# The Rising Tide of Climate Activism: A Granular Interaction Thinking Theory Interpretation

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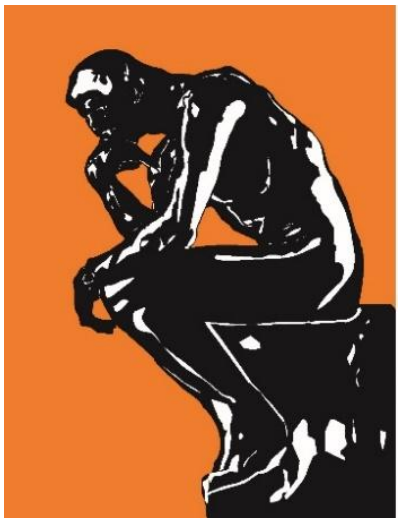

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"Only by uniting the power of the entire village could they chase Snake away."

— "Virtue of Sacrifice"; *Wild Wise Weird* (2024)

## Abstract

Climate activism has played a crucial role in shaping environmental discourse and policy, yet as the climate crisis intensifies, traditional methods are increasingly viewed as inadequate. This paper applies Granular Interaction Thinking Theory (GITT) to analyze the rise of radical climate activism and its societal implications. GITT posits that large-scale social transformations emerge from the accumulation of micro-level interactions, such as protests, media engagement, and public discourse. As climate activism escalates, some groups adopt disruptive tactics—ranging from nonviolent civil disobedience to direct action and sabotage—to force urgent responses from governments and corporations. The study also examines the cognitive and social mechanisms behind this shift, emphasizing the role of informational entropy-based value formation in shaping activists' strategies and public perceptions. While radical activism can heighten climate awareness and pressure policymakers, it also entails substantial risks, including public backlash, legal repercussions, and internal fragmentation within the movement. In light of these challenges, we advocate an alternative solidarity approach, emphasizing the strategic dissemination of climate and environmental information to the public, the promotion of eco-surplus culture, and the cultivation of cooperative efforts among governments, businesses, and activists to drive meaningful and sustainable solutions.

**Keywords:** radical activism; climate change; Granular Interaction Thinking Theory (GITT); cognitive and social mechanisms

## 1. Introduction

Climate activism involves individuals and groups advocating for action on environmental and climate challenges through public campaigns, advocacy, and protests (Fisher and Nasrin, 2021; Mackay et al., 2021). These efforts have played a pivotal role in raising awareness and driving policy reforms on issues such as pollution, deforestation, and global warming. Historical movements have shaped environmental policies, such as those in the United States (U.S.) that led to the establishment of the Environmental Protection Agency (EPA) following the first Earth Day in 1970 (Dietz, 2020), as well as conservation initiatives that helped curb deforestation (Shabecoff, 2012). More recently, international activism has contributed to global agreements like the Paris Agreement (Stankovic et al., 2023).

As scientific warnings about climate change grow more urgent, activism has intensified in both scale and impact (Mackay et al., 2021). Despite international commitments like the Paris Agreement, global greenhouse gas emissions continue to rise—projected to reach 41.6 gigatons of $CO_2$ in 2024—threatening critical climate targets such as limiting warming to 1.5°C (World Meteorological Organization, 2024). Movements like Fridays for Future have mobilized millions worldwide, reflecting widespread frustration with the sluggish response of governments and corporations. Many young activists, disappointed by political inertia, are increasingly demanding rapid and decisive action (Marquardt, 2020). This persistent gap

between climate commitments and real-world action has fueled growing impatience, with many viewing traditional methods such as voting and lobbying as inadequate to address the escalating crisis (Trott, 2024). In response, activism has evolved, with some groups adopting more radical tactics (Colvin et al., 2025). Disruptive protests and acts of civil disobedience—such as those led by Extinction Rebellion (XR)—are being strategically employed to force climate issues onto the political agenda (Berglund, 2023). As pressure mounts, the demand for stronger commitments from political and corporate leaders continues to intensify (Haugestad et al., 2021).

