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**Mixed methods for the study of opinion dynamics
in the emergency of events.** Integrating interviews,
social network analysis and frame analysis.

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1. Introduction.

Empirical research on online hate speech within dynamic contexts of digitally mediated communication presents several challenges. Firstly, hate speech is increasingly recognized as a discursive element within broader political strategies aimed at shifting societal norms toward authoritarian positions. Secondly, such communications occur within a media ecosystem where opportunities for collective action are confined to specific moments of public opinion formation. These moments, in turn, are shaped by the temporal and material logics of both traditional (centralized) and social (interactive) media. For individual interactions to have an impact on public discourse, particularly in addressing hate speech, some degree of coordination among users' media practices is essential.

To navigate these complexities, this article proposes a methodological framework that facilitates the analysis of the multifaceted dynamics of hate speech in online communication. While the framework has proven effective in empirical analysis with collected data, it is designed to be open-ended, allowing for flexibility in adapting to the diverse forms and structures of data gathered from various sources. This approach ensures that future analyses employing this framework will be responsive to the unique coding possibilities and nuances inherent in the data.

2. Integrating mixed methods from a pragmatic approach.

This framework employs a mixed-methods methodology that integrates both quantitative and qualitative methods, guided by a non-positivist outline —so the goal is not to approach reality from a hypothesis to be validated or refuted. While the aim is to understand how participants interpret aspects of reality, the focus is not on representing those views as faithfully as possible (Feilzer, 2010). The "added value" (Gillespie et al., 2024, p. 117) of this research lies in its conceptual and methodological contributions for inductively capturing the behaviors, practices, and tactics used by individuals in communication networks within the current digital public sphere, particularly in response to hate speech.

To achieve this, the methods were selected based on a "pragmatic" criterion, considering the phenomenological aspects raised by the research problem (Feilzer, 2010). These include the structure of available data in the field of study, the feasibility of analysis within the scope of a doctoral thesis, and the contribution of each method to advancing new knowledge (Gillespie et al., 2024, p. 121). Methods of analysis from various traditions, including grounded theory, practice theory, framing theory, and social network analysis, were integrated using both classical qualitative coding techniques and computational social sciences ones.

The methodological framework developed in this working paper has been tested for the empirical analysis of two distinct sets of data: 18 semi-structured interviews with key actors involved in combating online hate speech, and interaction and discourse data from microblogging platforms, related to two case studies of networked publics mobilizing against hate speech. Additionally, the initial phase of the research involved an exploratory review of documents and reports produced by NGOs and public institutions. This review provided critical insights into the state of the issue, not from an academic standpoint, but from the perspectives of state and civil society organizations, further shaping the empirical foundation for the framework.

2.1. Axis for ordering practices: temporality and spatiality.

The primary aim of the research was to identify, describe, and logically classify the practices and tactics empirically observed in the two data sets previously outlined —interviews and interactional plus discursive data from social media. This classification was developed based on key theories —such as social practice (Knorr Cetina, 2001), emergency (Williams, 2020), hegemony (Hardnack, 2019) and media practice (Mattoni & Treré, 2014)— and the inductive incorporation of findings from both the qualitative analysis of interviews and the qualitative-quantitative analysis of online interactions. To integrate the practices and tactics from both data sets, a cohesive matrix was designed, drawing on theoretical contributions and inductively derived insights.

The integration matrix was grounded in the media practice theory proposed by Mattoni and Treré (2014), which utilizes a temporal axis and an activity axis related to media use. In this case, the temporal axis is divided into two timeframes: emergence and latency. According to social practice

theory (Knorr Cetina, 2001), short-term practices refer to the specific form a practice takes in its execution during concrete situations (the moment of practice realization), while medium-term practices refer to the repertoires individuals have for general forms of practice (latent or potential practices). From the emergence theory (Williams, 2020) perspective, short-term practices are those carried out during the particular articulation of elements in emergency (specific moments for practice realization), leading to a phase change, while medium-term practices are those happening afterwards the emergency and/or preceding the articulation in the next emergence (latent or potential practices). Additionally, hegemony theory (Hardnack, 2019) posits that short-term practices, during specific events when interaction occurs, can be likened to those carried out in maneuver wars (the moment of practice realization), while medium-term practices, during broader cycles, correspond to position wars (latent or potential practices).

