# ACTIVISM UNDER OPPRESSION

How Internet-Age Social Movements Organize to Resist Structural Attacks, Internal Schisms, and Disinformation



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#### Abstract

This study explores how Internet-organized social movements react to threats of internal schism, infiltration, and external legal and political pressure. The investigation is focused on styles of leadership and how membership of a movement is defined. Using maps of social interactions within Twitter communities, the study analyzes the structure of social movement leadership and membership, and compares their methods of conflict-resolution against what is predicted by contemporary research on infiltrating and discrediting social organizations. This analysis found that organizations in threat of external attack, by law enforcement or public shunning, rely on an anarchic structure and loosely defined membership to protect the identities of their participants. In contrast, organizations facing internal conflict or infiltration form more hierarchical leadership and tightly controlled membership lists to isolate threats to group consensus. These findings have the potential to aid future movement organizers in making more robust organizations in hostile political climates.

# 1 INTRODUCTION

Social movements face two broad categories of threats: External, and Internal. External threats are any dangers the movement faces from individuals or groups outside the movement, such as arrest and dissolution by law enforcement, as in the case of social movements advocating illegal activity, such as Antifa or hactivist groups like Anonymous. External threats also include social ridicule and exile, particularly in the case of broadly socially unacceptable movements like white supremacy. Internal threats are any dangers originating from members within the movement, and include disagreements over strategy and methodology, leadership disputes, and disinformation or other undermining campaigns by hostile actors within the movement. While "hostile actors" can include agent provocateurs from an external group, these individuals are by intention indistinguishable from legitimate angry or disillusioned members of the movement, and therefore have to be treated as an internal threat. This study outlines the close connection between the structure of a social movement, and the internal or external threats it is defending against.

Throughout this paper I will refer to both *social movements* and *activist networks*. In this context, activist networks are the communities of participants within a social movement. A movement encompasses both the people in it and a broader political struggle, including objectives and methodology. Therefore the terms are closely related, but not interchangeable.

In this study, I analyze the structure of activist networks on social media, particularly Twitter. These groups are of interest because their use of "digital commons" allows them to organize rapidly, without central leadership, at a massive scale. These groups therefore may present novel techniques for social mobilization, with strengths and weaknesses unseen in earlier social movements.

I view these groups through the lens of *Social Choice Theory*; a socioeconomic framework wherein social behavior results from the summation of individual decisions, which are based on individual preferences, beliefs, and needs (Arrow 2012). Therefore, large-scale behavior is shaped by the most dominant beliefs and needs of the group, and by examining large-scale behavior one may gain insight in to the intentions of the participants. This framework has previously been used both to study online social movements (Castells 2015), and to examine computer crime and collective abuse of information technology (Charki, Josserand, and Boukef 2017), an approach I find particularly relevant, as any form of online social movement is both socially deviant and an unintended application of the online platform. I also draw from *Symbolic Repertoires*, a concept wherein different cultures develop their own terminology, ideology, methodology, and symbolism (Hess 2007). Invocation of this repertoire indicates alignment with and participation in a culture, and is therefore central to in-group out-group definition. These repertoires are used unintentionally to maintain group cohesion, but can also be invoked explicitly to build solidarity between movements, or to gain legitimacy within a movement (Williams 2004). Of particular interest are *Repertoires of Contention*, which are the methods and strategies social movements choose to engage with external organizations like law enforcement and media.

Since I am interested in activist networks on social media I will focus this study on decentralized and ostensibly leaderless organizations; the most prevalent form of social movement with a large social media presence. Of particular interest are the following questions:

- How is membership of decentralized movements defined? Do formal initiation rituals benefit or limit a movement?
- 2. How are decisions made in online movements? Is there diffused leadership, consensus, or individual direct action? What effects do these strategies have on group cohesion?
- 3. How vulnerable are different leaderless designs to infiltration and disruption by external forces? Which organizational strategies are the most resistant to disruption?

Answering these questions will be beneficial for two groups. First, movement organizers will have data to support decisions on group hierarchy and communications methods, hopefully aiding the creation of more efficient and robust social movements. Second, academic researchers will have a starting point for mathematical and computer modeling of social movements, an area so far surprisingly devoid of study. This supports future research which will hopefully be of further benefit to movement organizers.

# 2 BACKGROUND

This study is based on three corpuses of literature. First, a swath of political science and activism history must be examined to develop a vocabulary describing the leadership and communications techniques deployed in a wide array of social movements. These are not only formal academic texts

analyzing movements, but also primary-source material from the movements themselves, outlining organizational plans for other activists. Next, a corpus of quantitative social science is studied to inform the creation of a model that can represent arbitrary social organizations in a plethora of different leadership hierarchies. This corpus combines sociology with information theory and computer science, and will deviate considerably from the earliercited political texts. Finally, a survey of methods from "attackers" will be inspected. This section focuses on academic research done on behalf of federal intelligence and military agencies. Especially cited are an array of studies sponsored by the United States *Army Research Lab* on the spread of propaganda through instigating agents and the susceptibility of different network structures to attack. Much of this research is conducted by professors and students (including myself) at *Rensselaer Polytechnic Institute* through the *Social Cognitive Network Academic Research Center (SCNARC)*<sup>1</sup>.

#### 2.1 An Overview of Modern Activism

Activism on social-media, or "Hashtag Activism", is rapidly gaining popularity as a protest medium (Bonilla and Rosa 2015). Some of this is, as many critics are quick to point out, because participation is often trivial. There is no need to leave the comfort of home to find like-minded individuals online and spread a message. However, this explains only the instigation of online movements, not their manifestation as physical protests as in *Occupy* or the 2010 *Arab Spring* protests (Gerbaudo 2012). An alternative explanation is the difference in citizen engagement: Entering hashtag activism means immediately participating as a peer, not joining an existing institution like the Black Panthers and being put to work.

Social media creates a feedback chamber, a local community where the effects of Internet and real world activism are echoed back on a user's feed. This is a *generative context*, or a space where the effects of work remain local, and therefore workers have the potential to directly benefit from their own labor (Lyles et al. 2016). Parmy Olson, a historian of modern social movements, suggests that self-rewarding work has been crucial in contemporary movements, and that peer participation on social media allows participants to choose how they wish to be engaged, choose their engagement level, and always participate in a manner most rewarding for them (Olson

2012). Cybernetician Ron Eglash defines this pattern as *Generative Justice*, or "the bottom-up circulation of unalienated value" (Eglash 2016).