In this paper, we apply the Granular Interaction Thinking Theory (GITT) to understand better and theoretically explain the rise of radical climate activism and its societal impact. GITT posits that large-scale social shifts—such as growing support for radical climate action—emerge from numerous small-scale interactions, including conversations, protests, and media exposure. These interactions accumulate and amplify through feedback loops, gradually reshaping public opinion and policy (Thomas-Walters et al., 2025). Drawing from information theory and mindsponge theory (Shannon, 1948; Vuong, 2023), GITT also helps elucidate how values evolve as individuals process information under uncertainty. When confronted with climate information, like data or activist messages, individuals may experience cognitive dissonance—a conflict between existing beliefs and new information—prompting them to prioritize or reject environmental concerns as a way to resolve this tension. By considering GITT, we gain insight into how activism is shaped by the spread of information, evolving individual perspectives, and broader societal changes.

This paper is structured as follows. Section 2 introduces the core concepts of GITT, explaining how information, entropy management, and value formation processes interact to drive both individual and societal change. Section 3 examines the role of climate activism in shifting values and influencing policy, drawing on historical examples to illustrate its impact as a catalyst for social transformation. Section 4 explores the rise of more radical approaches in climate activism, characterized by high-entropy disruptive tactics such as civil disobedience, direct action, and militancy, as exemplified by groups like Extinction Rebellion and the Earth Liberation Front. Section 5 analyzes the factors driving this radicalization, including frustration with slow progress, lessons from past movements, and psychological influences such as eco-anxiety. Section 6 evaluates the risks and consequences of radical tactics, including potential social backlash, legal repercussions, internal divisions within the movement, and ongoing debates over their effectiveness. Finally, Section 7 reflects on the role of radical activism in addressing climate change, arguing that GITT provides a valuable framework for optimizing activist strategies to maximize impact while minimizing negative consequences, offering insights for more effective climate action moving forward.

## 2. Granular Interaction Thinking Theory

Granular Interaction Thinking Theory (GITT) provides a framework for understanding how socio-psychological phenomena emerge from the interactions of discrete informational units, referred to as “informational quanta” (Vuong and Nguyen, 2024a, c). Drawing on

concepts from quantum mechanics, information theory, and mindsponge theory, GITT posits that phenomena—such as human cognition and behavior and social trend—are shaped by the cumulative effects of micro-level interactions at lower levels. Within this paradigm, the individual mind functions as an information-processing system, continuously integrating new information from the external environment with existing cognitive structures. This ongoing process fosters adaptive changes, shaping both individual understanding and broader societal shifts. As individuals engage with and absorb information from their surroundings, they contribute to the formation of larger, interconnected informational systems, i.e., the social systems. Through these continuous interactions, meaning-making and adaptive learning occur, driving cognitive and social transformations.

A key principle of GITT is informational entropy-based value formation. It provides a mechanism for understanding how individuals and groups develop values—such as beliefs, preferences, and priorities—through interactions with information. Shannon (1948) defines entropy as a measure of uncertainty, disorder, or randomness within a system, which can be calculated by the following formula:

$$H(X) = -\sum_{i=1}^{n} P(x_i) \log_2 P(x_i)$$

$H(X)$ is the informational entropy (uncertainty or unpredictability) of a random variable $X$ with possible outcomes $\{x_1, x_2, \dots, x_n\}$ and corresponding probabilities $\{P(x_1), P(x_2), \dots, P(x_n)\}$. Each probability $P(x_i)$ represents how likely each outcome $x_i$ is to occur. In this context, the variable $X$ can be seen as an individual's or society's set of information at a given time, with $i$ number of information units. Each unit has a probability $P(x_i)$ of driving the thinking and behaviors of the individual or directions and actions of a society. For instance, when an individual's knowledge or thinking is fragmented or unstructured (the probability is equally distributed among knowledge or thinking), informational entropy increases, leading to heightened uncertainty. To mitigate this uncertainty, individuals seek to reduce entropy by organizing information into coherent values (i.e., an organized synthetic set of information), thereby creating structured and meaningful cognitive frameworks.