In terms of the activity axis, initially based on media use, it has been adapted into a spatial scale, consisting of three distinct planes of online activity that can be analytically distinguished, though they may overlap in daily life. These planes include: the individual-user media practices on the platform, the practices for the articulation of a networked public, and the networked action practices directed among adversaries. These three levels of spatial scale were inductively identified through the interview analysis and correspond to several theoretical frameworks, including media practice theory (Mattoni & Ceccobelli, 2024), networked public theory (Papacharissi & Fatima Oliveira, 2012), and contentious politics theory (Kavada & Poell, 2021).

The spatial scale framework provides a comprehensive lens through which to understand how online practices unfold at different levels: from individual actions on the platform to collective actions coordinated by networked publics, and, finally, to actions directed against specific adversaries or opposing discourses. This multi-level perspective facilitates a nuanced understanding of the dynamics of hate speech and counteractions in digital spaces, addressing both micro and macro aspects of the phenomena.

2.2. Two analytical levels for two different types of data: interviews and online interactions.

The strategy of integrating practices is driven by the aim to "achieve completeness" regarding the phenomenon under study (Gillespie et al., 2024: p. 120). Mapping latent behaviors, actions and practices, primarily obtained from the coding of interviews, aims to address the first research question and achieve the first objective. This objective and this question are specific to the analysis of hate speech and counter-speech. They can be reformulated for the study of any other type of action —for instance, actions to counter disinformation or actions to promote a particular political position— that may be of interest for the analyst in other contexts.

RO1: *To know the actions taken by users to counteract (the impact of) online hate speech.*

RQ1: *What actions do relevant actors in the digital arena promote to counter (the impact of) online hate speech?*

Mapping behaviors, actions and practices articulated during emergencies, mainly derived from the analysis of interaction and discourse dynamics in the case studies, is intended to answer the four remaining research questions and fulfill the second objective. These questions are specific to the analysis of case studies. This means that the knowledge that can be generalized stems not from the information obtained in the response to each answer but from the questions themselves, that may be replicated in any other study —related, for instance, to emergencies in which disinformation appears or an event in which a political confrontation takes place.

RO2: *Describe the most significant online behaviors during emergencies of interaction related to some hate speech.*

RQ2: *What are the opinion leaders involved in the emergencies of interaction arising around online hate speech?*

RQ3: *According to the position of each opinion leader in the interaction network, what are the most popular frames in each group throughout the emergence of the interaction?*

RQ4: In the emergence of the interaction, are there opinion leaders who emit unexpected frames given their position in the network?

RQ5: Among the opinion leaders who emit the most popular frames, which type of social actor has more visibility in the network?

A limitation of the current research design is that practices in emergency related to user actions on the platform could not be studied. Accessing these practices would require methods that capture user perceptions involved during the emergence of interactions and/or the participation of the analyst as an observer in spaces where decisions are made during the emergence. This could be an avenue for future research that should be taken into account since the design phase.

It is also crucial to note that merely observing concurrent online behaviors during emergency periods does not automatically qualify them as practices. To be considered a practice, behaviors must recur and include elements of social norms and moral references. The term ‘online behavior’ will be preferred in the first stage of the analysis. In the subsequent stage, the aim is to determine whether these behaviors can be classified as practices (or, where applicable, tactics) and what criteria are considered in making such a determination.

The integration of practices and tactics obtained from the interviews and interaction data is the final step in the analysis. Prior to integration, both datasets have to be analyzed separately.