Modern activist movements may not aim to be long-standing, and lack an ability to change focus (Tufekci 2014b). Without leadership it is difficult if not impossible to develop consensus on a change of methods or objective. Instead, modern social movement are often developed for a specific action, such as the Occupy protests, or the counter-protest to the Defund Planned Parenthood rally in early 2017. Once the action is fulfilled the movement disperses, although the sentiment that brought it together can create additional movements again and again (see the plethora of resistance movements like Indivisible started after initial protests of the Trump inauguration). In this design, movements facilitate networking and building future movements, rather than perpetuating their own existence. Some academics consider this to be a limitation of Internet activism; great success in rapid recruitment has not led to lasting social change (Tufekci 2014a). Nevertheless, the model is highly praised by French anarchists in The Coming Insurrection, which argues that all activist movements succumb to corruption or bureaucratic inaction if not regularly destroyed and rebuilt (The Invisible Committee 2009).

# 2.2 Traditional Decentralized Social Movements

Decentralized organizations are not a contemporary idea, and are not constrained to small or short-lived groups. As a case-study, Alcoholics Anonymous (AA) is a leaderless, localized organization founded in 1935 that is still unquestionably active today. Their organizational principles, called the *Twelve Traditions* (not to be confused with the *Twelve Step Program*), stress the success of the group over the success of the individual (Room 1995). The organization goes as far as requiring that all press-announcements be made anonymously, to prevent the rise of any leadership and deviation from the core mission of the group. Each chapter of the organization is run completely autonomously, except when dealing with matters concerning other AA chapters or the organization as a whole.

A more extreme variant of Alcoholics Anonymous' autonomous chapters is the secretive and localized "cell" design. In this model, participants are only in contact with a handful of other actors, protecting anonymity and limiting the danger if any particular actor is compromised. This is a particularly prevalent approach for movements like *Antifa*, in which members face significant violent or legal repercussions for participation. For similar reasons, this is also the design favored by most terrorist organizations, for which more research is available.

To gather first-hand data I briefly attended Antifa meetings in the New York Capital region. The group, which concerned itself primarily with removing white supremacist propaganda from the region, met in secret, all members identifying themselves only by their first name or a pseudonym. Similar to groups at New York Occupy rallies, the cell ran conversation without leadership, by sitting in a circle and establishing a "stack" for new topics and "sub-stacks" for tracking speaker order on particular topics. This is a subset of Robert's Rules of Order, a parliamentary system common to nonprofit groups and unions (Robert, Honemann, and Balch 2011). To my knowledge, no member of the cell had any contact with other Antifa cells, and certainly expressed no such communication in the meetings. This corroborates existing studies about "Black Bloc" militancy like Antifa: "The black bloc is not a group or an organization, but a tactic, an approach to an action, that stresses group unity, mobility, and confrontation." (Starhawk 2008) From conversations with other members, I established that the group began as a group chat (over Signal, an encrypted communications app recommended in How to Be a Digital Revolutionary (Blue 2017)) of protesters from other events including immigration and planned-parenthood rallies. This supports the idea that Antifa grows organically as an escalation of action, rather than as an independent organization.

# 2.3 Structural Analysis of Social Media

Social media, particularly Twitter and Facebook, can be thought of as a "common pool resource" (Ostrom 2008), in that exhaustive use of the medium prevents the messages of other users from being widely circulated by clogging the feeds of readers. To an extent the system is also self-regulatory, and users that are overly active or off-topic are curtailed by the community. Over-present users can be blocked, removed from lists, or most commonly ignored (peers no longer "re-tweet" or "like" the user's messages, limiting their distribution). This technique of self-governance has been recently explored as an solution to what western economics has largely considered an inescapable "Tragedy of the Commons" (Ostrom et al. 1999).

Self-governance can limit abuse of social media as an organizing medium, but the design of the medium itself is a limitation. Platforms like Twitter and Facebook produce a "feed" of recent activity, combining messages from any number of followed accounts and topics to create a single synopsis. This means feed-based social media functions as both an aggregator and *filter* on messages, and is fundamentally an *information bottleneck* (Tishby, Pereira, and Bialek 2000). The width of this bottleneck is not fixed - users can use news monitoring tools to manage several feeds of different topics, widening the variety of messages they receive at the cost of additional complexity and reading time (Blue 2017).

In some contexts the information bottleneck properties of social media are beneficial: Twitter allows a user to listen to hundreds, or even thousands, of other users at a protest simultaneously. This far outstrips traditional social communications constraints like Dunbar's Number (Dunbar 1992), which posits that humans can only maintain about 150 social connections at a time. While social media users may only *maintain* a hundred or so relationships (Gonçalves, Perra, and Vespignani 2011), they can still communicate with a much broader group for the purposes of collective action. Nevertheless, this bottleneck critically depends on the choices of the feed selection algorithm the media platform provides, which is often a poorly understood machine-learning engine. In general, widely repeated announcements, such as warnings during *Occupy* when police began marching on Zuccotti Park, are guaranteed to be circulated, but individual messages critical to long-term organization and complex conversation, are not.

#### 2.4 Group Decision Processes

If the goal of agent provocateurs is to manipulate the decision-making of an organization then special attention must be given to the decision making systems deployed by social movements.

#### 2.4.1 Decision-less and Self-directed Model

In self-directed movements there is no authority structure; individual members choose how to act within the movement, and submit proposals to the "social media sphere" that may or may not garner support from others. A classic example of a self-directed movement is *Anonymous*, where the only requirement for membership is self-identifying as a member of Anonymous. These movements are difficult to *control* because there is no leadership or control, but they are easy to *discredit*, because if a small subgroup commits violence or another socially alienating act it can be used to turn public opinion against the movement as a whole. For example, in 2011 a drum circle in Occupy Wall Street's occupation of Zuccotti Park refused to play only during day hours, violating city ordinances and almost resulting in the police ejecting the entire occupation from the park (Kreiss and Tufekci 2013).