For instance, an individual exposed to overwhelming data on climate change and extreme weather events may experience cognitive dissonance—manifesting as high informational entropy. Psychological responses to this dissonance vary depending on personality traits and priorly existing knowledge and beliefs within a person's mind, which influence how information is processed and acted upon (Nie et al., 2024). To resolve this tension and achieve cognitive coherence, individuals may form or reinforce values such as "climate action is imperative." This prioritization filters subsequent information, reducing entropy and bringing greater order to their cognitive framework.

According to GITT, values are not simply static information units (e.g., facts, thoughts, or beliefs) but synthesized meanings that emerge from the integration of diverse informational inputs (Vuong et al., 2025). Once established, core values act as high-probability cognitive nodes, serving as benchmarks against which new information is evaluated. As a result, information that aligns with existing values is more readily assimilated, while contradictory information is often dismissed. While this mechanism stabilizes an individual's worldview, it can also reinforce cognitive biases by entrenching preexisting beliefs. However, when the perceived benefits of the new information are considered to surpass the preexisting beliefs, the new information will become new values and replace the former ones, leading to an update in the cognitive system.

This dynamic applies analogously to social systems and has significant implications for activism and social change. Social movements introduce new information that challenges established values, temporarily increasing entropy. Over time, however, their goal is to reduce entropy by fostering a new, shared value system within the society aligned with their objectives (Vuong and Nguyen, 2024a). For example, while a single protest may only influence a limited number of individuals, the cumulative effect of multiple protests—amplified through media and social networks—can introduce new information into the cognitive processes of a critical mass. As more individuals internalize new information and adjust their beliefs, society may reach a tipping point where once-marginal views become mainstream. Each social interaction, whether through direct participation or mediated communication, functions as an "informational quantum," contributing to a broader societal transformation of values and priorities (Vuong and Nguyen, 2024b, c).

Thus, GITT provides a holistic and dynamic perspective on how individual cognition and micro-level interactions converge to drive large-scale social transformations by shaping public opinion and influencing social norms. By applying GITT, we can more effectively trace the evolving effects of climate activism—from the dissemination of information, such as scientific data, moral arguments, and personal testimonies, to the eventual establishment of new values and policies. The following sections will employ GITT to analyze the trajectory from rising frustration and increased awareness to activism-driven mobilization and, ultimately, social change.

## 3. The Importance of Climate Activism for Societal Transitions

Environmental activism has long been a driving force behind environmental progress, highlighting the tension between entrenched societal values and mounting evidence of ecological degradation (Pearse et al., 2025). This dynamic is particularly evident in how activism generates heightened informational entropy within society—disrupting the status quo and amplifying societal awareness of environmental harm. A key historical example is the late 1960s when rising public concern over pollution culminated in the first Earth Day in 1970. This mass mobilization, which engaged over 20 million Americans, was fueled by increasing informational entropy surrounding environmental issues (Earth Day, n.d.). The widespread exposure to scientific evidence of environmental degradation spurred public

demand for substantial policy changes, leading to landmark legislation such as the Clean Air Act and the Clean Water Act (Orford, 2021). In this context, activism played a crucial role in transforming scientific knowledge into shared societal values, reinforcing the idea that environmental protection is a fundamental priority.

In the contemporary landscape, climate activism continues to be a key driver of informational entropy in public discourse (Brehm and Gruhl, 2024). While traditional lobbying efforts have had limited success in addressing the climate crisis, grassroots movements—most notably Fridays for Future—have been highly effective in amplifying the urgency of climate action. Originating from Greta Thunberg's 2018 school strike, the movement rapidly gained global momentum. By September 2019, millions of young activists had participated in climate strikes across more than 150 countries. The movement's slogan, "There is no Planet B," encapsulates the integration of scientific data with moral and emotional imperatives, intensifying the push for action and further escalating societal awareness (Fridays for Future, 2019).

