-type extrinsichate
file-type " ,"
file-type agreements
file-type ","
file-type disagreements
file-type " ,"
file-type in-Klan?
file-type " ,"
file-type fear
file-type " ,"
file-type commitment
file-type " ,"
file-type motivation
file-type " ,"
file-type Klan-count
file-type " ,"
file-type sort Klan-list
file-type " ,"
file-type susceptibility
file-type " ,"
file-type sort leader-list
file-type " ,"
file-type ticks-in-Klan
file-type " ,"
file-type ticks-following-leader
file-type " ,"
file-print move-count
    ]
  ]
file-close
end
to log-leaderset-header
set-current-directory base-path
file-open word base-filename "-leaderhate.csv"
file-type "tick-no ,"
file-type "l-id ,"
file-type "charisma ,"
```

```
    file-type "intrinsichate ,"
    file-type "extrinsichate ,"
    file-type "agreements ,"
    file-type "disagreements ,"
    file-type "motivation ,"
    file-type "follower-list ,"
    file-print "move-count"
file-close
end
to log-leaderset-variables [tick-no]
set-current-directory base-path
file-open word base-filename "-leaderhate.csv"
foreach sort leaders
  [
ask ? [
file-type tick-no file-type " ,"
file-type l-id
file-type " ,"
file-type charisma
file-type " ,"
file-type intrinsichate
file-type " ,"
file-type extrinsichate
file-type " ,"
file-type agreements
file-type ","
file-type disagreements
file-type " ,"
file-type motivation
file-type " ,"
file-type sort follower-list
file-type " ,"
file-print move-count
   ]
 ]
file-close
end
```

Appendix F

GANNON UNIVERSITY

109 University Square
Erie, Pennsylvania 16541-0001
1-800 GANNON-U (1-800-426-6668)
www.gannon.edu

TO: Dr. Matthew Hiller, Dr. Elizabeth Groff and Dr. Steven Belenko
College of Liberal Arts, Temple University

DATE: 24 January, 2011

SUBJ: Letter of Support for Clarissa Breen

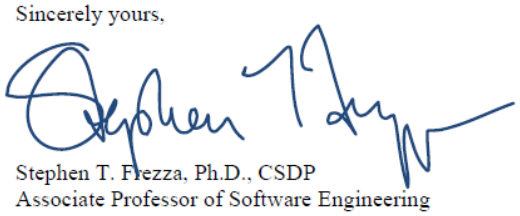
This letter is to document support I provided to MS Breen in developing statistical models for her Ph.D. Thesis. These statistical models were developed using version 4.1.2 of the Net Logo™ software developed at Northwestern University (http://ccl.northwestern.edu/netlogo/). The purpose of the models was to test theories of hate group formation: collective hate and charismatic leadership. Professor Breen provided all of the requirements for the models, and I worked very closely with her to validate the parameterization and operation of the models. Specifically, the models allow for the formation and dissolution of groups without forcing an expected behavior.

The models were developed incrementally, in order that each feature (including the control models) would be in place as further model refinements were developed. Six development iterations were used to expand and validate the various features of the model. This development began in October, 2010 and completed in December 2010 when they were used to create additional data for analysis. To my understanding of the program requirements and the NetLogo™ features, the models appear to be correct and without undocumented bias.

I have attached a copy of my Curriculum Vita if you need verification of my credentials. If you need any more particulars, please feel free to contact me at (814) 871-7563 or via email at *frezza001@gannon.edu* .

Thank you for your time and consideration,

Sincerely yours,



Stephen T. Frezza, Ph.D., CSDP
Associate Professor of Software Engineering
Computer and Information Science Department
Gannon University
109 University Square MB 3181
Erie, PA 16541 USA

Curriculum Vitae

STEPHEN T. FREZZA, PH. D., C.S.D.P.

Home Address:
2963 Poplar St.
Erie, PA 16508
(814) 868-3253
frezza001@gannon.edu

University Address:
Computer & Information Science
Gannon University MB3181
Erie, PA 16541
(814) 871-7563

PROFESSIONAL EXPERTISE

Application of Software Engineering tools and techniques, particularly in the areas of project management, process, requirements, design, and automated testing.

EDUCATION

- **Post-Graduate work in Theology**, Aug. 2009-Present, Gannon University
- **Ph. D. in Electrical Engineering**, Dec. 1995, University of Pittsburgh. Dissertation: "Requirements-Based Design Evaluation Methodology." Advisor: Prof. Steven P. Levitan.
- **M.S. in Electrical Engineering**, Apr. 1991, University of Pittsburgh. MS Thesis: "SPAR: A Schematic Place and Route System." Advisor: Prof. Steven P. Levitan.
- **Post-Graduate work in Computer Science**, Aug.-Dec. 1987, University of Pittsburgh
- **B.S. in Electrical Engineering** cum laude Apr. 1985, University of Pittsburgh

ACADEMIC EXPERIENCE

- **Associate Professor** of Software Engineering Gannon University, Jul. 2005 – Present.