# 2.4.2 Federated Movements

In a federated movement, anyone can create a local chapter under the banner of the larger movement, sharing a high-level objective, name, and symbols, but retaining independent leadership. There may be a central national organization, as with fraternities or the American Civil Liberties Union (ACLU), or there may *only* be constituent chapters, as in *Occupy* or *Black Lives Matter*. This provides a protective layer from abusive leadership, because if a local chapter violates the approved mission or method of the larger group other chapters can disassociate with the subgroup. Unfortunately this strategy has limited effectiveness, since the public may not follow the intricacies of which chapter was responsible. For example, some *Antifa* chapters focus on nonviolent action like anti-fascist propaganda and removing white-supremacy fliers. Other chapters engage in violent counter-protest. Since the counterprotesters have a much more prominent presence in media and make up more than a tiny fraction of *Antifa*, the movement as a whole is considered largely violent.

#### 2.5 Attacks on Network Structure

In general, adding hierarchy protects a social organization from random disasters, but makes them more susceptible to targeted attack (Albert, Jeong, and Barabási 2000). *Exponential networks*, where all members have a similar number of connections as their peers, have no central leadership or critical points. Removing any particular node from the network does about equal damage to the level of interconnection of other nodes. Introducing hierarchy creates a *scale-free network*, wherein leaders are far more connected than other participants and the number of connections for low-level participants does *not* scale with network size. In this configuration randomly losing a node is unlikely to have *any* impact on the rest of the network, as most nodes

are poorly connected to begin with. However, in a targeted attack where the most interconnected nodes are removed, a large number of participating nodes can be disconnected with the removal of a single hub. An example of each type of network is illustrated below<sup>2</sup>:



Figure 1: Example Networks

Translated to social-science terminology, the exponential network represents an anarchic, uncoordinated social group. The nodes on the graph represent people, while the edges between nodes represent who is in contact with whom. This "loose affiliation" is prone to losing random members. For example, if Alice is only connected to the group through Bob, and Bob chooses to leave the group, Alice has now lost all connection and can no longer be reached.

By contrast, the scale-free network represents a traditional hierarchy, where most volunteers are in contact with a handful of coordinators, who receive instructions from higher level leaders. In this system when a random volunteer like Bob leaves the group, there is no larger impact. However, this centralization of communication means if a central coordinator (the black nodes on the above scale-free diagram) is arrested or otherwise removed then entire sections of the group can be severed from one another. Even targeting lower level coordinators (the light-gray nodes) can remove whole groups of volunteers (the white nodes) from the organization.

During the 2011 Tahrir Square protests, the Egyptian government shut down the Internet across the country. This was an attempt at severing the protest leadership from the rest of the world, both by halting their social network traffic domestically, and by silencing their international reporting. However, this strategy was largely unsuccessful because there *was* no central leadership in the Egyptian *Arab Spring*. When citizens lost contact with their family at Tahrir Square, they took to the streets, magnifying the protest. By contrast, in the 2014 Hong Kong *Umbrella Movement*, the Chinese government utilized a non-targeted withering attack. They minimized police intervention, may have been responsible for local "organized crime gangs" attacking protesters, and periodically held unproductive meetings with movement leaders. Months later, when the government resolved to clear the protest areas, the movement had already been crippled by atrophy (Tufekci 2017).

Hierarchical movements in a hostile environment rely critically on anonymity and secrecy. When the leadership of a hierarchic organization is unknown or only partially known, the effectiveness of targeted attacks drops rapidly (Gallos et al. 2005). This is intuitive; if an attacker does not know who to attack they are reduced to randomly attacking, and are much more likely to catch low-level volunteers.

Distribution of power makes a movement more resistant to targeted attacks, while distribution of communication makes a movement more resistant to random drop-outs. This is obviously true in the most extreme circumstances: A movement led by one individual is critically dependent on that individual, while a leaderless movement has no leader to target. However, it is true at all levels of social leadership. The introduction of hierarchy creates a *dominant set*, or a core group of members that all other participants interact with. For example, in the Black Panther Party, leaders interacted primarily with top lieutenants. Lower level lieutenants were responsible for coordinating the efforts of a large force of volunteers. It is often the configuration of this dominant set that defines how vulnerable a social movement is to attack, rather than its highest leadership (Molnár Jr et al. 2015).

# 3 METHODS

I performed a comparative study on the centralization and structure of online activist networks. Rather than interviewing members of movements or analyzing publications by social movements, I chose to use Twitter interactions as an indicator of the structure of activist networks. Participants within a movement may not be able to identify the power dynamics of the group from within the organization, so I believe it is valuable to look at a network's structure from the outside. Social media does not reflect the exact leadership hierarchy of an organization, but it does indicate who is speaking to whom, which in turn can identify social ties and provide hints as to the communication structure of the group (Hargittai and Sandvig 2015). This type of social analysis is not uncommon in network science, and has previously been used to uncover social ties among college students (Blue 2018), and the creation of closed social communities within the virtual reality game *Second Life* (Welles et al. 2014).

To perform this study, I built a map of Twitter users that self-identified as part of social movements, and their associates. I analyzed the structure of connections on this map to ascertain attributes about the information flow in the activist network. Finally, I compared the uncovered structure to the structure described by members of the group, and compare reports on how the group has dealt with internal disagreements with literature on attacking groups with a similar structure.

#### 3.1 Data Collection

To collect data, I began with a group of "seed users", who self-identify as active members of an organization. These will usually be figureheads, spokespeople, or spokesaccounts, broadcasting a public message for the group. I then built a social media analysis system<sup>3</sup>, which given a list of starting usernames, performed the following task:

The system collected a sample of tweets (about 2000)<sup>4</sup> from each seed user, and saved them as an example of discourse from the group. It then read through each of the tweets and extracted the usernames of other accounts *mentioned* or *retweeted* by the seed account. These mentions and retweets constitute network connections between users, and roughly correspond to a conversation or citation between users (Boyd, Golder, and Lotan 2010). The software repeated this process on each of those users, recursively, until I had a network of two to three layers of connections. This provides a sample of accounts connected to the movement.

Data collection cannot usually proceed past the third layer as a result of the *small world problem* (Travers and Milgram 1967). Put simply, after a few levels of association every user is connected to a vast array of others with no distinctly shared social interests. Including this data floods the sample of the social movement (the third layer of the *Black Lives Matter* data (Section 4.4) contained over one million users), and makes it both technically demanding to analyze, and qualitatively challenging to extract meaning from. While the small world problem traditionally assumes network topologies are either random or uniform, of which Twitter is neither, the high-peer problem remains a challenge even in more complex social media networks (Watts and Strogatz 1998).