Qualitative analysis, based on grounded theory, is used for the interviews, while the analysis of interaction and discourse data combines network structural analysis —utilizing computational techniques due to the large scale of the data— for finding the opinion leaders, and frame analysis to examine the most amplified messages. The analysis of online interactions and discourses constitutes a second level of analysis with its own methods, units of observation, and variables. The outcome of this analysis is the identification of significant online behaviors in emergent interaction-discourse networks, which are interpreted as actions and, subsequently, integrated in the first analytical level —together with actions and medium-term practices found in the interviews.

3. Qualitative analysis of multitudinous interactions.

The interaction-discourse data from the case studies derives from two real-life situations in which tens of thousands of people participated through X/Twitter, engaging in both hate speech and counter-speech. The media practices of citizens during these emergencies create interaction networks that can be transformed into "networked publics" (Papacharissi & De Fatima Oliveira, 2012) or "connected crowds" (Toret et al., 2013) which articulate community or collective interests (Lünenborg & Raetzsch, 2017) and have the potential to exert political influence in the public arena. Despite this potential, the analyst has to approach these interaction networks assuming that has no prior knowledge of whether users' concurrent behaviors will represent an articulation of collective interests, and if so, of which type. To investigate phenomena of this type, it is proposed to combine two approaches from different disciplines, ethnography of crowds and computational communication sciences, that, as the literature review reveals, have not yet converged in empirical analysis, at least not in a systematic manner.

3.1. The ethnographic approach to online crowds.

Observing crowd behavior presents a methodological challenge, as it is far more complex than "reading" repetitive social practices (Steffen, 2020). As a social form, crowds do not correspond to any specific content, function, or meaning, and the "multiplicity of actors" makes it hard to discern collective intent (Steffen, 2020). However, crowds are not entirely disorganized. In *Crowd: Ethnographic Encounters*, Steffen references how Geertz described the audience at cockfights in Bali in contradictory terms —initially as a "unified superorganism" (Geertz, 1973), later as "not organized enough to be called a group and not disorganized enough to be called a crowd" (Geertz, 1973). Geertz noted that "the presence of the audience" created "the drama, the importance, and the depth of the game," though he also acknowledged that "the dynamics of the crowd's audience" were "never fully explored" (Steffen, 2020). For the study of emergencies of hate speech and counter-discourses, the interaction-discourse networks formed could be seen as scenes where the audiences generate the drama (by focusing attention on certain topics), the importance (by fostering interaction between certain actors), and the depth (through varying levels of intensity and duration).

In *A Grammar of the Multitude*, Virno (2007) emphasized the "transindividual elements of the multitude," which allow it to be seen as a "differentiated political subject." In this sense, networked interaction groups may become semi-articulated subjects capable of public intervention. This suggests that a networked interaction can evolve from being a mere audience into a networked public —something more than just atomized individuals. The challenge for the analyst is determining at what point an audience transitions from an aggregation of individuals into a fully articulated public, and identifying the dynamics that enable this transformation. At the outset, what the analyst observes is a disorganized multitude of nodes without clear structure. Part of the work is to uncover any underlying order or structure within this, and to assess whether changes in such structure hold significance for the articulation of a networked public and its potential to exert influence on the adversary —in this case, the hate speech spreader(s). Ideally, the connections between the structure of a connected crowd and a possible articulation of a networked public capable to exert influence on the adversary should be discussed through "collective reflexivity," which involves creating interpretations of the data that resonate with the broader social network analysis community (Tubaro et al., 2021) —including people involved in the articulation of counter-speech.

3.2. Computational Social Sciences for the study of online communication.

Computational communication sciences have recently emerged as a significant "methodological catalyst" (Hilbert et al., 2019) for addressing foundational questions in communication sciences. Situated within the broader field of computational social sciences, these methods use the vast data generated in virtual environments, such as social media platforms, to study phenomena relevant to social sciences, political science, and behavioral sciences (Lazer et al., 2009). One of the key advancements of this field is the ability to analyze social networks at a new scale, enabling deeper insights into political relationships like power, influence, and hegemony through user interactions. This is especially relevant when working with large datasets, as it provides more rich and detailed insights than traditional methods.