- **Chair, University Learning Outcomes Assessment Committee,** Jul. 2009 – Present.
- **Department Chair** Computer & Information Science Dept., Gannon University, Jul. 2005 – Jun. 2009.
- **Associate Professor** of Electrical & Computer Engineering, Gannon University, Aug. 2001 – Jun. 2005.
- **Acting Department Chair**: Computer and Information Science Dept., Gannon University, Jan. 1997 – May 1998.
- **Assistant Professor** of Electrical & Computer Engineering, Gannon University, Aug. 1995 – Aug. 2001.

COURSES TAUGHT

Course Title	*Level*	*New to Gannon*
Software Engineering:		
Software Project Management	Graduate	Y
Requirements Engineering	Graduate	Y
Requirements and Project Management	Undergraduate	Y
Object-Oriented Modeling	Graduate	Y
Software Engineering Methodologies	Graduate	Y
Software Testing and Quality Assurance	Graduate	Y
Embedded Software Paradigms	Graduate	Y
Software Testing	Graduate/Industry Seminar	Y
Software Engineering	Undergraduate	Y
Software Design and Test	Undergraduate	Y
Program Design using C++	Undergraduate	Y
Computer & Information Science:		
Introduction to Programming	Undergraduate	
Senior Design	Undergraduate	
CIS Professional Seminar	Undergraduate	Y
Computer Engineering:		
Language-Based Digital Design	Graduate	Y
Neural Networks	Graduate	Y

Microprocessors I	Undergraduate	
Microprocessor Design II	Graduate/undergraduate	
Digital Logic Design & Lab	Undergraduate	
Digital Design II & Lab	Graduate/undergraduate	
Computer Architecture	Undergraduate	Y
Advanced Computer Architecture	Graduate/undergraduate	Y
Computer Organization	Undergraduate	
ECE Professional Seminar	Undergraduate	Y
Senior Design	Undergraduate	
General:		
"Tech Think" Freshman Seminar	Undergraduate	Y
Project Economics (team taught)	Undergraduate	Y
Honors Introduction to PCs	Undergraduate	Y
Chancellorsville & Gettysburg Campaigns	Undergraduate	Y

Ph.D. Dissertation Summary

Development of a methodology for automating the evaluation of partial designs using black box testing techniques. The Requirements Based Design Evaluation (RBDE) methodology facilitates the evaluation of partial designs early in the design process by using requirements information to generate and run validation tests. RBDE uses a semantic graph data model, which maintains the relationships between the design and requirements data. These relationships permit the automated generation of equivalent test sets for a simulateable requirements model and the design. This test set is systematically applied to simulations of the partial design and its requirements, generating two sets of directly comparable results.

INDUSTRIAL EXPERIENCE

Consulting Experience (1995-Present)

Software Development Lead, PSI Medical, LLC., Erie, PA; Jan 2010- Present. Lead the software development for a medical information system to collect, track and provide alerts for blood catheter information in clinical settings. Included support for system design, design, quality planning, code construction, testing, deployment, production support and project management.

Software Development Lead, Immersimap, LLC., Erie, PA; May 2008- Present. Lead the software development for a homeland security information system involving distributed video capture, storage and deployment. Included support for system design, design, quality planning, code construction, testing, production support and project management.

Embedded Software Lead, Airborn-Lake City, inc., Lake City, PA; April 2010 ; Dec. 2004- Aug. 2008. Lead the software development for an embedded controller for a prototype custom aircraft power supply. Included support for system design, software specifications, design, quality planning, code construction, testing, production support and project management.

Director, Keystone Software Development Institute, Gannon University. Erie PA. .Jan. 2007- June 2008. Led the formation, funding and staffing of an institute for software development for supporting technology development and transfer.

Software Development Lead, Precision Rehab Manufacturing, North East PA. May. 2007- June 2008. Lead the software prototyping and validation for a video-based surface-mapping system involving o support . Included project planning, customer management and support for system validation, , code construction, and testing.

Chief Technology Officer, Electronic Source Documentation, Inc., Erie, PA; Jan. 2003 – Aug. 2005. Support in the development of entrepreneurial software to support computer-based medical records to support pharmaceutical studies.

IT Development Lead, Beata Clinical Research Services, Inc., Erie, PA; Mar. 2002 – Jan. 2003. Lead a team of interns in the development of entrepreneurial software to support computer-based medical records to support pharmaceutical studies.

Mentor for IMGP Graduate Students, GE Transportation Systems, Erie, PA; Jan. 2000 – Jul. 2003.
Guided four full-time graduate students' work in IT development, including eServices and infrastructure work with General Electric Transportation Systems. Included on-site and on-campus (recruiting, guidance, etc.) work.

eServices Lead Analyst, GE Transportation Systems, Erie, PA; Jun. 2000 – Jul. 2003.
Supported eServices initiatives to enable integrated delivery of product software and software configuration tracking for 5000+ locomotives. Included development of system and software requirements for electronic locomotive performance specifications and automated software configuration health checks.

Software Process Consultant, GE Transportation Systems, Erie, PA; Sept. 1998- June 2001.
