From Organizational-Centric Engagement to Network-Centric Engagement: The Role of Autonomous Public Communities in a Mediated Public Policy Advocacy Network

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Abstract
In this study, we explore how a social movement organization (Sunrise.org) and its autonomous public community advocated for the Green New Deal on social media. An autonomous public community is a group of publics that initially connect with each other through their engagement with a focal organization. Then, they go on to develop ties among themselves that go beyond simply responding to organizations’ messages. Autonomous public communities are ubiquitous on social media. Our research identifies unique patterns of interactions in an autonomous public community and finds that the Tertius Iungens orientation brings the network together. We also find that while the focal organization is not centralized in an autonomous public community, it still significantly affects tie formation and discourse as the networks evolve. Our study reveals a nuanced understanding of networked organization–public engagement where network structure and discourse are co-created by the organizations and the communities that they engage.

Keywords
social movements, networks, climate change, engagement, dialogue

Organizations around the world use social media to engage publics (Yoon et al., 2018). Engagement refers to a “connection, interaction, participation, and involvement, designed to achieve or elicit an outcome at individual, organization, or social levels” (Johnston, 2018, p. 19). As scholars and practitioners examine organizations’ engagement efforts, they often position organizations at the center of consideration (Dolan et al., 2019; Ihm, 2015; Hong & Yang, 2011). But, organization–public engagement on social media also creates public–public networks (Zhou, 2019). Ihm (2019) coined the concept of “autonomous public community” to refer to publics that initially connect with each other through their engagement with a focal organization and then go on to develop ties among themselves beyond simply responding to organizations’ messages. Members of an autonomous public community could serve a range of roles for organizations such as advocators, ambassadors, or haters (Dawson, 2018). Such communities could critically mediate an organization’s messages and influence the outcome of an organization’s advocacy campaigns on social change.

One of the most pressing issues challenging societies worldwide is climate change and there are a variety of social movement organizations working both independently and in networks to address climate change. Social movements can use social media to create social change (Chen et al., 2021). Social movement organizations play an important role in discussing and addressing wicked problems such as climate change. Jameson and Lee (2020) edited a special issue of Social Media + Society to showcase research that describes “how social media might be used to promote dialogue, broadly conceived as communication that is inclusive of multiple voices (especially those that have been marginalized) and aimed at improving understanding rather than persuading or ‘winning’” (p. 1). This article contributes to that dialogue.

In this study, we explore how a social movement organization (Sunrise.org) and its autonomous public community

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advocated for the Green New Deal (GND) on social media during the 2019 presidential primaries. The GND was considered a progressive initiative that combined climate change policy with social policy (Galvin & Healy, 2020). Our analysis showed that distinctive autonomous public communities formed around this organization with unique discourse and tie formation patterns. Many prominent politicians such as presidential candidates (and now president and vice president) Joe Biden and Kamala Harris were actively involved in these communities. In the next sections, we first review social media engagement and examine the organizational-centric versus network-centric engagement approaches. We introduce the concept of autonomous public community and explore how tie formation and discourse occur in these types of communities. We then report our method and research findings of a 6-month longitudinal study of the Sunrise movement. Theoretical and practical implications are also discussed.

**Organizational-Centric Engagement to Network-Centric Engagement**

**Organizational-Centric Engagement**

There has been a shift in the literature arguing for more public-centered research about dialogue and engagement (Kent & Taylor, 2021). The dominant approach to studying engagement tends to consider engagement from an organizational-centric point of view and mainly focuses on how organizations’ decisions and communication strategies shape engagement outcomes (Dolan et al., 2019; Guidry et al., 2017). This organizational-centric approach may have been appropriate in the mass media era. Social-mediated communication, however, tends to feature networks with decentralized centers. Even when an organization initially takes the center place, as more publics enter an issue space, the center may evolve and the organization’s role may be overtaken by others (Barisone et al., 2019). Moreover, the outcomes of an organization’s engagement and communication may largely depend on the communication network where the organization is embedded. As noted by Bennett et al. (2018), “how things appear to some observers in multimedia communication ecologies is the result of densely-networked framing processes that may look quite different from other network positions” (p. 662). The mediated communication process is filtered through numerous social networks. What people can see and respond to, whom they interact with, and what type of reactions they observe depend on the social contacts that they maintain. This process thus empowers the publics to co-create dialogic engagement experiences with organizations. Research shows that the process is not as easy as it should be (Gallacher et al., 2021; Kent & Taylor, 2021; Place & Ciszek, 2021).

Our study moves toward de-centralizing the role of organizations, and places the research focus on the mediated networks connecting organizations and publics. We refer to this approach as the network-centric engagement approach, in which the concept of engagement is reimagined and reexamined through the lens of organization–public networks. We believe that this approach holds great promise for rethinking relationships in society.

**Network-Centric Engagement**

Network-centric engagement conceptualizes organization–public relationships not as dyadic relations comprised of an organization and a public but as network connections among organizations and publics (Yang & Taylor, 2015). Publics in such networks play equal, if not more important, roles in the communication process. Recent research has recognized the power of publics, but few studies have examined publics’ networks in the process of organization–public engagement (Zhou, 2019). There is a need for studies that examine how social media facilitated public participation shapes policy. The next section draws upon recent research on autonomous public communities and brings the concept of networks to social media engagement in society.

**Autonomous Public Community: Concepts and Dynamics**

**Autonomous Public Community Defined**

Ihm (2019) proposed the idea of an autonomous network to refer to a group of publics that initially connect with each other through their engagement with a focal organization and then go on to develop ties among themselves that go beyond simply responding to organizations’ messages. In our study, these publics are referred to as autonomous publics and their communities as autonomous public communities. Our concept of an autonomous public is consistent with what boyd (2010) defines as a networked public, which are publics that are restricted by networked technologies and are simultaneously a place and a collection of people. Boyd (2010) notes that an important feature of a networked public is how technology configures the environment in ways that shape participants’ engagement. In our study, we focus specifically on how technologies restructure how publics engage with each other through their connections with organizations.