For the framework proposed in this working paper, computational analysis follows a "two-step model" (Gillespie et al., 2024), beginning with computational techniques to obtain extracts from

online interaction and ending with the qualitative interpretation of these extracts. Later, the results are integrated within other results obtained qualitatively —first with those coming from frame analysis of messages and after with those from interviews. This approach is necessary due to the differences in the structure of the data obtained from coding interviews and frames and interaction data from platforms like X/Twitter. The goal is to transform raw interaction traces into comparable units of analysis —practices and tactics— enabling a meaningful comparison and interpretation of user behaviors and actions.

The value of this contribution lies in two key aspects. First, it offers an opportunity to generate new knowledge on how public opinion forms in the digital age, an area previously constrained by lab-based simulations that simplified real-world complexities (Venturini et al., 2015). With the advent of digital media, the analysis of "social trajectories left by digital traces" offers a new way of studying collective life, refining theories that were previously based on synthetic data (Venturini et al., 2015). The second point of value is that, due to the closing of free academic access to X/Twitter's API in February 2023, the data collected for this research is situated in a unique window of opportunity—one of "abundance" of social interaction data (Venturini et al., 2015)— just before the access was restricted . This makes the findings from this research especially timely and valuable for advancing the emerging field of digital communication studies.

4. Description of methods and how they were used.

4.1. Interviews.

The analysis of interviews can be carried out both deductive and inductively. For deductive analysis, the data from interviews can be categorized into two main themes based on the theoretical framework. For instance, 'hate communication' and 'communicative action.' The first category is aimed to identify practices directly focused on responding to hate speech, while the second is aimed to identify practices focused on facilitating understanding and/or dialogue.

This initial category lacked sufficient precision for a systematic categorization of the actions and practices the analyst encountered in the data she collected, so she moved to inductive coding. The result was a three-category code for actions and practices in response to hate speech that related to

an individual perspective (concerning what users can do within the affordances of social media platforms), a collective perspective (where the response is framed by a networked public), and a contentious perspective (where the weight of the action is posed in directly reducing the volume of hate speech that circulates publicly). For any other analyst, this categorization of actions and practices should work as a deductive material that may be overflowed by what their own data have to say to them.

4.2. Social Network Analysis.

For applying social network analysis (SNA) to the study of opinion dynamics in digital contexts, particularly with a focus on online hate speech and counter-speech, it has been helpful to follow the guidance of Knoke (1990) and Scott (2017). Knoke's work on social networks provides insights into how interactions between individuals or groups can reveal the influence, power, and cohesion within networks, while Scott's foundational concepts of social network analysis, particularly on the structure of social ties and their impact on collective behavior, offered a solid framework for understanding how information spreads and is processed in these networks.

The application of Social Network Analysis (SNA) with computational methods for the study of opinion dynamics based on big data from online interactions consists of three phases:

1. **Network Preparation.** This initial stage starts with the identification of the beginning of the emergency and the peak segments of interaction, helping to define the temporal period that has to be studied. Next, the network is created by analyzing the interactions between nodes (such as users or entities) and the edges (connections or relationships between them). Communities within the network are then detected, which are groups of nodes that have more dense connections among themselves than with the rest of the network. The network is then visualized, aiding in the understanding of its structure. Finally, disconnected nodes that do not contribute to the analysis are excluded.

2. **Sampling Units of Observation.** In this phase, relevant samples are identified for analysis based on key interactions within the network. Key tasks include the identification of opinion leaders and the identification of popular messages. Opinion leaders are the nodes with the highest influence in

the network, which can be measured through a centrality metric such as degree centrality —for instance, by selecting the nodes with highest in-degree connections. Popular messages are those that have received the most engagement (e.g., retweets, mentions), indicating their wide dissemination.

3. Analysis of Variables. In the final phase, specific variables related to the interactions in the network are analyzed: position of opinion leaders in the network and their visibility degree. The position of opinion leaders within the network is examined, particularly how their influence contributes to polarization or cohesion in the discourse, depending on their location in the structure. The visibility of opinion leaders is assessed to understand how their interactions propagate information throughout the network, highlighting their role in shaping the overall dynamics.