#### 3.2 Pre-Analysis Data Pruning

This form of "Big Data" analysis presents too much data to examine thoroughly. Maps of Twitter accounts even three hops away from a given Twitter user can easily include a million or more accounts. Most forms of visual map analysis work best with between a thousand and ten thousand nodes. Therefore, I used a technique known as *data pruning* to extract a meaningful sample from the larger map, which I can analyze in detail (Welles 2014).

I do this in two passes: First by splitting the "mentions" and "retweets" in to separate maps, and then by removing nodes with a low degree.

Splitting the mention and retweet maps allows for some new analysis - retweets usually imply support of a message, since the user is furthering the spread of the message by retweeting, but mentions only indicate a relationship which could be positive or negative. For example, Twitter users in an argument will often mention one another, but will rarely retweet the other.

Removing nodes with a low degree means examining how many connections there are between Twitter users in a map and removing the loosely connected accounts. For example, if a user has been mentioned by a single account in our data set then it is only loosely associated with the network. If a Twitter user is mentioned or retweeted by *hundreds* of other users in the map then they are much more clearly involved in the social sphere I am mapping.

# 3.3 Network Analysis

After pruning, the collected data is small enough to visualize. I rendered maps of each community<sup>5</sup>, where circles represent Twitter users, and arrows between circles represent social connections (retweets or mentions). The maps were oriented with "edge-repulsive weak-clustering," which generally means that well-connected users are drawn close to one another, users with no connections are drawn far apart from one another, and users are positioned to minimize overlaps in the graph. This produces visually helpful

representations of the data, where an observer can see clustering indicating sub-communities within the activist network, in which users communicate among themselves more than to the rest of the network.

After data pruning I have "maps" of a variety of activist networks, showing which members of the networks interact, and also where different activist networks engage with one another.

# 3.4 Comparison to Literature

Using the above maps, I compared the structure of each activist network to social movements discussed in literature. I am particularly interested in three questions:

- How does the social-media network structure of the organization compare to their self-described leadership model? Are "leaderless" movements as decentralized as they claim?
- How does the structure of the organization compare to the offensive literature regarding infiltrators and propaganda? Are these hierarchies known to be vulnerable to attack?
- How has this organization dealt with dissent? How does it mediate disputes and make decisions? Does its success with group cohesion match what we would expect from its network structure?

#### 3.5 Groups to Examine

There are several communities established on Twitter that I examined:

- Hactivists, including Anonymous and Telecomix
- Alcoholics Anonymous
- Antifa
- Black Lives Matter
- Hate Groups

These groups were chosen for their wide recognition, large membership, and, except for Alcoholics Anonymous, their significant social media presence. Alcoholics Anonymous is included as a control-group for comparison to other organizations: It is a thoroughly studied and well-understood social movement with a smaller online presence.

Since I was not familiar with the names of a wide array of hate groups to search for, I instead began with a list of hate groups from the Southern Poverty Law Center (SPLC)<sup>6</sup>, a non-profit organization that tracks the growth of hate groups throughout the United States. I included only hate groups with an active Twitter presence. The selected hate groups include the American Nazi Party, ACT for America, American Patrol, American Family Association, FAIR Immigration, the Oathkeepers, the Nation of Islam, WorldNetDaily, White Lives Matter, and the Westboro Baptist Church.

#### 3.6 Selection of Seed Users

To gather my data I manually selected "seed users" from each social movement, then generated a map of who these seed users interact with, who those users interact with, and so on. Seed users were generally chosen by a Google search for "<social movement> Twitter," then selecting Twitter users with a high number of Tweets and followers. This methodology is appropriate, since I believe it is also how an interested user would learn more about or join an online social movement.

# 3.7 Limitations

Of chief concern is establishing "ground truth." I can analyze Twitter networks endlessly, but cannot easily confirm whether the leadership structure presented online is equivalent to the leadership structure used in physical space. For this reason I focus on Hactivism and Black Lives Matter; movements organized primarily publicly and online, where I can minimize the possibility of gathering misleading data. While it is possible for there to be a "shadow leadership" for these groups, it is unlikely, as hactivist organizers already use psuedonyms on Twitter and gain little by running a second communication hierarchy<sup>7</sup>, and Black Lives Matter organizers have a reduced audience if they do not communicate on Twitter.

Some organizations, like Antifa and Alcoholics Anonymous, may organize their local chapters offline, and only use Twitter for interactions between chapters. This means these analysis techniques cannot provide insight in to the organizational strategies of social movements at a local level, but can still be used to investigate the movement at a national or international scope.

The initial seeds for data collection were chosen subjectively. It is conceivable that by choosing poor starting points I may have skewed the communities I examined, and miss sub-groups that are important to the structure of the movement. This is of limited concern, because the small-world effect suggests that even with non-ideal starting points my data sets will quickly include nearby sub-groups.

Twitter significantly limits the data available for this study, and provides only close to the 2000 most recent Tweets by a user. As a result, this study is limited to temporally-recent communication, and cannot show how the leadership of movements has changed over time. A longer-term study could repeatedly collect Twitter data on the same organizations and produce such results in real time as the social movement changes, but that is outside the scope of the current study.

In some cases, the communities I monitored changed or collapsed as I attempted to analyze them. This is particularly prevalent in the hate group data set, where Twitter banned central organizing accounts from the *American Nazi Party* and the *New Black Panthers* just before I began data collection. Twitter has also dissolved parts of the Antifa user base during their "Bot Purge" of early 2018 (Gallagher 2018). In these cases my analysis of leadership may be hindered, but observing the attempts of these groups to re-organize around their missing leadership also provides a valuable case-study in hierarchy reacting to targeted damage.

# 3.8 Consent

This study includes Tweets from several million users, making it infeasible to acquire explicit consent from each one. Fortunately, the Twitter terms of service<sup>8</sup> expressly "authorizes [Twitter] to make your Content available to the rest of the world and to let others do the same." By posting on Twitter, users implicitly consent to having their posts shared publicly and having them re-shared by others. This justification is not uncommon in "Big Data" research, and has been used by Professor Brooke Foucault Welles in her Twitter research (Hargittai and Sandvig 2015).

#### 4 ANALYSIS

# 4.1 Hactivism

Below is a minimal map of hactivism communities, mostly centered on Anonymous and Telecomix<sup>9</sup>. To seed data collection I began with eleven users that self-identified as hactivist news groups, speakers representing the organizations, or journalists and academic researchers that study hactivism.