Ihm (2019) explained that autonomous public communities are made possible by the increased individual autonomy and loose organizational coordination on social media. An autonomous public community is a meaningful and distinctive form of online communities that are formed around an organization’s engagement efforts. Over time, autonomous engagement patterns develop among members. This type of community is different from online communities that are formed based on members’ shared interests, hobbies, and professional needs (referred to as interest-based communities) in the degree to which they are related to specific organizations’ engagement efforts (Marwick & boyd, 2011). While members
of interest-based communities are loosely connected through their shared interests, members of autonomous public communities could be much more heterogenous in the sense that they do not necessarily share interests, needs, or backgrounds. What bring them together is their reaction to organizations. Such communities are also different from fan or organization-based communities because autonomous publics are not necessarily affiliated with organizations in any meaningful ways. They are organizations’ stakeholders who took an interest in organizations’ actions or messages, and in their process of responding to organizations, they go off to interact with each other. Such autonomous publics are quite prevalent in the digital space. Autonomous public communities could emerge on the comment section on YouTube under companies’ videos or take shape in the review sections on Amazon (Kozinets, 2019). They also play prominent roles on social media platforms such as Twitter and Facebook, as we further examine in the current study.

Ihm’s (2019) approach is consistent with Choi and Park’s (2014) work that discussed a three-stage process in which social movement organizations can engage and mobilize publics to participate in online activism. In the first stage, organizations play an instrumental role in establishing informal networks that bring publics together into an issue area. They suggest that at this stage, organizations have networked power, which is that relational capacity of asymmetric influence on the behaviors of other members. This stage can also be understood as the formation stage of autonomous public communities. Nevertheless, once the community is formed, as Choi and Park argue, at the second and third stages, collective identity and tactical repertoires of collective actions (e.g., petitions, boycotts, and emailing campaigns) will take the center stage in the collective action to help accomplish the organization’s advocacy goals.

We argue that for organizations with strategic communication intentions such as social movement organizations, advocacy groups, and corporations, these types of communities may be important. In this study, we examine the Twitter-based engagement campaigns of the Sunrise Movement.org, a social movement organization that extensively engaged in social media advocacy during the 2019 presidential primaries. Such groups are often detectable through community detection methods (González-Bailón et al., 2013). In addition, research suggests that these communities are connected by relatively dense networks and endure certain levels of stability (Metzler et al., 2019). In other words, such communities (not the organizations) provide members a social structure in which repeated interactions become possible. To understand whether and how autonomous public communities have emerged through interactions with the Sunrise Movement.org, we ask the following question:

**Research Question 1 (RQ1):** How do autonomous public communities emerge around the Sunrise Movement.org in the 2019 presidential primaries in the United States?

Communication scholars now regularly apply social network analysis to examine social-mediated communities on Twitter and other social media platforms (Barisone et al., 2019; Lai et al., 2019; Liang & Fu, 2019). Networks are often porous, volatile, and unstable (Lai et al., 2019) and studies have generally found that the networks in these voluntarily formed communities are not necessarily horizontal and decentralized. Instead, research shows that leaders or influencers tend to occupy central network positions and disproportionately influence community-level communication outcomes (Dawson, 2018; Huffaker, 2010). Considering the importance of such leaders, we pose the following question:

**Research Question 2 (RQ2):** Which actors emerged having the highest indegree and outdegree centralities in autonomous public communities emerge around the Sunrise Movement.org?

In addition to identifying autonomous public communities and describing the structural features of such communities, and to extend network-centric engagement research, it is also necessary to understand what types of engagement dispositions drive tie formations in such communities. Network structures do not come from a social vacuum. They are the results of norms of community interactions. In addition, because members of autonomous public communities interact to discuss key issues that matter to them, it is also important to examine the discourse that emerges from such communities and compare that with the organization’s narrative. In the next sections, we further discuss each of these aspects of autonomous public communities.

**Autonomous Public Communities’ Norms of Interaction**

Networked social interactions generally are driven by endogenous network structural signatures or exogenous, actor attributes–based factors (Leenders et al., 2016). Endogenous network structural signature refers to different dispositions that actors may adopt in forming relations in different networked communities (Monge & Contractor, 2003). In different communities, actors may adopt different dispositions. In the context of organization–public engagement, two types of dispositions have been extensively discussed by scholars: dialogic engagement disposition (Taylor & Kent, 2014) and Tertius Iungens disposition (Kent et al., 2016; Obstfeld, 2005).

**Dialogic Engagement Disposition.** Dialogic communication has long been recognized as an important and effective approach for activism (Jameson & Lee, 2020; Taylor & Kent, 2014). According to Kent and Taylor (2002), dialogic engagement creates dialogic conversations. The process of dialogic communication involves at least two entities that have a back-and-forth conversation. Taylor and Kent (2014) argue that...
dialogic engagement is a communication predisposition, which reflects mutuality, a willingness to interact, spontaneity of interaction, and empathy. More than 20 years of dialogic communication research has generally found that dialogic communication contributes to more effective communication outcomes and higher levels of public commitment (Sommerfeldt & Yang, 2018). Social movements can enhance their reach and advocacy through dialogic communication (Place & Ciszek, 2021). But how dialogue actually works to build relationships among activists is still unclear. Based on previous research, we propose that dialogic communication disposition may also influence tie formation in the autonomous public community:

**Hypothesis 1 (H1):** Dialogical communication disposition positively and significantly affects tie formation among autonomous publics.