Supported efforts in software process improvement, including the training and implementation of Formal Technical Reviews, software estimation and tracking, software metrics, TickIT and ISO 9000 support. Included development of web-enabled tools to support process changes, development of in-house standards and templates, prototype modeling. Sept. 1998- June 2001.

Industrial Trainer, Erie Insurance Group (EIG), Erie, PA; May-December 2002; March-August 2005.
Provided custom short courses to support department-specific training initiatives:

- *Systems Analysis and Design*, 20-hour on/off-site course primarily focused on UML application for practicing systems analysts. (2005)
- *Requirements Management for Business Analysts*, 20-hour on-site custom course on requirements elicitation, documentation, modeling, analysis and review techniques. (2002)

Industrial Trainer, GE Transportation Systems (GETS), Erie, PA; May 1996-Jun. 2001.
Provided custom short- and long courses to support various GE Transportation Systems initiatives:

- *Formal Technical Reviews*, including long and short courses for reviewers, moderators and readers (1999-2001)
- *Design for Six-Sigma*, short course on modeling techniques to support DFSS training. Feb. 1998.
- *Software Testing*, long course focusing on the fundamentals of software testing for embedded systems (1996)

Mentor for ESGP Graduate Students, GE Transportation Systems, Erie, PA; Aug. 1997-May 2001.
Guided graduate students' work in embedded software systems (GETS). Aug. 1997-May 2001.

Positions Held (1985-1994):

Documentation Consultant, Lumin Corporation, Pittsburgh, PA; Jun. - Sep. 1994.
Produced updated version of the user manual for *Small Scale Ticketing* (SST), Lumin's workflow-management tool. Project involved interaction with development and marketing teams.

Quality Assurance Engineer, Formtek, Inc., Pittsburgh, PA; Jun.-Sep., 1992, Mar. - May 1993.
Analyzed, wrote and conducted testing for TIMS document management software. Project involved strong interaction with development team.

Research Engineer, Electric Research and Management, Inc., Pittsburgh, PA; Mar. 1991 - Feb. 1992.
Aided in the research for an EPRI literature search on the biological effects of magnetic fields; also consulted on the development of a magnetic field modeling program.

Knowledge Engineer, Computer Possibilities, Inc., Pittsburgh, PA; Apr. 1988 - Dec. 1990.
Analyzed, designed, wrote, installed a custom commercial expert system to design 50/60Hz transformers for ShapeIMAG, Tempe AZ. Project involved extensive customer interaction and project management.

Software Engineer, Westinghouse D\&ESC, Baltimore, MD; May - Aug. 1987.
Analyzed and converted testing software (ADA) as part of a satellite upgrade program.

Project Engineer, Lutron Electronics, Inc., Coopersburg, PA; Jun. 1985 - May 1987.
Responsible for the development of a family of electronic fluorescent dimming ballasts. Emphasis on power electronics and manufacturing implementations.

PRESENTATIONS AND PUBLICATIONS

Invited Presentations

Stephen T. Frezza, "A Facilitator's bag of Tricks: Dealing with difficult stakeholders," workshop presented to the *August 2010 Project Manager's Forum,* Erie Insurance, Erie, PA, 31 August, 2010.

Stephen T. Frezza, and Mei-Huei Tang, "Testing as a Mental Discipline: Practical Methods for Affecting Developer Behavior," workshop presented at the *2007 Conference on Software Engineering Education and Training* (CSEE&T '07), Dublin, Ireland, 5 July, 2007.

Stephen Frezza, Andrew Getz, Mary Anne Rivera, "Re-visualizing the Mission of the Catholic University for the 21st Century," presented at *A City on a Hill: A Symposium on the Purpose and Identity of Catholic Higher Education*, Steubenville, OH, April 19-22 2007.

Stephen T. Frezza, and Mei-Huei Tang, "Testing as a Mental Discipline: Practical Methods for Affecting Student Behavior," workshop given at the *2006 Conference on Software Engineering Education and Training* (CSEE&T '06), North Shore, Oahu, HI, 20 April, 2006.

Stephen T. Frezza, and Michael J. Caulfield, "*Deus Machinator and the Implications for Catholic Engineering Education*," at *the Role of Engineering in the Catholic University (RECU) Conference*, Dayton, OH, September 2005.

Stephen T. Frezza, Michael J. Caulfield, and Rev. Nicholas J. Rouch, "*Engineering the Catholic Mission: Applying Requirements Best Practices to 'On Catholic Identity'*," at *the Role of Engineering in the Catholic University (RECU) Conference*, Dayton, OH, September 2005.

Stephen T. Frezza and Theresa M. Vitolo, "Systems Analysis and Design," course series given in July 2005 for Erie Insurance Group (EIG) for their Systems Analysts from their Erie, PA facility.

Stephen T. Frezza, "Integrating Requirements Engineering Best Practices, Making Requirements Work," presentation given at the *IEEE-Members Professional Awareness Conference* Erie, PA, May 2003.

