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Peripheral and Embedded: Relational Patterns of Lone-Actor Terrorist Radicalization

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Abstract

This article provides a comparative analysis of lone actor terrorist radicalization from a relational perspective. Extant research on lone-actor terrorism has shown that lone actors are rarely as 'lone' as public perceptions suggest. In most cases, lone-actor terrorists have some social ties to established radical groups. Accordingly, this article asks 1) why these individuals do not integrate into the radical groups they frequent and engage in collective violence, and 2) if they do integrate, why do they then end up engaging in violence on their own? The article argues that patterns of lone-actor terrorist radicalization can be categorized according to the extent and evolution of their loneness. It highlights two broad patterns of lone-actor radicalization in relation to broader radical groups/movements - peripheral and embedded – and explores the reasons why some lone-actor terrorists remain peripherally integrated in radical groups, while others become more embedded only to engage in violence alone. The article is based on qualitative research, drawing on a geographically and ideologically diverse sample of cases (N=25), and access to restricted material. The article identifies and theorize five recurrent radicalization trajectories, which are variations of the peripheral and embedded patterns, and discuss the implications for prevention/interdiction.

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Introduction

Violent attacks perpetrated by individuals who are neither part of, nor directed by, a terrorist organization, popularly known as "lone wolves", are a major concern for western governments.[2] The unpredictability and seeming ubiquity of these attacks foster a perception of lone-actor terrorism as a spectral menace and has resulted in collective suspicion of certain minorities, particularly Muslims in the West. The political consequences of lone-actor terrorism are significant,[3] even though they remain less common and less deadly than more conventional terrorist attacks.

   Lone-actor terrorists are popularly depicted as detached loners with personal grievances and psychiatric conditions who radicalize online, launch individual violent attacks and are almost impossible to detect and interdict. However, recent academic research challenges this notion.[4] In Gill et al.'s dataset on lone-actor extremists, almost half had personal contacts with political milieus; one-third were members of organized political movements or parties; and in 64% of the cases, others were aware of the perpetrators' intentions to carry out attacks.[5] In other words, so-called lone actors are embedded in varying social and political environments, albeit often remaining on their margins, and their isolation is always relative rather than absolute.

   This article asks (1) why many lone-actor terrorists remain at the margins of the radical groups they engage with and do not participate in collective forms of violence, and (2) if lone actors integrate more substantially in radical groups, why do they end up engaging in violence individually rather than collectively? We consider patterns of lone-actor radicalization from a relational perspective and analyse "loneness" as a development of social ties across time, which allows us to consider varying degrees and types of loneness. Our basic contention is that variation in relational embeddedness allows us to identify particular trajectories and mechanisms of lone-actor radicalization. We argue that loneness is not an inherent quality but

a result of social processes shaped by individual personalities and capacities for social interaction. We propose two distinct categories of lone-actor terrorist radicalization, *peripheral* and *embedded*, which are further divided into five sub-types based on the nature and extent of their social embeddedness.

Our study combines insights from detailed analysis of a geographically and ideologically diverse sample of cases (n=25) drawn from Gill et al.'s database with a smaller (n=5) set of in-depth case studies based on extensive primary and secondary sources. We adopted a relational perspective in order to first identify overall patterns of lone-actor radicalization in the sample, and, building primarily on the rich in-depth case studies, we further specified the patterns that caused some lone actors to remain on the margins of radical groups, while others became fully socially embedded before pursuing violence on their own. Our main contribution is to specify, based on the analysis of relational pathways, particular types of lone-actor terrorist radicalization that display recurrent trajectories and mechanisms of radicalization. We thereby seek to disaggregate the phenomenon of lone-actor violence and go beyond a correlational logic of explanation, to capture the dynamic processes in which individuals progress from holding and sharing radical political views to perpetrating or attempting to carry out individual acts of violence.[6]

The article proceeds as follows. First, we define key concepts and describe our relational theoretical approach. We distinguish between strong, weak and affiliative social ties and identify their specific functions. We break down the link between social ties and the particular offline and online settings in which they form. Next, we explain our methodology. In the final section, we present the results of our analysis of radicalization patterns and explain the two major identified types, *peripheral* and *embedded*. In five short case studies based on restricted data, we empirically illustrate these patterns of radicalization and explore variations and composite causal mechanisms. Based on this, we propose a exploratory typology of five sub-

types of lone-actor radicalization and discuss their implications in terms of pre-empting radicalization and interdicting existing lone-actor terrorist plots.