**Tertius Iungens Disposition.** Tertius Iungens means to join, unite, or connect and it is different from Tertius Gaudens, which refers to brokers who strategically separate disconnected contacts so that they can benefit (Burt, 2001). Block (2015) noted that in the social network literature on friendship formation, most studies assume reciprocity and clustering tendency. Tertius Iungens provides another engagement approach because it connects otherwise disconnected contacts and provides opportunities for new relationships and engagement to emerge in the network. As noted by Obstfeld (2005), Tertius Iungens can be understood as a "strategic, behavioral orientation toward connecting people in one’s social network by either introducing disconnected individuals or facilitating new coordination between connected individuals" (p. 102). Tertius Iungens facilitates relationship formation to sustain and enrich social capital for all members of a community. For instance, Yang and Cheong (2019) examined the evolution of the organizational network of the largest Chinese NGO incubator over its 6-year formative period and found that as “the third who joins,” the NGO incubator was able to bridge structural holes and build cross-sectional alliance networks in a nascent civil society. The NGO incubator facilitated the formation and development of a strong civil society actor community. Similarly, Kent et al. (2016) also contend that Tertius Iungens is oriented toward cooperation and collaboration. This is an engagement disposition that resonates with the co-creational approach to relationship building and therefore may play a central role in autonomous public community:

**Hypothesis 2 (H2):** Tertius Iungens disposition positively and significantly affects tie formation among autonomous publics.

Network structures are also shaped by exogenous, actor attributes–based factors such as how actors use social media. Yang and Taylor (2015) argue that strategic communication actions could shape network structures. When it comes to engagement in autonomous public communities, we differentiate three types of actions: organization-initiated engagement, publics-initiated engagement, and autonomous publics’ general engagement patterns with each other.

**Organization-Initiated Engagement.** This concept refers to communication initiated by the focal organization and is directed at specific members of the autonomous public community. Specifically, we operationalize organization-initiated engagement as retweets or mentions initiated by a focal organization, aiming at members of the autonomous community. Guo and Saxton (2018) noted that reaching out to specific audiences through targeted messages is an effective way to build relationships. This reflects the type of engagement that is extensively studied in traditional organizational-centric engagement research (Guo & Saxton, 2018). Such efforts may also convey a sense of personalized attention to engage key publics. It is likely that such efforts help to activate the reciprocal attention of key publics and thus drive their engagement with the organization and others in an autonomous public community. Therefore, we propose the following hypothesis:

**Hypothesis 3 (H3):** Sunrise.org-initiated engagement positively and significantly influences recipient publics’ tie formation with other publics among autonomous publics.

**Autonomous Publics–Initiated Engagement.** This concept refers to the type of engagement that is initiated by autonomous publics and is directed at the focal organization. We operationalize autonomous publics–initiated engagement as retweet or mentions initiated by members of the autonomous community, aiming at a focal organization. This type of engagement reflects the initiatives taken by autonomous publics to engage with and influence the focal organization (Saxton & Waters, 2014). Previous research shows that when autonomous publics engage with a focal organization, they may gain the power to influence the organization and shape the discourse in the autonomous public community (Choi & Park, 2014). Therefore, we propose the following:

**Hypothesis 4 (H4):** Publics-initiated engagement with Sunrise.org positively and significantly affects tie formation among autonomous publics.

**Autonomous Publics’ General Engagement Pattern.** Autonomous publics have different general engagement patterns. Some are good at engaging with others, regardless of the specific context. Following Leonardi et al. (2020), we operationalize each autonomous publics’ general engagement pattern as a function of her long-term approach to engagement (as indicated
by her total number of followers and the total number of
tweets sent over the entire account’s history) and how well
she could invite engagement (as indicated by the total number
of likes and retweets she has ever received). It is likely that in
an autonomous public community, the type of publics that are
generally keen to engage with others may also be quite popu-
lar. Therefore, we propose the last hypothesis:

Hypothesis 5 (H5): Autonomous publics’ general engage-
ment patterns positively and significantly affect tie forma-
tion among autonomous publics.

Autonomous Public Communities’ Networked
Discourse

Finally, because autonomous public communities are formed
around a focal organization, it is also interesting to examine
the discourses that emerge from such communities and com-
pare them with the organization’s messages. The discourse
that emerges from autonomous public communities could
reinforce or differ from the focal organization’s messages.
First, the autonomous network could extend and magnify the
social impact of the organization through a couple of mecha-
nisms. For example, members of the autonomous networks
could respond to organization’s messages and discuss such
messages among themselves, and effectively make those
messages more visible on social media (Guo & Saxton,
2018). In addition, members of the autonomous networks
could leverage their social networks and pool other forms of
capital to magnify the organization’s impact on society.

Second, autonomous public communities may take on
functions on their own that can coordinate with or facilitate
the focal organization’s goals and objectives. Third, the
autonomous network community could in turn affect the
focal organizations. When organizations are densely con-
ected with a community of autonomous publics, publics’
views and perspectives tend to strongly influence the organi-
sation. The denser the connection, the stronger the influence
(Rowley, 1997; Yang et al., 2018). As an organization’s
engagement efforts attract different types of autonomous
publics, the network could in turn shape the organization.
This effect may be especially strong when an organization
has attracted powerful influencers, such as political leaders,
to its autonomous community. These influencers’ agenda and
arguments may reshape the organization’s voice, prompting
us to ask the following question:

Research Question 3 (RQ3): In what ways do the dis-
course patterns in the autonomous public community
reflect or differ from the messages shared by Sunrise.org?

In conclusion, we are interested in better understanding the
actors, structures, and meanings of autonomous public com-
monicities. The answers to the hypotheses and research
questions will contribute to both theory building and practi-
cal approaches to network building in social movements.