From the perspective of GITT, each protest or campaign can be viewed as an effort that generates numerous micro-level interactions that cumulatively contribute to the dissemination of information within the social system. These small-scale interactions gradually introduce environmental information to more peoples' minds and help build consensus around the urgency of climate action, making inaction increasingly untenable. The impact of this growing consensus is reflected in political shifts, such as the European Commission's increased climate funding in 2019 (Almeida et al., 2023) and the formal declarations of climate emergencies by numerous governments (Nissen and Cretney, 2022).

Moreover, activism serves as a catalyst for value shifts by transforming abstract scientific data into compelling narratives centered on justice, survival, and intergenerational responsibility, which facilitate the internalization of climate information into individuals' core values and subsequent decision-making. Protests disrupt societal complacency and facilitate the emergence of new values, prompting individuals and communities to reassess their priorities. Empirical studies suggest that acts of protest and civil disobedience effectively elevate public concern about climate change, often leading to a reevaluation of both personal and collective commitments to climate action (Brehm and Gruhl, 2024).

The value shifts driven by climate activism are particularly evident in the intersection of ecological crises and social justice movements. Climate activism has fostered a survival-based narrative that resonates deeply with marginalized and vulnerable communities, who disproportionately bear the consequences of environmental degradation. As individuals confront the moral implications of their actions contributing to global harm, many increasingly adopt values that prioritize climate justice and urgent action. This transformation is reinforced by continuous exposure to climate activism information—through public demonstrations, media coverage, and grassroots campaigns—which collectively reinforce the recognition of climate change as an existential threat (Han and Ahn, 2020). Historical events demonstrate activism's effective role in driving value shifts.

The Fossil Fuel Divestment Movement, launched in 2011, emphasized the ethical implications of fossil fuel investments, bringing moral considerations to the forefront of climate discourse. Similarly, sustained civil society pressure played a crucial role in shaping the Paris Agreement of 2015, demonstrating how activism can influence not only public consciousness but also international policymaking (Bergman, 2018).

These examples underscore how activism introduces new information to the society's information process, raises the social system's entropy (i.e., uncertainty) by challenging the established socio-psychological structures, provides conditions for new values to be formed, possibly driving the reorganization of the society's priorities towards sustainability and climate justice.

## 4. Radical Approaches in Climate Activism: High-Entropy Disruptions

Climate activism encompasses a wide spectrum of strategies, from traditional approaches such as petitions and lobbying to more radical tactics designed to heavily disrupt societal norms and demand urgent action on the climate crisis (Chiroleu-Assouline and Lambert-Mogiliansky, 2023; Sovacool and Dunlap, 2022; Vuong et al., 2024). While conventional activism operates within established institutional frameworks and only generates a bearable level of rising informational entropy, radical activism seeks to destabilize the status quo through high-entropy tactics that challenge societal apathy and forcefully introduce climate change issues into public consciousness (Chiroleu-Assouline and Lambert-Mogiliansky, 2023). These tactics often begin with non-violent civil disobedience, disrupting daily life without inflicting direct harm (Morrison et al., 2022).

Groups like Extinction Rebellion (XR) and Just Stop Oil have adopted disruptive strategies to draw attention to the climate emergency. XR has blocked highways, while Just Stop Oil activists have staged high-profile protests, such as gluing themselves to artworks, to spark public discourse on climate issues (Scheuch et al., 2024). Though controversial, these actions amplify climate concerns by creating disruptions that demand attention. Even when operating in legal gray areas, such tactics engage a broader audience by compelling public debate.

At the more radical end of the spectrum, direct action sabotage targets industries such as fossil fuel infrastructure. In 2016, the Valve Turners manually shut off pipelines, while activists Jessica Reznicek and Ruby Montoya damaged sections of the Dakota Access Pipeline to disrupt its operations (Manson, 2024). While motivated by strong environmental convictions, such extreme actions can provoke backlash and risk alienating potential supporters.