Stephen T. Frezza, "Requirements Management for Business Consultants," course series given in September, November and December 2002 at Erie Insurance Group (EIG) in their Erie, PA facility.

Stephen T. Frezza, "Linking Requirements and Design Data for Automated Functional Evaluation," presentation given in March 1997 at NASA/WVU Independent Verification and Validation (IVV) facility in Fairmont, WV.

Other Invited Presentations:

The Germans at Gettysburg
The Turner Regiments in the Civil War
Germans in the American Civil War

Book Publications

Frezza, S., Tang, M-H., and Brinkman, B., "Chapter XVI: How to Create a Credible Software Engineering Bachelor's Program: Navigating the Waters of Program Development," in *Software Engineering: Effective Teaching and Learning Approaches and Practices,* Heidi J. C. Ellis, Steven A. Demurjian, and J. Fernando Naveda, Eds., Idea Group Inc (IGI), 2008, pp. 298-325, ISBN 978-1605661025.

Journal and Conference Publications

Weifeng Xu, Ben Luebbert, Stephen Frezza, Qing Zheng, and Todd Dinner, "Visual Manipulation for Grid-Based 3D Surface Models," *in Proceedings of the 36th Annual Conference of the IEEE Industrial Electronics Society*, Phoenix, AZ, Nov, 2010.

Weifeng Xu, William R. Betz, Stephen T. Frezza, and Wookwon Lee, "Letting Patients' Daily Living Information Speak: A Novel Approach to Study Geriatric Patients with Dementia and Hypertension," in *Proceedings of the World Congress on Engineering and Computer Science*, San Francisco, CA, Oct 2010. Paper awarded the Certificate of Merit for the *International Conference in Modeling Health Advances 2010*. http://www.iaeng.org/WCECS2010/awards.html

Stephen T. Frezza, "Computer Science: Is It Really the Scientific Foundation for Software Engineering?" *Computer*, vol. 43, no. 8, pp. 98-101, Aug. 2010, doi:10.1109/MC.2010.224

Weifeng Xu, Ben Luebbert, Stephen Frezza, Sreela Sasi and Todd Dinner, "Building Customized Cushion Seats Using Stereo Visions for Disabled," in *Proceedings of the 7th International Conference on Information Technology : New Generations*, Las Vegas, NV, April 2010

Eric D. Regan, Stephen T. Frezza, and Jeremy Cannell, "Product-Based Learning in Software Engineering Education", in *Proceedings of the Frontiers in Education Conference* (FIE'09), San Antonio TX, October 2009.

Stephen T. Frezza, "Deus Machinator: God the Engineer", in *Proceedings of Christian Engineering Educators Conference* (CEEC'09), Waco, TX, June 2009.

Richard J. LeBlanc, Ann E. K. Sobel, Donald J. Bagert, and Stephen T. Frezza, "Panel – Assessing the impact of SE2004 Curriculum Guidelines," in *Proceedings of the Frontiers in Education Conference* (FIE'07), Milwaukee, WI, October 2007.

Stephen T. Frezza, "'Real World Problems' as Assessment of Software Engineering", WIP paper in *Proceedings of the Frontiers in Education Conference* (FIE'07), Milwaukee, WI, October 2007.

Stephen T. Frezza, Mei-Huei Tang, and Barry J. Brinkman, "Creating an Accreditable Software Engineering Bachelor's Program" in *IEEE Software*, Vol. 23 No. 6. November 2006, pp 27-35.

Stephen T. Frezza, and Wayne E. Anderson, "Interactive Exercises to Support Effective Learning of UML Structural Modeling", in *Proceedings of the Frontiers in Education Conference* (FIE'06), San Diego, CA, October 2006, pp M2F7-M2F12.

Fong K. Mak, and Stephen T. Frezza, "Collection, Maintenance, and Validation of a Set of Effective Objective Evidence," in *Proceedings of the International Conference on Engineering Education 2005* (ICEE), San Juan, PR, July 2006.

Jeremy C. Cannell and Stephen T. Frezza, "Introducing Software Engineering Principles in CS0 using RoboLab™," in *Proceedings of the 35th ASEE/IEEE Frontiers in Education Conference* (FIE'05), Indianapolis, IN, October 19-22, 2005, pp T1A1-T1A2.

Fong K. Mak and Stephen T. Frezza, "Using student learning outcomes assessment to assure EC2000 program effectiveness," second acceptance and published in *Proceedings of the ASEE/AaeE Global Colloquium on Engineering Education, 2005,* Star City, Sydney, Australia, 26-29 September 2005.

Wook-Sung Yoo, Stephen T. Frezza, and Park, Chi-Yeon, "*PSP Web-Based Log Tool in a Teaching Environment*," in *Proceedings of the IASTED International Conference on Computers and Advanced Technology for Education* (CATE 2005), Oranjestad, Aruba, August 2005.

Fong K. Mak, Stephen T. Frezza, and Wook-Sung Yoo, "*A Web-Based Outcome Assessment Tool: EvalTOOLS™* ," in *Proceedings of the IASTED International Conference on Web-based Education 2005*, Grindelwald, Switzerland, February 2005.