Method

Case Description

We followed the evolution of the networked publics around
the grassroots youth organization, the Sunrise Movement
(SM hereafter), to examine how the organization engaged
with autonomous publics. The SM played a critical role in
the mobilization and publicizing of the G. Initially, in 2018,
the movement endorsed candidates such as Alexandria
Ocasio-Cortez, Ilhan Omar, Ayanna Pressley, and Rashida
Tlaib. SM organized a peaceful sit-in at Nancy Pelosi’s office
in November 2018, demanding action on a newly envisioned
piece of legislation called the Green New Deal (GND
hereafter).

In the months since, SM grew from a little-known grass-
roots organization to encompass more than 200 hubs in cities
around the United States and has held 200 town hall meet-
ings to promote the GND. On 10 January 2019, a letter
signed by 626 organizations in support of the GND was sent
to all members of Congress (Cama, 2019). Later in May
2019, more than 90 house representatives and senators
endorsed the GND. In August 2019, Sen. Bernie Sanders was
the first of the Democratic presidential contenders to back
the GND. By September 2019, most front-runners of the
2020 Democratic candidates had embraced the GND or
adopted their own version of ambitious climate policy plans.
The topic was featured prominently in multiple Democratic
presidential debates in 2019 (Irfan, 2019). When pressed
during a debate, Biden said that he did not support the GND
but had a plan that the media called, “a Green New Deal-
style climate plan” (Guardian, 2020).

By September of 2020, Joe Biden’s “Build Back Better”
agenda embraced one of the most ambitious clean energy
and environmental justice plans ever proposed by the nomi-
nee of a major American political party. The SM and its allies
had pushed climate change to the center of American politics
(Nwanevu, 2019). The SM may have even propelled Biden
and Harris to the White House because it reassured progres-
sive voters weary of Biden that he was serious about climate
change.

Data

The time frame for data collection was set between June 2019
and December 2019 during six democratic presidential
debates. Longitudinal research allowed the team to track
changes overtime. We collected tweets using the trending
hashtags related to GND during those weeks. Any tweets
including #greennewdeal or #Road2GND or #ClimateStrikeME
were retrieved for further analysis. We divided the data into
three waves to construct three network data sets and text
corpora to examine how the network evolved over time. The nodes in our networks are individual users who have tweeted using one or several of these hashtags and ties are based on retweet or mention relationships. Two actors are said to share a tie if one retweets or mentions another. Specifically, in July and August, a total of 174,893 tweets used the above hashtags. There were 104,899 unique users involved in this network, connected by 166,920 ties (density = .000015). In September and October, a total of 134,465 tweets were retrieved. There were 67,224 unique users in this network, who were connected by 119,151 ties (density = .000026). Finally, in November and December 2019, a total of 375,996 tweets were retrieved. There were 122,352 users involved, who were connected by 221,654 ties (density = .000015).

Furthermore, since we are interested in understanding the engagement patterns in SM’s ego networks, we identified the SM’s official Twitter account (@sunrisemvmt) and its directly connected user accounts. To examine the autonomous community surrounding SM, we removed @sunrisemvmt from each network and removed isolates and pendants from these networks as well. This step eliminated users who are included in these networks purely based on their relationship with the SM but have little to no interactions with any other users. These steps essentially revealed the autonomous community networks surrounding the SM at three different times and thus provide the data in this study. The first network (July–August 2019) contains 1,819 users connected by 7,430 ties (density = .002). The second network (September–October 2019) contains 827 nodes with 3,289 ties (density = .005). The third network (November–December 2019) contains 3,076 nodes with 21,345 ties (density = .002). These networks are further analyzed to address the research questions and hypotheses.

**Variables**

*Publics-Initiated Engagement.* Following Yang and Saffer (2019) and del Mar Gálvez-Rodríguez et al. (2019), publics-initiated engagement is operationalized as the number of times a user account retweets or mentions the focal organization.

*Focal Organization–Initiated Engagement.* Again following Yang and Saffer (2019) and del Mar Gálvez-Rodríguez et al. (2019), organization-initiated engagement refers to the number of times an organization retweets or mentions a user.

*Publics’ General Engagement Pattern.* Following Leonardi et al. (2020), we calculated each user’s engagement score with the following equation to assess their general approach to engagement, not specific to the focal organizations’ community. Leonardi et al. (2020) found that the higher the engagement score, the faster a user’s message tends to spread inside and outside of her community:

\[
\text{Engagement Score} = \frac{\sum \text{Likes}_{i,t} + \text{Retweets}_{i,t}}{\text{Total Followers}_i \times \text{Number of Tweets}_i}.
\]  

In our formula, the user \(i\)’s engagement score is the sum of her number of likes and number of retweets at time \(t\), divided by her total number of followers and her time of tweets.

*Reciprocal Dialogical Communication Approach.* According to Kent and Taylor (1998), dialogic communication refers to “negotiated exchange of ideas and opinions” (p. 325). In network terms, this refers to reciprocated communication patterns (see Table 1 for illustration and description). In Exponential Random Graph Model (ERGM) models, the reciprocity configuration examines statistically significant tendencies for actors to reciprocate relationships.

*Tertius Iungens (the Third Who Joins) Communication Approach.* The Tertius Iungens orientation emphasizes the tendency for actors to actively bridge ties that can bring a network closer. The network measure that best captures this type of orientation is the type of transitivity resulting from

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**Table 1. Network Configurations Modeled in This Study.**

| Configuration             | Illustration | Description                          |
|--------------------------|--------------|---------------------------------------|
| Edge                     | ![Edge](image) | Baseline propensity to build ties.    |
| Nodal attribute effect   | ![Nodal Attribute](image) | Propensity to build ties based on nodes’ attributes. |
| Reciprocity              | ![Reciprocity](image) | A tendency for reciprocated ties.     |
| Alternating k − 2 path (GWDSP) | ![Alternating k − 2 path](image) | Propensity for users to share ties with the third person. |

Note. GWDSP = geometrically weighted dyad-wise shared partner.
alternating k-triangle, which describes how actors introduce otherwise disconnected others through communicative actions (see Table 1 for illustration and description). We used geometrically weighted edgewise-shared partner (GWESP) to capture the effect of this network configuration.