The most extreme form of radical activism—eco-terrorism—involves violence or intimidation to advance environmental objectives (Lederer et al., 2024). The Earth Liberation Front (ELF), for example, engaged in arson and property destruction, garnering media attention but also undermining the movement's credibility and resulting in severe legal and social

consequences. In contrast, groups like XR and Just Stop Oil focus on mass, non-violent disruptions that challenge societal norms without resorting to violence (Covill, 2008).

As seen through GITT, radical activism functions as a disturbance that can trigger cascading societal responses. A dramatic act—such as defacing a famous painting or blocking a major highway—creates an informational shock, sending ripples through media and public discourse. Whether experienced firsthand or through news coverage, these disruptions expose observers to new inputs that may shape their perceptions. Some may interpret such actions as a necessary wake-up call, recognizing the urgency of the activists' cause, while others may react with frustration or ridicule. By injecting high entropy into public discourse, radical activism attempts to shift climate change from a primarily scientific concern to a broader societal debate. Once confined to expert discussions, the issue is now framed in terms of controversy, ensuring its persistent visibility in mainstream conversations. For instance, when Just Stop Oil blocked major roads in London in November 2022, the ensuing traffic disruptions dominated media coverage, keeping the climate crisis in the public eye (Scheuch et al., 2024).

Research on social movements further illuminates these dynamics through the radical flank effect, which describes how extreme actions can either enhance or undermine a movement's broader appeal. A positive radical flank effect occurs when radical activism makes moderate factions appear more reasonable by comparison, thereby increasing public support for less disruptive climate initiatives (Simpson et al., 2022). Conversely, a negative radical flank effect can alienate potential allies who support the cause but disapprove of the methods. A 2020 study found that disruptive tactics risk repelling sympathizers who might otherwise be inclined to engage (Feinberg et al., 2020). However, a 2024 study suggests that such disruptions can ultimately benefit moderate climate organizations by drawing public attention and channeling engagement toward more conventional activism (Ostarek et al., 2024).

Radical activism not only challenges entrenched societal norms but also creates an informational shock, prompting an immediate re-evaluation of values by involving it with what the society currently cares for (Chiroleu-Assouline and Lambert-Mogiliansky, 2023). Disruptive protests often carry profound symbolic weight, forcing society to reconcile conflicting priorities within a compressed timeframe. For example, the high-profile "soup-on-painting" stunt starkly contrasted public reverence for art with the existential urgency of climate action, creating cognitive dissonance among observers (Berglund, 2023). While some dismissed the act as counterproductive, others saw it as a necessary provocation—one that reframed inaction on climate change as the far greater moral failing (Bamford, 2023).

## 5. Underlying Reasons for Radicalization: Entropy-Induced Activism

From the GITT perspective, radical tactics in the climate movement emerge as a response to a confluence of strategic urgency, emotional distress, and social dynamics, all driven by frustration with systemic inaction (Latkin et al., 2022; Nguyen et al., 2024). Decades of

scientific warnings have been met with inadequate political action, even as mounting evidence underscores the severe consequences of climate change. This persistent inertia increases informational entropy (i.e., uncertainty) in the minds of activists who prioritize climate action, fueling their disillusionment with what they see as mere "half-measures"—such as delayed coal phase-downs and stalled fossil fuel commitments. As entropy escalates, activists may either succumb to anxiety and inaction or intensify their efforts to drive societal change. In the latter case, they are likely to adopt increasingly radical methods aimed at disrupting societal informational equilibrium, forcing climate issues into urgent public and political consideration. This shift toward radicalization is not unique to the climate movement; historical struggles such as the U.S. Civil Rights Movement and the anti-apartheid movement similarly combined nonviolent resistance with more extreme measures, operating on the belief that disruption becomes necessary when conventional methods fail (Chenoweth, 2020). The same strategic logic underpins the climate movement, where activists increasingly see escalation as a rational response to a narrowing window for meaningful action.