Fong K. Mak and Stephen T. Frezza, "Process to Identify Minimum Passing Criteria and Objective Evidence In Support of ABET EC2000 Criteria Fulfillment," in *Proceedings of the 2004 American Society for Engineering Education* (ASEE) *Conference & Exposition*, Salt Lake City, UT, June 2004. Nominated for best paper.

Stephen T. Frezza, Sreela Sassi, and Jaehoon Seol, "Report from the Trenches: Applying the SEEK to BSSE Program Development", in *Proceedings of the Frontiers in Engineering Education Conference* (FIE'03), Boulder, CO, November 2003.

Fong K. Mak, Wook-Sung Yoo, and Stephen T. Frezza, "Enhancing ABET EC2000 Preparation using a web-based survey/reporting tool", in *Proceedings of the Frontiers in Engineering Education Conference* (FIE'03), Boulder, CO, November 2003.

Fong K. Mak, Wook-Sung Yoo, and Stephen T. Frezza, "Web-based Course-exit Survey for ABET EC2000", in *Proceedings of the 2003 American Society for Engineering Education* (ASEE) *Conference & Exposition,* Nashville, TN, June 2003.

Stephen T. Frezza, "Integrating Software Testing and Design for Undergraduates", proceedings of *the Frontiers in Engineering Education Conference* (FIE'02), Boston, MA, November 2002.

Stephen T. Frezza, "Integrating an Industrial Practicum into a Graduate Embedded Software Engineering Program," proceedings of *the Frontiers in Engineering Education Conference* (FIE'99), San Juan, PR, November 1999.

Stephen T. Frezza, and Roy M. Voshall, "Industry/Academic Collaboration in Senior Design," *ASEE 1999 Spring Conference, North Central Section.*

Roy M. Voshall and Stephen T. Frezza, "Capstone for Cross-Disciplinary Ethics and Design," *ASEE 1999 Spring Conference, North Central Section.*

Stephen T. Frezza, "An Undergraduate Software Engineering Program ... In Electrical Engineering," proceedings of the *Frontiers in Engineering Education Conference* (FIE'98), Tempe, AZ, November, 1998.

Samuel L. Hazen and Stephen T. Frezza, "An Integrated Program and Practicum in Embedded Software Engineering," in proceedings of the *Frontiers in Engineering Education Conference* (FIE'97), Pittsburgh, PA, November, 1997.

Stephen T. Frezza, Steven P. Levitan and Panos K. Chrysanthis, "Linking Requirements and Design Data for Automated Functional Evaluation" *Computers in Industry*, 30(1996) pp. 13-25.

Stephen T. Frezza, Steven P. Levitan and Panos K. Chrysanthis, "Requirements Based Functional Evaluation" *32nd Design Automation Conference* (DAC), San Francisco, CA, June 1995, pp. 76-81.

Stephen T. Frezza, "Automating Requirements-Based Testing for Hardware Design" *IEEE Int. Symposium on Requirements Engineering Doctoral Consortium* (RE'95), York, England, March 1995.

Stephen T. Frezza, Steven P. Levitan and Panos K. Chrysanthis, "Requirements Based Performance Evaluation" *Proceedings of the 1995 National Science Foundation Design and Manufacturing Grantees Conference*, San Diego CA, January 1995, pp. 539-540.

Stephen T. Frezza and Steven P. Levitan, "SPAR: A Schematic Place and Route System" *IEEE Transactions on Computer-Aided Design of ICAS*, Vol. 12, No. 7, July, 1993, pp. 956-973.

Other Publications:

Stephen T. Frezza, "SWEBOK Knowledge Area Jump-Start Document for Software Testing" for the *Software Engineering Body of Knowledge project - http://www.swebok.org*, joint ACM/IEEE Software Engineering Coordinating Committee, February 1999.

GRANT DEVELOPMENT

PA Dept. of Community and Economic Development, Technology Development Office, "*Keystone Innovation Grant*" Keystone Innovation Grant proposal for industry-academic partnerships. $75,000 awarded. April 2010-March 2011.

PSI Medical, LLC, "*Product Demonstration Development Grant*" for work in prototype development for medical information systems in collaboration with Meadville Medical Center. PSI Medical, LLC, Erie, PA. $30,000 awarded Jan-Dec 2010.

CE Convergence, LLC, "*Interactive Prototype Grant*" for work in interactive requirements prototype for professional development information management system. CE Convergence, LLC, Erie, PA. $3,000 awarded Jan-May 2010.

Immersimap, LLC, "*Software development for panoramic video*" for work in prototype development and initial system deployment for 3D-building mapping system and software. Immersimap, LLC, Erie, PA. $115,000 awarded April 2007-June 2009.

PA Dept. of Community and Economic Development, Technology Development Office, "*Keystone Software Development Institute*" Keystone Innovation Startup Kit proposal for faculty recruitment. $119,772 awarded. April 2008-June 2009.