User Twitter Status. In addition to the aforementioned variables, to control for the impact of accounts’ status on Twitter in terms of popularity, we included a number of variables such as users’ number of friends, number of followers, number of likes received, and number of retweets as control variables. Specifically, the number of friends refers to the total number of friends each account has at the time of data collection. The number of followers is the total number of followers each account has at the time of data collection. The number of likes received is the cumulative number of likes an account has received over all of its content at the time of data collection. And finally, the number of retweets is the cumulative number of retweets an account has received over all of its content at the time of data collection.

Analytic Strategies

We used social network analysis (SNA), network modeling, and semantic network analysis for the data analysis. SNA primarily applies analytic techniques to the relationships between individuals and groups, and investigates how those relationships can be used to infer additional information about the individuals and groups.

To address RQ1, we conducted community detection analysis. According to Ihm (2019), stakeholders’ autonomous networks refer to the networks formed among stakeholder themselves, excluding the focal organization. This step helps us to understand (1) whether stakeholders form autonomous clusters among themselves, and (2) the structure of such clusters. For this analysis, the Louvain algorithm (Blondel et al., 2008) was performed on each network multiple times using different resolution parameters to search for suboptimal modularity.

To test the five hypotheses, ERGM was conducted. ERGM is a network modeling method for predicting the patterns of tie formation within networks (Wang et al., 2013). The dependent variable in this model is the statistical likelihood of tie formation between two users. The independent variables are parameters based on the hypotheses and network structural features (see Table 1 for illustrations).

The model estimation procedure included the following steps. First, based on hypotheses, we constructed variables and included them in the model (for details about parameter specification, see Hunter et al., 2008). After specifying the model configuration using the ERGM package in R, the program then ran a series of simulations and produced both parameter estimates and standard errors for variables. The interpretation of parameter estimates and standard errors is similar to that of a logistic regression, where the parameter values stand for the log ratios of a given variable in predicting the likelihood of cross-sector tie formation. In ERGM, statistical significance is assessed by dividing a parameter estimate by its standard error, and t greater than 1.96 suggests a significant relationship (Lusher et al., 2013), meaning the hypothesized process significantly predicts the formation of cross-sectoral ties. We conducted ERGM analysis for the networks at each time wave.

Finally, semantic network analysis, a text-based analytical approach based on the co-occurrences, frequency, and clustering patterns among words (Liu et al., 2018), provided graphical representations of discourse based on meaningful relationships of written text. Semantic network analysis identifies salient concepts and the interpretive context surrounding them. This method helps to reveal the prominent issues that emerge in a big text corpus such as an autonomous community’s discussion. Before performing the analysis, we first preprocessed the text by removing duplicates, numbers, punctuation, symbol, URLs, possessive forms, and dates. We also converted all words to lowercase and applied stemming. For the tweets in the autonomous public communities, we removed words that appeared fewer than 5 times; for tweets sent by Sunrise.org, we removed words that appeared only once. We then set the connection criteria to the distance of 2, which means words immediately adjacent to each other share a tie. Six separate semantic network analyses were constructed for each time period, each of Sunrise.org’s tweets, and for the autonomous communities’ tweets.

Results

The Structure of Autonomous Public Communities

RQ1 and RQ2 inquire about the communities of autonomous publics around Sunrise.org and the top influencers in these communities. We first removed Sunrise.org and then conducted community detection analyses using the Girvan–Newman algorithm for each wave of network. Specifically, for the first wave (July–August 2019), the analysis identified four major communities and many smaller ones (fewer than three users involved). In the first wave, Bernie Sanders and Varsh Prakash are the leaders of largest community. AOC (Alexandria Ocasio-Cortez) and Elizabeth Warren are the leaders of the second largest community. The third community is headed by Chuck Todd (journalist at NBC News and presidential debate moderator) and then California Senator Kamala Harris. The second wave (September–October 2019) identified five major communities. The largest community is headed by Bernie Sanders. The second largest center around AOC and Rashida Tlaib (a representative for Michigan’s 13th congressional district). The third one is headed by Eco1stArt (an eco-friendly business). For the third wave (November–December 2019), the analysis revealed three large communities along with many small ones. The largest community contains mega influencers such as Bernie.
Sanders, Naomi Klein (journalist), and AOC. The second is headed by Elizabeth Warren and the third is headed by Eco1stArt.

Overall, the analysis found that upon the removal of the SM, the network did not fall apart. Instead, communities took shape around central actors whose influence persisted at least half a year. A closer look suggests that the prominence of politicians such as Bernie Sanders, Kamala Harris, and AOC persisted over the half year period. Considering that this was the U.S. presidential primary season, having top presidential candidates involved in these communities may have helped take the GND from being seen as a fringe issue to being seen at the center of public attention.