Beyond strategic considerations, psychological and emotional factors can also contribute to the radicalization. These occurrences interact and amplify informational entropy within the activists' minds, prompting them to recalibrate their values and embrace radical activism as a moral imperative that transcends conventional notions of civility and legality. Many climate activists experience "pre-traumatic stress"—a heightened sense of moral responsibility to act when traditional efforts fail to drive meaningful change. This psychological burden, compounded by overwhelming evidence of the climate crisis, often compels individuals to prioritize immediate, disruptive action over adherence to conventional norms of law and order (Godden et al., 2021). The emotional weight of the crisis—intensified by anxiety, grief, and anger—can reinforce the perceived necessity of radical measures (Ogunbode et al., 2022).

Moreover, the social dynamics within activist communities can further reinforce the shift toward radicalization (Schulte and Trinn, 2024). Movement cultures, often characterized by tight-knit networks of like-minded individuals, tend to appreciate acts of protest, such as pipeline blockades and disruptions of high-profile events. These actions, when acknowledged, also help to reinforce a shared commitment to more assertive tactics. The process of group polarization intensifies this trend, as discussions within activist groups can lead to a more extreme consensus on the urgency of climate issues. In other words, these groups selectively highlight the most alarming aspects of the climate crisis, often downplaying incremental progress or political gains, thus further solidifying their collective belief in the need for urgent and radical action. Additionally, collective action can amplify individual contributions, transforming small-scale acts of resistance into coordinated movements with broader societal impacts.

Counterresponses from the socio-political structure also play a significant role in creating a high-entropy infosphere catalyzing the radicalization process. A notable example is the

approval of the Dakota Access Pipeline despite widespread opposition and protests (Owen, 2017). This decision led activists such as Reznicek and Montoya to escalate their tactics, resorting to acts of sabotage as a means of confronting a system they perceived as unyielding. The government's countermeasures, like harsh penalties and crackdowns on peaceful demonstrations, can increase the informational entropy of the situation and accelerate the transition from individual acts of resistance to large-scale disruption. Each setback—whether it be an arrest, a violent police response, or the approval of an environmentally harmful project—reinforces activists' perception of the political system's intransigence, strengthening their resolve and pushing them toward more confrontational tactics.

In summary, climate activists' shift toward radical methods stems from an interplay of multiple factors that can reinforce each other, like strategic urgency, emotional distress, and social reinforcement. Both individual and collective dynamic interactions fuel this escalation, as each new informational quantum—whether a natural disaster, a high-profile protest, or a governmental crackdown—appears, it will add more perceived value to the radical alternative and further legitimize disruptive tactics. While this shift is understandable given systemic failures to address the crisis, it carries inherent risks, which will be explored in the next section, including both its potential benefits and unintended consequences.

## 6. Risks and Consequences: Value System Instability

Radical climate activism, often defined by disruptive tactics, carries both risks and unintended consequences that can either advance or hinder the movement's goals. From the perspective of GITT, such activism operates within a complex adaptive system where radical actions trigger cascading reactions across social, political, and legal domains. In other words, it aggressively heightens the uncertainty within the society. While the intent is to shift societal values by exposing them to a new set of information and values that prioritize climate action immediately, this disruption can also result in resistance and rejection. When entrenched values and order are aggressively challenged, opposition can solidify, potentially slowing progress rather than accelerating it.

### Social and Political Backlash

One of the most immediate risks of radical climate activism is the alienation of a segment of the public. While disruptive tactics like road blockades or defacing public property aim to highlight the urgency of climate action, they often generate significant inconvenience and distress. The resulting public frustration—stemming from delays, disruptions to daily life, and perceived infringements on personal freedoms—can obscure the movement's core message (Borum, 2004).

This dynamic, known as the "activist's dilemma," arises when tactics designed to raise awareness inadvertently diminish public support by framing the movement as extreme or unreasonable (Feinberg et al., 2017). Media portrayals further intensify this challenge, often sensationalizing radical protests as "vandalism" or "eco-terrorism," which shifts attention

away from the climate crisis and reinforces negative perceptions of activists (Chan et al., 2023). Political opponents can capitalize on these portrayals, branding activists as extremists, which deepens polarization and weakens the movement's moral authority.