Figure 2: Hactivism, One Layer from Seed

We can immediately see clusters around each of the seed nodes, suggesting the presence of distinct communities. Two clusters in the center are focused around "anonyops" and "anontvofficial", accounts self-identifying as news groups within Anonymous. These accounts do *not* represent independent communities, but are instead are followed by many people also connected to separate hactivist groups on the periphery of the graph.

The community isolated far to the right is the Chaos Communications Congress<sup>10</sup>, a German political hacker conference with less overlap than the intersection of predominantly American and Western-European hactivist groups at the left of the graph.



Figure 3: Hactivism Retweets, Two Layers from Seed

At a higher level of analysis these initial clusters melt together (Figure 3). This suggests that while there may be some variation in hactivism giving the appearance of distinct groups, the community is quite fluid, with members participating in, or moving between, many different sub-communities. This matches the findings of Anonymous researcher Gabriella Coleman, who defines Anonymous as a loosely-defined "scene", where "many Anonymous-based nodes and collectives, whether small teams, larger networks, or simply groups of loosely connected Twitter accounts, form, disband, and regroup in new ways in the course of weeks or months. Others have existed in relatively stable shape now for 5 years" (Coleman 2017).

Coleman's description of Anonymous appears to generalize to most hactivist communities, and echoes the prose of the oft-referenced *Hacker Manifesto*, which includes "We exist without skin color, without nationality, without religious bias, …. You may stop this individual, but you can't stop us all... after all, we're all alike" (The Mentor 1986).

#### 4.2 *Alcoholics Anonymous*

Alcoholics Anonymous presents themselves as a leaderless organization. Members are forbidden from using their names when representing AA, to prevent the rise of unintentional power-dynamics and potential corruption (Wilson 1953). Accordingly, I expect Alcoholics Anonymous to have a minimal online presence used for spreading information, but without a distinguished "social movement" centered around their accounts.



Figure 4: Graphs of Alcoholics Anonymous and Surrounding Accounts

Above are graphs of two layers out from five prominent AA accounts online, found by their number of Tweets and use of hashtags associated with Alcoholics Anonymous. Three of the five AA accounts examined did not participate in social networking whatsoever, and did not retweet or mention any other users, isolating them from the graph. The remaining two users *did* retweet and mention other accounts, but are dwarfed by the social traffic of their peers. In the left graph, where the size of nodes is determined by their number of connections to other accounts in the graph, the Alcoholics Anonymous accounts are not easily discernible. In the right graph, the size of AA accounts has been artificially inflated to make their locations apparent.

The large clusters in this network represent a range of interest groups and pop culture icons, ranging from the musician "P!nk", to a former administrator at Twitter, to YouTube. These groups do not appear to have any shared objective with Alcoholics Anonymous, and were likely included because they are interests of individual people mentioned or retweeted by the AA accounts.

Clearly, Alcoholics Anonymous does not have a social media community centered around them. This is the behavior one would expect, and suggests that the clustering seen in the hactivist and other data sets *is* indicative of community, and is not implicitly part of Twitter.

# 4.3 Antifa

Antifascism is a relatively new phenomenon in the United States, started in response to Nazi rallies in late 2016. This is in stark contrast to European Antifascism, which originated in the second World War resistance of Axis powers. As a result, I was not surprised to see vibrant United States Antifa activity on Twitter, that appears to be largely self-contained without obvious links to traditional European Antifascism. What I did not expect to see was clear bifurcation within the U.S. Antifa network (Figure 5).

In the graph, the Antifa accounts in the lower left have federated with what they refer to as *The Antifa Army*. Their website<sup>11</sup> features a list of "confirmed comrades", suggesting this may be an attempt to counteract disinformation campaigns from fake Antifa Twitter accounts in mid-2017 (Gallagher 2017).

In fact, this could not be further from the truth. Many of the disinformation accounts mentioned in Gallagher's study *are the same accounts* as



Figure 5: American Antifascist Activity, One Layer from Seed

in this "Antifa Army", and are present on a community blocklist of fake antifa accounts<sup>12</sup>. The blocklist is maintained by a Twitter account named "Antifachecker", and the Antifa Army maintains a parallel account named "Antlfachecker" (with an 'l' in place of a similar-looking 'i'), which works to discredit other Antifa accounts.

In other words, the "Antifa Army" is a concerted effort to give legitimacy to false-flag accounts by creating a parallel sphere of Antifa social activity, where fake accounts mention and retweet one another to appear as part of a larger movement. The tactic is effective at least to cursory observation; I unwittingly selected several Antifa Army accounts as seed nodes since they appeared in the top hits on a Twitter search for "Antifa".

The Antifa accounts in the top right of the graph are not associated with this "Antifa Army", but are on average more active on social media, and have larger peer networks as a result.

# 4.3.1 Analysis of Layer 2

When I extended analysis out one layer further the bifurcation became more complicated. The extra layer increased the number of users in the map from 4500 to over one million, so I have split the map in to "mentions" and "retweets" and employed extensive data pruning on each:



Figure 6: Pruned Graphs of Antifa, Layer 2

In the retweet data the bifurcation is still clear. The dominant community to the top is the legitimate Antifa activity, while the smaller stem on the bottom of the graph is the "Antifa Army". The distinction is muddier, presumably because some observers cannot distinguish between the legitimate and false Antifa accounts and retweet both. However, in general, members of the Antifa community promote either the message of the legitimate accounts or the deceptive accounts, creating visually distinct communities.

In the mention data, this bifurcation is completely lost. The two groups appear to be engulfed in one amorphous community. I believe this is because of the distinction in meaning between a mention and a retweet. Retweets further the spread of a message without modification, which implies support of the message. Mentions are only a way of messaging another user. An informal sampling of Tweets directed at accounts in the Antifa Army indicates that many are denouncements of Antifa Army, requests to stop their activity, and threats. Tweets *from* the Antifa Army frequently reference legitimate Antifa accounts, congratulating them on morally-repugnant acts that often never occurred (Silverman 2017). These mentions do not indicate a single cohesive community, but rather two communities engaged in media combat.

The small protrusion on the left of the mention graph appears to be an anomaly, based on a handful of very social Twitter users with no evidence of counter-cultural political engagement.

As a side note, this data cannot be reproduced. Twitter recently banned the "Antlfachecker" account, along with several other prominent users from the "Antifa Army", in their attempts to combat 'bots' in a post-Russianelection-manipulation cleanup of social media.