### Tie Formation in the Autonomous Public Communities

Which network endogenous and exogenous factors drive tie formation? H1 sought evidence about whether dialogical communication disposition positively and significantly affects tie formation among autonomous publics. Table 2 presents Markov Chain Monte Carlo Maximum Likelihood parameter estimates (MCMC-MLE, an estimation technique commonly used for ERGM) and their standard errors. The goodness-of-fit showed a relatively good fit of the proposed models (see Table 2 goodness-of-fit test for the three full models). H1 predicts that dialogic reciprocal relationships influence tie formation in the autonomous public communities. H1 is partially supported when public attention on the issue is high. Models 1, 4, and 7 report endogenous-factors-only models. At Wave 1 and Wave 3, when public attention on this issue was relatively high, the networks showed a positive and significant tendency toward reciprocity. When the issue attention was relatively low, the network showed a significant and negative tendency toward reciprocal ties. Models 3, 6, and 9 report findings on full models where endogenous, exogenous, and control variables are all considered. A consistent and robust pattern emerged from the analyses showing a significant and negative tendency toward forming reciprocal ties when all factors are considered. Overall, it seems that autonomous publics were not bond together through dialogues with each other as pairs. So, how do they form communities?

| Variables                       | Wave 1 network (July–August 2019) | Wave 2 network (September–October 2019) | Wave 3 network (November–December 2019) |
|---------------------------------|----------------------------------|---------------------------------------|----------------------------------------|
| Edges                           | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 |
| Edges                           | -6.115*** | -6.390*** | -6.633*** | -7.337*** | -5.132*** | -5.538*** | -6.442*** | -5.761*** | -5.941*** |
| Endogenous factors              |         |         |         |         |         |         |         |         |         |
| Reciprocity                     | 2.136*** |         | -2.580*** | -0.031*** | -1.702*** | 0.867*** | -1.690*** |         |         |
| Tertius Iungens (GWESP)         | 2.825*** |         | NA       | 3.129*** | NA       | 2.028*** | NA       |         |         |
| Engagement pattern              |         |         |         |         |         |         |         |         |         |
| Publics-initiated engagement    |         |         |         |         |         |         |         |         |         |
| Organization-initiated engagement |         |         |         |         |         |         |         |         |         |
| Public engagement score         | -0.010*** | -0.001*** |         | -0.004*** | -0.003*** | -0.004*** | -0.003*** |         |         |
| Control variables               |         |         |         |         |         |         |         |         |         |
| No. of Followers                |         |         |         |         |         |         |         |         |         |
| No. of Friends                  |         |         |         |         |         |         |         |         |         |
| No. of Likes                    |         |         |         |         |         |         |         |         |         |
| No. of Retweets                 |         |         |         |         |         |         |         |         |         |
| AIC                             | 104,001 | 322,261 | 327,429 | 39,747  | 37,292   | 33,878   | 292,199  | 119,283  | 345,870  |
| BIC                             | 104,027 | 322,267 | 327,430 | 39,781  | 37,338   | 33,981   | 292,242  | 119,284  | 345,892  |
| Network size                    | 1,810   | 1,810   | 1,810   | 827     | 827      | 827      | 3,076    | 3,076    | 3,076    |

Note. NA means this configuration cannot be applied to the model otherwise the model cannot converge. ERGM = Exponential Random Graph Model; GWESP = geometrically weighted edgewise-shared partner; AIC = Akaike information criteria; BIC = Bayesian information criteria.

*p < .05. **p < .01. ***p < .001.
H2 predicts a strong and positive effect of Tertius Iungens. H2 is strongly supported across models. Contrary to the case of reciprocity, across Models 1, 4, and 7, we consistently identified a strong and positive tendency for the network to form triadic closure across time waves. In other words, it is common among a substantial number of members to introduce ties to others and help build connections. However, this does not necessarily suggest that structural holes in these autonomous communities will decrease over time. Table 3 reports that standardized average values for key structural holes indicators (structural hole effective size, efficiency, and constraint), showing that the value for structural holes remained relatively stable despite the tendency for nodes to introduce previously unconnected others to each other. This structural hole “introduction process” is likely due to new contacts continually being added to the networks. A further comparison of the three network waves showed that among the thousands of users involved in the autonomous public network, only 354 accounts consistently appeared in all three waves.

H3 predicts that focal organization–initiated engagement positively and significantly influences recipient publics’ tie formation with other publics among autonomous publics. H3 was supported with strong and consistent effect across all models in which this factor was included (Models 2, 3, 5, 6, 8, and 9). This is the strongest predictor of how autonomous publics would go on to build ties with others in the autonomous publics’ communities. It is likely that given the status of the SM, it only interacted with a selected number of publics. The publics that received communication initiated by the SM therefore gain a certain status in the group, which in turn leads these members to be very popular among others.

H4 predicts that publics-initiated engagement with the focal organization significantly affects tie formation among autonomous publics. This hypothesis is only partially supported. In Models 2, 5, and 8, we only consider engagement pattern–related attributes. The more frequently users initiated communication with Sunrise (only in Wave 1) leads to a higher tendency to also build ties with other autonomous publics. However, in the full models (Models 3, 6, and 9), it seems that users who initiated ties with the focal organization also tend to build more connections with other autonomous publics.

H5 predicts that the publics’ general engagement pattern will positively and significantly affect tie formation among autonomous publics. H5 was rejected. Across the models, the analysis consistently found a negative and significant tendency for users with high engagement scores to show less interest in engaging with other autonomous publics.