### Government and Corporate Countermeasures

In response to radical activism, governments and corporations often implement stringent legal and policing measures aimed at suppressing protests rather than addressing the underlying climate concerns. These measures prioritize public order over substantive engagement, leading to the enactment of repressive laws, increased surveillance, and harsher enforcement actions. For instance, the UK's Police, Crime, Sentencing and Courts Act and Public Order Act 2023 introduced severe penalties for disruptive protests, criminalizing tactics such as "locking on" (Martin, 2024). Similarly, in the U.S., several states have enacted or proposed legislation targeting protestors who trespass on critical infrastructure, such as pipelines, effectively criminalizing dissent (Greenpeace Staff, 2023).

Corporations have also intensified their legal responses, increasingly pursuing activists for disruptions and seeking financial compensation for damages. These countermeasures serve to intimidate protesters, escalating the risks associated with activism and potentially discouraging future participation. However, such repression may backfire, further radicalizing activists who interpret these actions as evidence of state-corporate alignment rather than genuine public interest. In this way, crackdowns may inadvertently strengthen activists' resolve, escalating both the scale and intensity of protest tactics.

### Legal Repercussions for Activists

The legal consequences for activists engaged in radical actions are becoming increasingly severe. Participation in direct action can result in arrests and serious charges, including accusations of domestic terrorism or conspiracy. For example, activist Jessica Reznicek was sentenced to eight years in prison for sabotaging an energy facility, with her sentence heightened by the application of "terrorism enhancement" (Johl, 2022). Such legal repercussions not only impose harsher penalties but also shape public perception, framing activists as extremists and potentially undermining broader public support for climate movements.

### Internal Divisions and the Movement's Image

Radical tactics have also deepened divisions within the broader environmental movement. Groups like Extinction Rebellion (XR) and Just Stop Oil (JSO) employ disruptive methods—such as road blockades and public event interruptions—to underscore the urgency of the climate crisis. However, these tactics are not universally supported within the climate advocacy community. Many organizations, including moderate NGOs, scientists, and environmentalists, prioritize non-confrontational strategies such as policy advocacy, public education, and legal action to advance climate goals (Garcia-Gibson, 2023). In response,

some groups have deliberately distanced themselves from radical activism to maintain credibility with policymakers and the public.

This internal fragmentation weakens movement unity, as moderate groups seek to avoid association with disruptive actions that may provoke public backlash (Filkobski and Shor, 2024). Statements like “We understand the frustration but do not condone breaking the law” highlight these tensions, reinforcing the divide between “moderates” and “radicals” within the climate movement (Bugden, 2020). Media coverage further amplifies this polarization by framing radical actions as “eco-terrorism” or “elitism,” shifting focus away from the climate crisis and diverting attention from the need for systemic change (Scheuch et al., 2024).

### Effectiveness and Strategic Consideration

The effectiveness of radical tactics remains a contentious issue within both academic and activist circles. Proponents argue that disruptive actions are necessary to accelerate climate action in the face of an escalating crisis, yet these methods are increasingly subject to ethical scrutiny (Lederer et al., 2024). Case studies present mixed results: while Extinction Rebellion’s (XR) 2019 protests played a role in prompting the UK’s declaration of a climate emergency and the adoption of more ambitious emissions targets, other radical actions—such as eco-sabotage in the early 2000s in the U.S.—led to government crackdowns that diverted resources away from addressing climate change and undermined the movement’s legitimacy (Chiroleu-Assouline and Lambert-Mogiliansky, 2023).

Measuring the impact of radical activism remains challenging, as its effectiveness varies depending on political context, public perception, and media framing. While some radical protests have provoked policy discussions or shifts, others have triggered heightened repression rather than meaningful engagement. Qualitative research suggests that these tactics elicit diverse responses, ranging from intensified crackdowns to constructive dialogue and policy concessions (Simpson et al., 2022).