Precision Rehab Manufacturing, Inc., "*PRM Stereo Image Digitizer and Mill Software Beta Release*" for the development of image-based measurement system and editing software. Precision Rehab Manufacturing, North East, PA. $58,000 awarded April 2007-Sept 2009.

Steris Corporation, Erie PA: *"Career Development Grant,"* for work in requirements development for international regulatory information. Steris Corporation, Erie, PA. $1449 awarded February-May 2004.

MultiGig., LTD. England: "*Automatic Schematics Generation (ASG) tools for high-speed circuit design,"* Involves application of ASG to HSPICE files, and includes integration of enhanced SPAR algorithms into XCircuit schematics capture tool (http://xcircuit.ece.jhu.edu). $14,000 awarded April 2003-2004.

Rational Software, Cupertino, CA: as part of the IBM University Program: 52 user licenses for their Rational Enterprise Suite; This software was in use for SIC310 Software Design & Test, SIC315 Software Engineering and GENG586/GCIS512 Object-Oriented Modeling, GENG580/GCIS504 Requirements Engineering courses. Total value of grant: Apx. $700,000.

Beata Clinical Research Services, Erie PA: Developed a prototype of a system to apply eBusiness technology to the collection of data used in pharmaceutical trials. Total value of contract: Apx. $5,000.

Project Enhance (IU5), Edinboro PA: Six sets of Lego/Dacta robots, including site-licensed software. Used for IU5Project Enhance programs. These kits and accompanying materials spurred school interest to use the robots in undergraduate classes (SF101 & SC190). Total value of grant: $2,400.

General Electric Transportation Systems (GETS), Erie PA: Five funded Graduate Student Scholarships, including stipends, mentoring hours, and faculty consulting. In collaboration with Dr. Wook-Sung Yoo (CIS). Total value of contract: $91,000.

PROFESSIONAL MEMBERSHIPS

- Institute of Electrical and Electronics Engineers (IEEE) 1984, Senior Member 2011.
- IEEE Computer Society, 1986; Volunteer for Educational Activities Board (EAB), Nov. 2006 to present. Frontiers in Education Conference (FIE) Steering Committee member, 2011-present.
- ACM Special Interest Group on Computer Science Education (SIGCSE), 1998
- Association of Catholic Scholars, 2002

PROFESSIONAL CERTIFICATION

Certified Software Development Professional (CSDP) # 0088 May 2001, January 2005, January 2008.

Appendix G

Validation and Verification

Model Verification

As previously stated in Chapter Five, model verification ensures that there are no problems with the software and the programming of the model (Manson, 2001). In order to determine whether or not the models were viable and the programming correct, Dr. Stephen Frezza of the Computer Science Department of Gannon University examined the model programming language for mistakes. Dr. Frezza also provided assistance and suggestions regarding programming language based on his expertise in the areas of JAVA and computer programming. Dr. Frezza ran a series of model runs separate from the model runs designed to test the hypotheses to check the mechanics of the models. He ran partial segments of the programming code varying discernable outcomes, such as having agents change color to show particular characteristics or adherence to behavior rules. Dr. Frezza actively discussed the results from these test runs with the modeler and assisted in rewrites of the model programming when errors were detected. Dr. Frezza asserts that the models were accurate in accordance with the characteristics and behavior rules of interest. Dr. Frezza's letter of support and CV can be found in Appendix F.

Model Validation

Model validation is related to how close the model comes to replicating the behaviors or phenomena of interest (Manson, 2001: Gilbert and Troitzsch, 2005). This process is considered easier when the model is tied to a theory (Manson, 2001). The models used in this dissertation are linked to two theories; Hamm's (2004) collective hate and Weber's (1947) charismatic

leadership. The concepts inherent in these theories are detailed earlier in this chapter and were manipulated as parameters in the model testing phase with Dr. Frezza. The validation of how well the models recreated the theoretical and real world phenomena of interest, hate group formation will be determined through two validation analyses using the dependent variables listed in Table 25 below.

Table 25: Dependent Variables for Validation

Dependent variable	Conceptual Definition	Operational Definition
Most extreme group	The group with the highest collective intrinsic hate	A group with a minimum of 5 members with the highest average intrinsic hate
Number of supporters	The number of supporters personally connected to the charismatic leader	The number of supporters personally connected to the charismatic leader

Conceptually and operationally, *the most extreme group* is the group with the highest average intrinsic hate formed over the course of a model run. This is the core test of collective hate, whether or not a group of individuals was brought together due to an intense collective hatred. This is the dependent variable for the overarching research question regarding collective hate and serves as part of the validation of the collective hate experiment model.

Conceptually and operationally, *the number of supporters*, is the number of supporters personally connected to the charismatic leader. These are individuals who have agreed with the charismatic leader when they have come in contact with him. This is the core test of charismatic leadership, whether or not the charismatic leader can draw in direct supporters. This is the dependent variable for the overarching research question regarding charismatic leadership and serves as part of the validation of the charismatic leadership experiment model.