These three stages, involving the preparation of the network, sampling for analysis, and in-depth analysis of key variables, allow researchers to study the structure and the dynamics of networked publics in a context of potential contention within an adversary.

4.3. Frame Analysis.

The literature on framing analysis, as explored by authors such as Miller (1997), Snow and Benford (2000), and Ryan et al. (2010), is extensive. However, there is a lack of systematic models for studying the framing of narratives by groups of users during dynamic interaction periods, particularly in response to hate speech. This gap has led the researcher to develop a custom model for studying the behavior of both hate speech producers and their challengers.

The framework draws upon Desrosiers' (2012) work on conflict frames and Thijssen and Verheyen's (2022) framing of solidarity. Framing is understood as the interpretation of meaning in emerging situations, where problems are described, solutions are offered, and political opportunities are generated. In today's hybrid media system, this interpretation is negotiated among a variety of actors, including polarized audiences, journalists, and platform algorithms.

To identify the practices and tactics involved in these meaning negotiations, a deductive-inductive coding book was created from the data. The coding process involved integrating theoretical insights on conflict framing, solidarity framing, and the components of diagnostic and prognostic framing

(Snow & Benford, 2000) with iterative qualitative analysis (Srivastava & Hopwood, 2009). Desrosiers (2012) identified four core types of conflict frames: "injustice," "adversarial," "counter-framing," and "victimization," while Thijssen and Verheyen (2022) emphasized that solidarity is no longer solely a left-wing prerogative but is also claimed by the right.

The coding book, refined through both deductive and inductive methods, includes two levels: the first level categorizes diagnostic and prognostic frames, and the second level focuses on the specific objects within the communicative and territorial context. Diagnostic frames were analyzed for their references to injustice and adversarial frames, with the responsibility placed on various actors such as media, institutions, and social groups. Solidarity frames were found to overlap with victimization frames.

In prognostic frames, the researcher examined the severity of the issue, whether counter-frames reaffirmed hate speech or proposed alternative discourses, and the suitability of proposed solutions. Solutions were categorized into those addressing the territorial situation (the conflict's origin) and those addressing the communicative situation (the struggle for hegemony). This dual-level coding system allowed for a deeper understanding of the actions, practices and tactics within the dynamic context of online discourse. Again, as in the interviews' coding process, any analyst may use the code proposed here as a deductive starting point that can be refined through inductive analysis open to the insights pointed by their data.

5. Conclusion.

The integration of different types of data —such as interviews and online interactions and discourses— through different analysis methods and techniques —such as qualitative deductive-inductive coding, social network analysis conducted with the help of computational methods, and frame analysis— provides a robust framework for studying opinion dynamics in specific contexts. By combining qualitative insights from interviewees with the computational approach to multitudinous social networks and the interpretative depth of frame analysis, this multi-method approach allows for a more nuanced understanding of how individuals and groups construct, negotiate, and communicate meaning in dynamic online environments. Although this

framework was developed through a study of the dynamics of hate speech and countermeasures——demonstrating its usefulness for analyzing politically hostile situations—— it can potentially be applied to observe any type of online dynamics, particularly those in which an event emerges unexpectedly.

Interviews offer direct, rich insights into the personal experiences and perceptions of individuals. This personal, subjective data provides essential context for understanding the motivations and behaviors of users in online spaces. Complementing this, social network analysis quantifies the relationships and interactions between users, highlighting the structural dynamics of networks and offering a way to visualize how opinion clusters form, evolve, and potentially polarize. Frame analysis reveals the collective meaning-making processes during temporary events, offering insight into the negotiation of public discourse. By examining how actors interpret issues of injustice, solidarity, and conflict, this method provides depth to the understanding of the strategic positioning of users and groups within digital publics. When combined, these methods capture both the macro (network) and micro (individual) aspects of online opinion formation, allowing for a richer, more dynamic analysis of how public opinion is shaped in real time.

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