Radical climate activism, when viewed through GITT, operates within a complex system where actions may lead to unpredictable outcomes. Although disruptive tactics have the potential to provoke governmental action and drive bold policy changes, they risk destabilizing societal values and triggering backlash. Indeed, while the effectiveness of radical action in shifting societal values remains uncertain, one undeniable consequence of radical activism is the increase in informational entropy within society. If this rising disorder is not channeled toward a coherent and sustainable social transition, it risks exacerbating societal uncertainty rather than fostering meaningful progress. Without a clear strategic direction, radical activism may inadvertently divert limited resources—both time and energy—toward mitigating the chaos it generates rather than advancing its core objective: addressing the climate crisis while safeguarding social and economic well-being and sustainability.

## 7. Conclusion and Future Directions

Climate activism, particularly in its more radical forms, reflects the urgency of the climate crisis and plays a crucial role in reshaping societal values under mounting pressure. GITT offers valuable insights into this transformative process. Activists introduce critical information—ranging from scientific evidence to moral arguments and narrative frameworks—into the public sphere, raising informational entropy and disrupting entrenched value structures to catalyze a shift toward climate action. Radical tactics further amplify this process by forcefully generating spikes of entropy that challenge the existing systemic order (e.g., ethical or legal structure) and risk provoking chaotic backlash.

As Vuong et al. (2024) highlight, these disruptive tactics may produce unintended consequences that hinder rather than advance climate goals. Actions such as art vandalism and road blockades can provoke significant public resentment, eroding support for climate activism and providing opportunities for opposition groups to label activists as extremists. The "activist's dilemma" emerges when efforts to raise awareness through disruption inadvertently alienate key public segments, making it easier for governments and corporations to justify legal crackdowns (Feinberg et al., 2017; Vuong et al., 2024).

GITT underscores the inherent unpredictability of complex social systems, suggesting that while small-scale protests can aggregate into large-scale movements, large-scale mobilizations may falter due to internal fragmentation and external resistance. This dynamic highlights the necessity of adaptive strategies within protest movements. Effective activism requires continuous refinement based on feedback mechanisms—such as public opinion polling and sentiment analysis—to navigate shifting socio-political landscapes, maximize impact, and minimize the negative collateral impacts it creates (Ferreira et al., 2021).

Societal transitions toward environmental sustainability often come with significant costs and losses, as the marginalization and displacement of prevailing values create social and economic disruptions. While transition is essential, minimizing these costs is equally crucial to ensure stability and inclusivity. Vuong et al. (2024) propose a solidarity approach that prioritizes collaboration over confrontation. This strategy emphasizes public education, the cultivation of an eco-surplus culture, and strengthened cooperation between activists, businesses, and policymakers to drive systemic change (Nguyen and Jones, 2022; Vuong, 2021; Vuong et al., 2023). Rather than relying on potentially counterproductive disruptive tactics, this approach seeks to align socio-cultural structures with environmental priorities, facilitating a more effective and less contentious transition while mitigating the tensions that fuel radicalization. In this sense, policymakers and businesses need to mitigate the drivers of radical activism by addressing the "value gap"—the disconnect between societal priorities and climate action. Implementing robust measures, such as substantial emissions reductions and enhanced regulatory accountability for the fossil fuel industry, may diminish the systemic tensions that fuel disruptive activism (Santos et al., 2022).

Furthermore, interdisciplinary approaches, particularly from social psychology, could aid in crafting messages that resonate more effectively with the broader public, minimizing resistance to the climate movement (Constantino et al., 2022). It is also important to

consider the mental health implications of climate anxiety as individuals grapple with the psychological toll of environmental concerns. The emotional distress linked to climate change is significant, as individuals experience difficulty reconciling personal fears about the environment with their everyday lives (Schwartz et al., 2023). Addressing this mental health challenge should be an integral component of the solidarity approach, ensuring that both activists and the general public are supported in managing the psychological strain associated with the climate crisis.

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