# 4.3.2 Formal Membership

The network diagrams above indicate that Antifa is largely successful at thwarting the disinformation campaign of "Antifa Army", because the disinformation users form a distinct community rather than seamlessly infiltrating other Antifa social groups, but it does so by formalizing membership and centering activity around trusted hubs.

Antifa is an inherently open-membership loosely-affiliated group: All that membership requires is taking anti-fascist action, so someone can be a self-identified member without associating with any other Antifa chapters or individuals.

However, in an attempt to denounce bots, propaganda, and false-flag operations, many prominent Antifa individuals have collaborated on the "Antifa Blacklist", which formally defines a list of non-Antifa-individuals. This explicitly places the prominent Antifa accounts in a position of authority where they can define who is and is not part of the movement. These gatekeepers utilize shared language, symbolism, and historical references to distinguish legitimate members from impersonators, which places pressure on members to conform to a monoculture within antifascism.

#### 4.4 Black Lives Matter

Before I began analysis of Black Lives Matter (BLM), I anticipated the group to be amorphous, much like the second layer from the hactivism data set (Figure 3). The accounts I used for seed nodes did not identify themselves as being local chapters, bound to physical regions or a particular sub-topic. Rather, each had thousands of followers and identified itself as a main news anchor for the entire social movement. Therefore, I expected significant overlap between the communities of each account. Instead, I found fragmentation (Figure 7).

One layer further out, Black Lives Matter solidifies in to two broad camps (Figure 8) suggesting that the first layer clustering is not a fluke, but represents at least two distinct ideological or political differences.

Further analysis unveiled that my understanding of Black Lives Matter was severely flawed, likely stemming from ignorance as a white researcher



Figure 7: Black Lives Matter, One Layer from Seed



Figure 8: Black Lives Matter, Two Layers from Seed

that has not been embroiled in race movements. BLM began as a slogan at protests, and a hashtag rallying cry, gaining notoriety after the 2014 Fergusson protests and leading to the creation of many local groups focused on issues of racial inequality and police brutality. However, Black Lives Matter rapidly institutionalized in the lead-up to the 2016 presidential election. This organization, nominally calling itself *The Black Lives Matter Global Network*<sup>13</sup>, but often simply referred to as *Black Lives Matter*, coordinates local chapters with an alert system and shared resources.

The federated model of BLM Global Network, while less formalized than a parliamentary system, still implements a degree of leadership hierarchy, with organizational teams, initiatives, and action platforms. These include formally-defined national organizations like *The Movement For Black Lives* (Often referred to by the acronym "M4BL"), which organizes petitions, town hall meetings, and electoral engagement. There is now a schism in the Black Lives Matter community between two groups: Those that adhere to a revolutionary, self-organized political model, and those that have nationalized and work towards improvements within the current political system. Proponents of the former group see the later as co-opting the black liberation movement and its accomplishments for their own agenda, and intercepting media attention and funding that would otherwise support local movements (Black Lives Matter: Cincinnati 2018). More broadly, there are accusations of the later group "selling out" and joining a national trend of corporatized activism (Dauvergne and LeBaron 2014) that reinforces and works within the existing power structures of the country without challenging the framework of oppression itself.

# 4.5 Hate Groups

Hate groups present an interesting case study, as they have similar organizational and coordination problems to other social movements, but face heavy public criticism and frequent conflict with law enforcement.

While different hate groups have dramatically different identities, with focuses ranging from opinions on sexuality and abortion, to religion, to immigration and race, hate groups tend to be tightly interconnected (see Figure 9).



Figure 9: Hate Groups, One Layer from Seed

Remarkably, this network includes not only the white-male-Christian dominated groups described above, but also the Nation of Islam (NOI), a black Muslim extremist group. While it is somewhat estranged from the rest of the groups (NOI is the small community in the upper-right), it engages in



a similar political space, and interacts with several of the same accounts as the other hate groups.

Figure 10: Hate Group Retweets, Two Layers from Seed

Social factions crystalize one layer further out (see Figure 10). In the retweet map, most hate groups have unified in to a single nondescript community. Two outliers exist - the *Nation of Islam* (NOI), protruding to the right, and the *Westboro Baptist Church* (WBC), near the bottom of the map.

The large cluster makes up what is commonly refered to as *The Alt-Right*. It is an interdisciplinary coalition of activists in politics, religion, race, and sexuality, featuring unsavory elements including white supremacists, Nazis, anti-LGBT groups, and anti-immigration militias. The two outsiders to this community have distinct ideologies - the Nation of Islam has little in common with white-christian groups, and the Westboro Baptist Church is an isolationist organization which does not communicate with anyone outside the WBC. It is linked to the graph only because other hate groups retweeted messages from the WBC Twitter account.

What this suggests is that the social structure of the alt-right is similar to that of hactivist communities (Figure 3): Membership is loosely defined, group boundaries are porous, and isolating a single subcommunity is almost impossible. As in hactivism, many hate-group participants rely on anonymity to engage in socially isolating or blatantly illegal activities.

		Data Summa	ry		
Name	1 Layer Out	2 Layers Out	Membership	Anonymity Level	Explanation of Graph
Hactivism			Extremely informal, membership porous	Anonymity is critical for evading law enforcement, pseudonyms are over- whelmingly common	Amorphous shape in- dicates no strict de- lineation between hactivist communi- ties
Alcoholics Anonymous	N/A (Map too sparse)		Membership formally defined, but usually kept secret	Anonymity is a central tenet for gaining new membership	Minimal so- cial network footprint, since "me- dia" directly conflicts with their single- mission charter
Antifa			Membership ostensibly open, but requires unofficial recogni- tion from existing community leaders to distinguish from imper- sonators	Direct action groups are anonymous to prevent law en- forcement or fascist disruption, supporters are often publicly identified	Bisection of graph indicates separation between "legitimate" Antifa and an imper- sonation and disin- formation campaign called "An- tifa Army"
Black Lives Matter			Membership open and unofficial	Most mem- bers publi- cize involve- ment, no anonymity necessary	Bisection indicates dis- agreement between "tradition- alist" self- organized BLM groups and "Black Lives Mat- ter Global Network"
Hate Groups			Membership usually in- formal, not publicized by most or- ganizations	Anonymity common to protect from law enforce- ment and public, but publicizing involvement often seen as dedication to the cause	Main blob indicates the "Alt-Right", while periph- eral nodes are non- affiliated hate groups including the West- boro Baptist Church and Nation of Islam

# 4.5.1 Summary of Findings

#### 5 DISCUSSION

# 5.1 Membership of Social Movements

#### 5.1.1 Anonymity and Porous Membership

Online social movements often adopt anonymity as a central tenet of membership, using online aliases instead of real names and rarely if ever meeting in person. This practice protects participants like hactivists or Antifa from law enforcement when they engage in illegal or questionably legal acts. It also protects devotees from being socially ostracized, which is particularly relevant for hate groups, but also movements like Antifa that are demonized in mainstream media. The creation of public and private identities for social organization is not unique to political activism, but has a long history in queer communities, which often face social isolation and physical danger if their identities are publicized (Lewis 2017).