Validation of Collective Hate

A two-way ANOVA was conducted that examine the effect of societal hate and type of experiment on the most extreme hate group formed. The dependent variable, most extreme hate group did not have any homogeneity in variance as assessed by the Levene's test for equality of error variances. There was not a significant interaction between the effects of type of experiment and societal hate on the most extreme group formed. Individually, the level of societal hate F (4, 2) 246.4, $p<.001$ and the type of experiment $F(2, 4)$ 7.9, $p<.001$ did have a significant effect on the most extreme group formed. Figure 8 below shows the profile plots for the most extreme group formed during each experiment at the varying levels of hate.

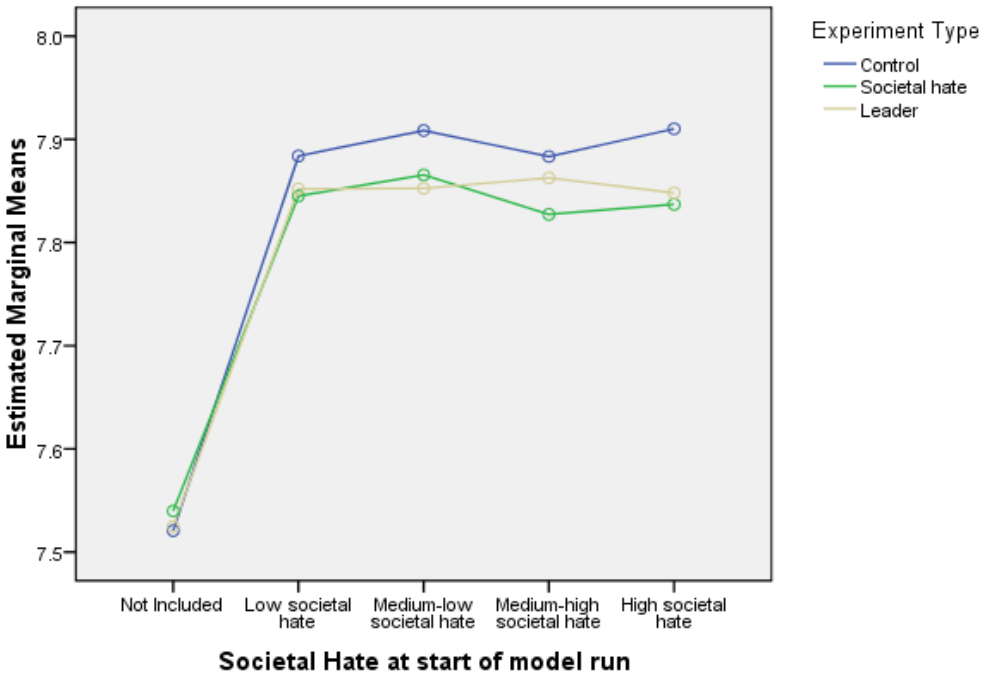


Figure 8: Most Extreme Hate Group Profile Plot

Hamm's (2004) theory of collective hate states that individuals are drawn together due to an intense collective hatred. This analysis shows that groups with an intense collective hatred were formed at the absence of and at all levels of societal hate, in the control, collective hate and charismatic leader experiments. The *control model* significantly produced the most hate groups and the largest hate groups. These groups were also the most extreme at every level of societal hate. This follows the basic logic that the control model had the absolute fewest moving parts. Agents in the control model were locked into their respective levels of intrinsic and extrinsic hate. They could not change these values. As such, societal hate also remained constant. The control model produced hate groups at each level of societal hate at a rate that is lower than the number of hate groups added to the SPLC list this past year.

However, these hate groups were being developed in a simulated society that did not have already existing hate groups. Further, the SPLC looks at hate groups forming on a national scale, while the population of these models was 500 agents. For 500 agents to form as many hate groups as they did over the course of these model runs could show that these models produced more hate groups than a comparable society in the real world would have formed. As a foundation, all the models produced a reasonable amount of hate groups.

The *collective hate model* produced fewer hate groups and groups that were significantly smaller than the control model, but agents were able to change their intrinsic and extrinsic hate, further resulting in changes in societal hate. These changes are more likely to be similar to real world behavior of potential hate group members than the stagnant levels of intrinsic, extrinsic, and societal hate in the control model. These models produced less extreme groups, but those groups followed a similar distribution of level of extremism to that of the control models.

The *charismatic leader model* produced the fewest hate groups and also significantly smaller groups. This merits further investigation of the data to determine if the behavior of the charismatic leader truly mimicked a real world charismatic leader. While this model presented the greatest number of options for changing intrinsic, extrinsic, and societal levels of hate, the model itself may have been too simplistic to recreate a charismatic leader scenario. One point to note however, in examining the level of extremism among groups formed in the charismatic leader model, when societal hate was at level 6, the charismatic leader model produced more than the collective hate model. The next section examines the validation of the charismatic leadership experiment.