### Networked Discourse in the Autonomous Public Communities

RQ3 explores the ways in which the discourse patterns in the autonomous public community reflect or differ from the messages shared by Sunrise.org. For Period 1 (July–August), Sunrise.org sent/retweeted 58 tweets, which form a network of 445 nodes connected by ties (Figure 1A). The color of the nodes is based on Newman grouping, and there are four major clusters of words with one cluster clearly dominant the conversation. The most prominent cluster is climate change featuring words such as climate, change, emergency, will, and sunrise, which frame Sunrise.org as part of the solution to the climate change emergency. Other prominent clusters discussed policy advocacy for the GND (e.g., greennewdeal, town hall, endorses, joining and convention), the livelihood of fossil and coal works (e.g., coal, workers, oil), empowering Native Americans (e.g., empowering, indigenous, tribal), and corruption in congress (e.g., corruption, fuel, fossil, funding). Furthermore, we analyzed the discourse of the overall autonomous community, which is a much larger network of 2,521 nodes connected by 1,167 ties. To meaningfully visualize the semantic network, we removed all isolates and nodes with a total degree smaller than 2. The color of the nodes is based on Newman grouping, and there are four major clusters of words with one cluster clearly dominant the conversation. Among the prominent clusters, climate change (climate, treat) and the livelihood of fossil fuel workers (fossil, workers, production) are consistent with that of the discourse of Sunrise.org. However, new clusters such as Joe Biden’s policy propositions (e.g., joebiden, hope, united-nations, paris) and AOC’s policy arguments and actions (e.g., Alexandria Ocasio-Cortez, temperature, justice, national, strike) took a much more center stage.

For Period 2 (September–October), Sunrise.org sent/retweeted 51 tweets, which form a network of 336 nodes connected by 164 ties (Figure 1B). The color of the nodes is again based on Newman grouping, and there are five main clusters of words. Climate crisis in California (e.g., climate, crisis, threatening, California, people) is the most prominent cluster. Other topics include policy advocacy involving Democratic politicians (ewarren, demanding, office, democratic leaders, etc.) and young people’s leadership (e.g., young people, led, country). The discourse of the overall autonomous community is a much larger network of 6,416 nodes connected by 3,404 ties. To meaningfully visualize the semantic network, we removed all isolates and nodes.

| Table 3. Structural Hole Measures for Three Waves. |
|------------------------------------------|
| Scaled structural hole measures          | Wave 1 | Wave 2 | Wave 3 |
| Efficiency                               | M = 0.733, SD = 0.206 | M = 0.790, SD = 0.193 | M = 0.761, SD = 0.186 |
| Effective network size                   | M = 4.958, SD = 70.232 | M = 4.314, SD = 50.726 | M = 7.899, SD = 90.179 |
| Constraint                               | M = 0.550, SD = 0.334 | M = 0.622, SD = 0.344 | M = 0.495, SD = 0.367 |

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with a total degree smaller than 2 (Figure 2B). In this large conversation, Sunrise.org’s messages are no longer at the center of conversations. Of the several major discussion topics, the cluster of nationwide climate change movement (e.g., united_states, los_angeles, extinction rebellion, American, support, progressive) took a prominent position in the conversation, which greatly expanded the horizon of discourse in comparison with the previous period.

For Period 3 (November–December), Sunrise.org sent/retweeted 237 tweets, which form a network of 1,124 nodes connected by 671 ties (Figure 2B). The color of the nodes is again based on Newman grouping, and there are five main clusters of words. The two most prominent clusters continued to focus on the policy advocacy of the GND (e.g., greennewdeal, future, sensanders, aoc, endorse) and the impact of climate change (e.g., climate, solution, racial, economic). Other prominent clusters include the livelihood of fossil and coal workers (e.g., fight for, coal, workers) and California climate crisis (e.g., deadly, forest, fires). The autonomous public communities’ discourse forms a network of 7,283 nodes with 18,113 ties. The two most prominent clusters focus on climate change policy (e.g., climate, climateemergency, bernie) and operation of fossil companies in California (e.g., Shell, LA). The autonomous public communities’ discourse is largely consistent with Sunrise.org’s messages, thus expanding the scope of discourse.

**Discussion**

This study explores characteristics of autonomous public communities formed initially around social movement organizations. Our findings reveal autonomous public communities’ unique patterns of interactions. We see that while the focal organization is not positioned in the center, as the network evolves, it still significantly affects tie formation and discourse. Our analysis reveals a much more nuanced understanding of networked organization–public engagement and describes how social movements’ mediated relationships create autonomous communities.

**The Unique Patterns of Interaction of Autonomous Public Communities**

Our analysis uncovers unique interaction patterns of an autonomous public community. Publics had interactions with the organization, and over time, they have had interactions with each other. The connected network structure persists even after we removed the SM from the network, suggesting that when organizations engage with publics and build communities around such engagement actions, organizations are not necessarily the center of such communities. The relationships between the SM organization and publics are much more complex and dynamic than an organizational-centric view could explain.
Figure 2. (A) Semantic network analysis of discourse in September and October. (B) Semantic network analysis of discourse in November and December.
We further examined the tie formation patterns in such autonomous communities to understand what mechanisms connect publics into communities, finding a significant and negative tendency for reciprocity in an enduring, albeit, evolving issue network. Previous studies have found that in networks with low or negative tendency for reciprocity, those networks tend to be unstable and marked with volatile and porous boundaries (Lai et al., 2019). Our findings also confirm that only a small portion of users ($n = 345$) consistently appeared in all three waves of data.

The clustering tendency, referred to as the Tertius Iungens, describes the tendency of two unconnected actors that shared a contact, to become connected. The networks that emerged showed members of the community going out of their way to introduce their ties to others and they freely shared information with others. Block (2015) noted that in the social network literature on friendship formation, most studies would assume reciprocity and clustering tendency would go hand in hand. In other words, reciprocity helps to strengthen the tendency to close a friendship circle and vice versa. Our study found a consistent and positive tendency for clustering paired with a negative tendency of reciprocity. One possible explanation is that these autonomous public communities function to primarily involve previously unconnected, new contacts into this circle of discourse. Members of these communities are not necessarily interested in socializing with each other, but want to interact with others who are interested in the GND. This explanation is also consistent with Obstfeld’s (2005) research, who found that “the action of the Tertius Iungens is not that of cultivating the preexisting competition of structurally equivalent alters but of facilitating, locating, and even forging coordinated action between disparate network members” (p. 121).