Organizing online pairs well with a need for anonymity, but also makes tracking membership challenging. In the Black Panthers membership is formally defined by attending meetings of the Black Panther Party, receiving orders, and carrying them out. There is no parallel to party membership in intentionally de-organized groups like Occupy Wall Street.

Contemporary social movements rely on membership in the *movement*, rather than in an explicit *organization*. Individual organizations, ranging from nonprofits to online hacker groups, to Facebook pages, act more as affinity groups within the larger movement. These affinity groups have porous membership, with participants moving between groups as suits them (Gerbaudo 2012). This matches what I have seen in the hactivism data set (Figure 3), and in the hate group data (Figure 10), where individual groups meld in to an indistinguishable cloud unless viewed very closely.

# 5.1.2 Formal Membership

Formally-defined membership has a number of benefits, ranging from accountability to deniability. A lack of a member roster makes it impossible to prove someone is a member of Anonymous, but it also makes it impossible to prove someone is *not* a member of Anonymous, if "membership" is even an applicable term in a movement that is more concept than institution. Formal institutions, such as the Catholic Church, have mechanisms like excommunication to control their official membership, and can distance themselves from figures lending a bad name to the movement. It is for this reason that I believe the Antifa factions remain so distinct (Figure 6): Not only do they follow a federated leadership model (see Section 2.4.2), but they *require* formal membership to create a blacklist and stem any efforts by bad actors to discredit the movement as a whole.

# 5.1.3 Constitutional Self-Organization

Tightly defining the bounds of an organization's mission can alleviate the need to define membership. As an example, Alcoholics Anonymous defined the Twelve Traditions as their official ruleset (Room 1995). Any organization of two or more people following the Twelve Traditions is implicitly and explicitly a chapter of Alcholics Anonymous. There is no parent institution to seek approval from or send a notification to<sup>14</sup>. This means that, like in hactivist or hate groups, Alcoholics Anonymous has no single authoritative membership list, but it is not susceptible to the kinds of of discrediting attacks Antifa is facing. If an Alcoholics Anonymous chapter performs in any way inappropriate to the Twelve Traditions, then it by definition ceases to be a chapter, and is easily countered in media. As a result, AA's Twitter presence (Figure 4) is neither an amorphous blob, nor clearly distinct clusters - AA uses social media to announce the presence of chapters and meetings, but has no need for a "social sphere", and accordingly has none.

The challenge with Alcoholic Anonymous' directing document approach is that once the founding document is released, no changes can be made. By definition, there is no group with the authority to update the document, and any variant of the document is not abiding by the original rules, and is discounted. Any organization using this strategy cannot evolve in a changing environment. However, this can be considered a positive in the proposals of *The Coming Insurrection*, where it is suggested that all social organizations have a specific task, and should be dismantled when that task is complete (The Invisible Committee 2009).

#### 5.1.4 Derivation of Value

One of the benefits of self-organized movements is the application of Generative Justice (see Section 2.1), where activists are spurred on by their own activism, creating a self-sustainable community. Generative justice can only exist within a generative *context*, where rewards from an action are localized such that participants in the action can directly experience the payoff. This couples well with physically local movements, such as a single chapter of Black Lives Matter or Antifa, and also works in an online context, such as hactivism. However, localization is disrupted when a national organization intervenes in local activity, such as the Black Lives Matter Global Network (see Section 4.4). Outside intervention prevents local activists from "own-ing" their movement, and has a deleterious effect on the longevity of the movement. This may generalize to any form of activism, such as overseas humanitarian aid, where the aid is not sustainable unless local citizens are given a pivotal role in the aid process.

Generative Justice also requires that activists can define their own participation, choosing both the type and level of commitment to the movement. This is compatible with porous, ill-defined movements like Occupy Wall Street, where participation can range from spreading a hashtag online to interacting with law enforcement on the front lines of a protest. It is not compatible with movements with formally-defined membership requirements, where participants must act a certain way to qualify. For example Antifa, through the creation of the "Antifa Checker" account (see Section 4.3), has created formal membership demarcation. At the time of writing, only 78 accounts are "recognized" as part of Antifa by the Antifa Checker, while 426 are explicitly excommunicated<sup>15</sup>. This means membership on the "recognized" list requires following a strict, though not explicitly-stated, code of conduct.

Special action groups, such as Alcoholics Anonymous, fall outside the scope of what is normally considered by Generative Justice. The mission of an organization such as Alcoholics Anonymous is so specific that there is little flexibility for defining ones own role, excluding the movement from traditional definitions of Generative Justice. However, the many-action-groups model in anarchist literature proposes that instead large activist groups with diverse activities there should be many small action groups with specific goals, which together coalesce in to a diverse social movement (Hazan 2015). Under this definition I believe action groups match *Conditional Generative Justice*, by which participation in the action group *is* how activists define their role within the larger social movement.

#### 5.2 Intentionality of Organization

This study anthropomorphizes social movements by implying they have intentionality; that they decide on their own leadership styles and membership criterea, rather than allowing group dynamics to form organically by social interactions between individual members, as *Social Choice Theory* suggests. In several instances there is evidence that a minority of members *did* intentionally force changes to the group dynamic, such as Antifa members creating the "AntifaChecker" account as a purity test for membership, or members of Black Lives Matter creating a 501(c)(3) nonprofit to change how they interact with other members of Black Lives Matter and organizations outside the movement. The initial organizers of Alcoholics Anonymous artificially selected leadership and membership styles in the creation of the Twelve Traditions (Room 1995).

Instead, it appears as though informal leadership and open groupmembership are a "default", and deviation from this state requires intentional effort by a sub-group. Individual hactivist groups like Antisec, or hate groups like FAIRImmigration may have local leadership, but hactivism or the altright as broader communities have no such leaders, and are self-organized at any large scale.