Validation of Charismatic Leadership

A two-way ANOVA was conducted that examine the effect of societal hate and level of charisma on the number of supporters following the charismatic leader. The dependent variable, number of supporters did not have any homogeneity in variance as assessed by the Levene's test for equality of error variances. There was a significant interaction between the effects of level of charisma and societal hate on the number of supporters $F(16, 4)$ 165.8, $p<.001$. Individually, the effect of level of charisma $F(4, 4)$ 64980.5 , $p<.001$ and level of societal hate $F(4, 4)$ 948.3, $p<.001$ were also significant. Figure 9 below shows the profile plots for the number of supporters the charismatic leader acquired at the varying levels of hate, based on different levels of charisma.

Weber's (1947) theory of charismatic leadership postulates that a charismatic leader draws individuals to him. This analysis shows that individuals were drawn to the charismatic leader as supporters at the absence of and at all levels of societal hate and at each level of charisma assigned to the charismatic leader.

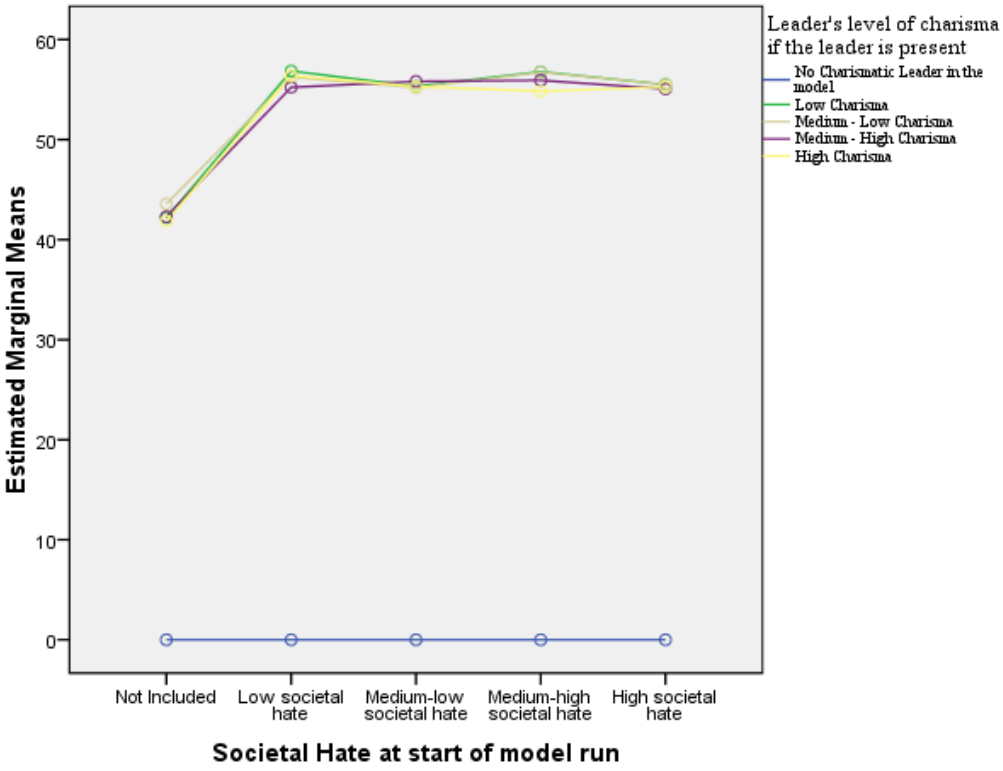


Figure 9: Number of Supporters Profile Plot

The charismatic leadership models dealt with personal connections and face-to-face meetings between the agents in the model and the leader over the course of the model run. They did not look at the leader's influence as a more nebulous presence. On average over the course of a model run, the leader agent met with approximately 20% of the population of the model. Of that 20%, his supporters or detractors continuously shifted, so that one group outnumbered the other on a regular basis. His supporters, as illustrated by Figure 9 above, averaged out between 40 and 60, with more supporters, on average, at higher levels of societal hate. This means that between 8 and 12% of the population supported the charismatic leader. When Hitler came to the forefront of the Nazi party, he garnered varying levels of public support (Goldhagen, 1996;

Gellately, 2001; Kershaw, 2008). Looking at election records, in 1928 his party received 2.6% of the votes for the Reichstag, 18.3% in 1930, 37.3% in 1932, and 43.9% in 1933 (O'Lessker, 1968). A recent study in Germany, conducted by the Friedrich Ebert Foundation found that about 13% of Germans would welcome the election of a new 'Fuhrer' in Germany to restrict immigration, limit the practice of Islam, and decrease the influence of Jews in Germany (Marquand, 2010). So, while representative of past instances where support for a charismatic leader, the small percentage of support for the charismatic leader in the model is likely indicative of increased support that would have developed if the models have run for longer than one simulated year. The smallest following occurred when societal hate was not included in the model; this makes sense due to the fact that charismatic leaders are very situational. The concern is that the levels of charisma do not seem to engender much difference in how much support the charismatic leader gained. As long as the leader possessed even the minimal level of charisma, a following developed. This does match up with historical accounts of Hitler, while he was a great orator and passionate in his message, his personal habits and mannerisms made him someone that most people would not be comfortable with should they meet him on the street (Kershaw, 2008; Gellately, 2001; Fritzsche, 2008).