Also consistent with Obstfeld’s (2005) finding, we did not find evidence that Tertius Iungens increases/decreases actors’ access to structural holes. This is because as introductions of new ties closed existing structural holes, they also changed the network structure and lead to subsequent introductions that generated new structural holes. Essentially, the most effective function of Tertius Iungens is to create a dynamic momentum for a community to reach out to new ties. The GND movement grew because members shared their contacts with others, possibly showing the preference for network growth over an individual’s preference for network position and power.

It is interesting to note that although members of these communities change over time, the communication patterns persisted. New members followed past patterns of bringing in new members and then going back out to bring in more. Our analysis showed that autonomous public communities demonstrated a type of tie formation pattern that is uncommon in other forms of communities such as communities of practitioners, industry groups, or trade relations.

**Evolution of an Organization’s Influence on Autonomous Public Communities**

Our data show that Sunrise.org posts, support for certain candidates, and other activities facilitated social media engagement that created the foundation of an advocacy national network. The research team collected and analyzed the data over six waves ending in December 2019—far before Biden and Harris joined together on the Democratic presidential ticket. Our study provides a glimpse into the ways in which progressives and climate change policy activists interacted with their messaging.

The organization was not necessarily the center of interactions. Stars such as political figures emerged in these communities as leaders. Our findings suggest that the focal organization was still powerful in the autonomous network in two aspects: tie formation pattern and community discourse patterns.

In terms of tie formation pattern, the analysis showed that across networks, the actors that the focal organization initiated interactions with tend to be favored in interactions. In other words, if Sunrise.org initiated engagement with an actor, such engagement could help the actor to become popular in the autonomous community and, over time, become more influential among community members.

In terms of discourse patterns, the analysis showed that the focal organization mainly focused on a few key issues throughout the half year (e.g., climate crisis, GND, the livelihood of fossil and coal industry workers). It seems these main topics also took a prominent role in the autonomous communities’ overall conversation. This finding suggests that focal organizations reap benefits when others are connected and form communities around the organization. The organization can still drive the agenda forward through the autonomous public communities that it helped to create. However, this does not mean the focal organization’s message will dominate the community’s discourse. As our analysis showed, the communities’ discourse often broadened the scope of the topics or took the topic into new directions.

**Methodological and Practical Implications**

We still have a lot to learn about how social movements mobilize social media for public policy outcomes. Our analytic approach combines network and discursive perspectives to provide a multilevel representation of social media communities. The combination of network visualization, modeling, and discourse analysis helps to identify and compare complex patterns of structuration and community configurations in social movements.

We live in the age of networks so our study also has practical implications for social movements and other networks of networks. Social movements are the “canary in the coal mine” and their positions on social, political, and cultural issues are often years or decades ahead of others’ agendas.
Our longitudinal data about the SM show that as few as 354 accounts consistently appeared in all three waves. But these accounts and the community around them kept the GND alive and allowed it to evolve. The findings provide insight into how an activist or a social movement organization might use network analysis to identify, support, and make prominent social media network leaders. When Sunrise.org initiated engagement with a networked member, that type engagement helped the actor become popular in the autonomous community and, over time, become more influential among community members. Social movements can use these findings to better allocate scarce resources to improve communication outcomes and social impact.

Limitations and Future Research

This study does have a few limitations that can be addressed in future research. First, we mainly focused on one social movement organization. The organization has clear policy advocacy goals and it has been active on social media to pursue advocacy goals. As such, this organization’s characteristics may also influence the observed features of autonomous public communities around the organization. Future studies may further examine multiple types of organizations’ autonomous public communities to see whether similar patterns persist or whether new features emerge. Second, our data were collected from one social media platform. Future studies may triangulate multiple data connection methods to see how autonomous public communities form across different contexts. With continued research, we may arrive at a general understanding of how autonomous public communities function, how they shape society, and the role that social media play in advancing social movement advocacy.

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Notes

1. In Exponential Random Graph Model (ERGM) models, the null hypothesis about tie formation is that actors are connected through randomly formed ties (Wang et al., 2013). If this is the case, the distribution of ties that actors have should follow the same pattern as predicted by random graphs. All hypotheses in this article propose that independent variables influence tie formation in such a way that tie distribution significantly differ from that of random graphs.

2. The three hashtags, #greennewdeal, #Road2GND, and #ClimateStrikeME, were originally used by the Sunrise Movement organization to organize rallies and movements related to the Green New Deal. Influential politicians such as Alexandria Ocasio-Cortez also adopted these hashtags which help to promote their popularity. These hashtags have been widely included in Green New Deal–related tweets and therefore provide a reliable way to identify Green New Deal–related conversation.

3. Ego networks consist of a focal node ("ego") and the nodes to whom the ego is directly connected to (these are called "alters") plus the ties, if any, among the alters (Crossley et al., 2015).

4. By directly connected, we mean that within the three networks that we have identified, autonomous publics who have retweeted or mentioned the focal organization.

5. In networks, isolates refer to nodes who are not connected to any other nodes. In our case, isolates are accounts who are included in our networks through their one and only connection with the focal organization. Because we removed the focal organization from our further analysis, they become isolates due to the fact that their only connection in these networks has been removed.

6. The Girvan–Newman algorithm for community detection depends upon the iterative elimination of edges with the highest number of the shortest paths that pass through them. By removing the edges, the network breaks down into smaller networks, known as communities.

7. Reciprocal relationships are ties in a directed network that are mutually linked (Carrington et al., 2005).

8. Triadic closure is the property among three nodes A, B, and C, that if the connections A-B and B-C exist, there is a tendency for the new connection A-C to be formed (Carrington et al., 2005).

9. A structural hole is a gap between two actors who have complementary sources to information (Burt, 2004).

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