# 6 CONCLUSION

This study has three general conclusions regarding group membership and leadership paradigms:

- 1. The "default" model in Twitter-based social movements is an anarchic, self-organized design in which there are no fixed leaders, but organizers that help retweet proposals so they "ripple" through the network. This design is beneficial, because shared leadership means the movement can work on a wide array of tasks at once, and there is no single organizer or sub-group that can be dismantled to scatter the movement. However, this model is vulnerable to internal attack wherein agent provocateurs embed themselves in the movement and spread harmful messages.
- 2. In response to internal attack, social movements institutionalize and centralize leadership, allowing identification and excommunication of harmful individuals. This formalization of membership means a small number of individuals are "gatekeepers" to the movement, who can define who qualifies as a member. These gatekeepers are defacto leaders and organizers of the movement, and introduce the possibility for corruption, schisms, and targetting by external attackers.

3. An alternative to either organizational model is the creation of an immutable "guiding document". Anyone following the rules of the document is a member of the social movement, and anyone violating the rules is explicitly not a member. This can prevent abuse of the movement name by provocateurs without the use of an authority, but it leaves the social movement inflexible and unable to respond to scenarios outside the scope of its founding document. This works for single-issue social movements like *Alcoholics Anonymous* (Section 4.2), but is not applicable to broad-objectived social movements like *Black Lives Matter* (Section 4.4). To widely deploy this model would require making many small and specific social organizations that layer to create a broad social movement.

This study also has a specific conclusion regarding the use of "hybrid" leadership models: While it is possible for two leadership models to coexist in a single social movement, it obscures the goals and methods of the movement, and can hide one side of the movement from media attention. This is based on the particular study of *Black Lives Matter* (Section 4.4), where the movement is largely referenced in media and popular discourse as a self-organized, leaderless movement, but in fact has an internal schism between self-organized and highly centralized components. The two groups have differing scopes, objectives, and methods, but share a name to the detriment of both sides.

#### 6.1 Limitations

This study has very few data points, because there are few large and currently active social movements with a heavy presence on Twitter. Our most valuable data sets are Antifa (Section 4.3), Black Lives Matter (Section 4.4), and Hate Groups (Section 4.5), since those communities are publicly under internal and external attack, and are actively modifying their structure to respond to damage. These provide valuable case studies in strategies for combating disinformation and member removal, but cannot provide a statistically significant sample of the effectiveness of different strategies.

It is recommended that any researcher attempting to reproduce this study expand their search for social movements. Other interesting case studies may include the *Maker Movement*, the *Open Source Software* community, and self-identified conservative groups facing public criticism such as *Turning Point USA*.

This study also has ethical limitations: Researchers should not *induce* the collapse of social movements just to watch how they fail. Therefore, the breaking points of social movements can only be observed if Twitter data is collected during the collapse of a movement, which would be incredibly valuable but unusual data.

#### 6.2 Future Work

This study was limited in scope due to time constraints, and Twitter's restraint in only providing recent data. A long-term study could take repeated snapshots of communities, and show the evolution of a movement's social graph over time. This would allow us to judge the effectiveness of strategies like Antifa's attempt at blacklisting the Antifa Army, or the conflict between traditionalist Black Lives Matter members and supports of the Black Lives Matter Global Network nonprofit.

Because data availability is limited, it is proposed that future scientists utilize the case studies and attack scenarios outlined in this paper as the foundation for social-movement simulations. These simulations can explore important topics such as the exact breaking points of movements under duress, and better inform future movement organizers on strategies for resistance. As a starting point, researchers might begin with models for how information flows in organizations, and how individuals collaborate to share information in simulated environments (Trujillo et al. 2017).

More generally, it is hoped that this research will lead to suggestions for future movement organizers on how to make their movements more robust to failure while preserving rapid decision making. Agent provocateurs and informants are key instruments in the suppression of social movements. These techniques were notoriously deployed by the FBI during the civil rights movement, as part of COINTELPRO (The Counter Intelligence Program), and by the East German Stasi before the collapse of the German Democratic Republic in 1990. As revealed by Edward Snowden, the scale and technical ability of modern blanket and targeted surveillance far outstrips either historical group. More recently, foreign attempts to influence the U.S. electoral process through targeted advertising and social activist impersonation underscore the potential threat of internal attacks to a social movement. If contemporary protest movements like Occupy Wall Street are to be successful, then it is paramount that they are organized in a way that minimizes the threat of surveillance and externally-introduced instigators.

#### NOTES

<sup>1</sup>Social Cognitive Network Academic Research Center website: http://scnarc.rpi.edu

<sup>2</sup>Example networks were generated by the author with NetworkX (https://networkx.github.io/) and Cytoscape (http://cytoscape.org/)

<sup>3</sup>The social media analysis framework, called "socmap", is open source and freely available online: https://socmap.daylightingsociety.org

<sup>4</sup>The Twitter API places severe limitations on data collection, and restricts the date ranges and rate of data collection I have access to

<sup>5</sup>Using Cytoscape, a network analysis and graph-drawing tool

<sup>6</sup>Southern Poverty Law Center Website: https://splcenter.org

<sup>7</sup>Hactivists do organize some operations over other media - famously, Anonymous organized its 2011 raids over Internet Relay Chat (IRC). However, these alternative platforms do not have a permanent presence or wide reach like Twitter does, and are not used for long-term organization

<sup>8</sup>Twitter terms of service: https://twitter.com/en/tos#usContent

<sup>9</sup>A European hactivist group most active during the Arab Spring, but still operating today <sup>10</sup>CCC website: https://ccc.de/

<sup>11</sup>Antifa Army website: https://antifaarmy.com/

<sup>12</sup>Fake Antifa Blocklist: https://blocktogether.org/show-blocks/UQ\_ZPDyCHCygI-EUU\_ 6xLY23sewTWFbPA8k7cCdz

<sup>13</sup>Black Lives Matter Global Network Website https://blacklivesmatter.com/about/

<sup>14</sup>There are organizations that help connect those in need with local AA chapters, and share literature between chapters. These organizations, like aa.org, require registration to list your chapter nationally, but are otherwise not an authority.

<sup>15</sup>Accounts followed by the Antifa Checker account are considered to be "verified", while accounts blocked by Antifa Checker are considered "excommunicated"

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