Concepts and Theory

In defining lone-actor terrorism, we apply three criteria: a lone-actor terrorist must operate as a single perpetrator in the preparation and execution of an attack; a lone actor is not formally affiliated with a terrorist organization/group; and a lone actor does not act on direct orders or under direct influence of a leader/group.[7] Like terrorism, radicalization is a contested concept: in line with Sageman and McCauley and Moskalenko we distinguish between violent and non-violent radicalization.[8] Recognizing that radicalization of beliefs is not the same as – and does not necessarily result in – violent action, we use the term "radicalization" to refer to the processes by which "people come to adopt beliefs that not only justify violence but compel it, and how they progress – or not – from thinking to action".[9]

Research on lone-actor terrorist radicalization is challenged by a lack of reliable sources and the relatively infrequent occurrence of this type of event. Moreover, efforts to systematically conceptualize lone-actor radicalization have been limited by reliance on single-case studies or small-n comparative studies.[10] Others have concentrated on ideological factors[11] or the specific security challenges these types of attack pose to counter-terrorism.[12] While the literature on lone-actor terrorism is rich in empirical detail and provides a foundation for further studies, systematic analyses of trajectories of radicalization beyond single-case studies are scarce, and the role and nature of relationships between lone actors and broader radical groups are largely ignored.

We build on pioneering studies to generate more systematic data based on larger-n samples. However, these studies primarily identify indicators such as mental illness or family background, and are largely descriptive rather than analytical.[13] To remedy these

shortcomings, our theoretical framework is based on a notion of radicalization as a fundamentally social process, shaped by patterns of interaction with, exposure to, and participation in specific social settings or radical groups. Triggers and drivers of radicalization are not found in personal dispositions or abstract ideologies alone but in conjunction with processes of interaction between individuals and their social environment.[14] Studying lone-actor radicalization from this perspective entails a particular set of challenges: 1) accounting for patterns of partial or peripheral embeddedness, 2) focusing on mechanisms of rejection, withdrawal and isolation in addition to processes of integration and interaction, and 3) examining how particular personality traits shape individuals' ability to engage in and sustain social relationships.[15] To meet these challenges, we draw on relational approaches to the study of mobilization and social movements, emphasizing the importance of social ties, their functions and interaction with particular spatial settings.[16]

Settings and Relations

At the core of our analytical approach lies the reconstruction of the relational patterns and interpersonal processes that shape radicalization. By adapting existing relational approaches within social movement studies to the study of lone-actor terrorists, we develop a conceptual framework that allows us to account for more discontinuous and complex processes of lone-actor radicalization by disaggregating radicalizing settings as well as various types and functions of relationships forged in them.[17] Radicalization does not take place in a single, stable environment but in a dynamic constellation of multiple *spaces and social relationships* that change over time. Individuals are not passive objects of radicalizing influences but actively engage in interactions, formation of new social ties, and evaluation of radicalizing teachings. Settings and relations are deeply intertwined; individuals extend or contract their

array of ties as they encounter new settings. Additionally, exposure to new settings and new relations can change and weaken existing ties in other settings.

Individuals become radicalized through interpersonal processes shaped by a combination of strong and weak social ties. Strong ties are often based on extended interpersonal and affective interactions in online and offline settings; weak ties are more intermittent, impersonal and circumstantial. Affiliative ties emerge in the absence of interpersonal interaction and are established on the basis of self-identification and perceived collective solidarity. Drawing on Passy's work, we identified various settings in which radicalization can occur. *Neutral settings* (e.g., sports clubs, schools, workplaces) do not harbor radicalizing teachings but may offer opportunities to meet radical activists, and radicalizing agents may identify and befriend vulnerable individuals there.[18] *Open settings* (churches, mosques, prayer groups, political associations) are inherently politicized or religious. They do not necessarily promote radical worldviews, but basic elements of interpretative frameworks may trigger interest in more radical political or religious teachings. Connections with more hardline actors often take place at the margins of such settings with weak collective supervision. *Radicalizing magnets* (e.g. places of worship known for fundamentalist interpretations, militant political groups, or pseudo-militia movements) where individuals are exposed to unconcealed radical teachings via organized seminars, talks, and diffusion of literature, offer ample opportunity to form ties with established radical actors.[19] Finally, *radicalizing micro-settings*, i.e., detached spaces where radical cliques drift off from broader radical milieus, tend to be private, oftentimes clandestine and facilitate intense peer-to-peer socialization, reciprocal emotional ties, and undercutting of countervailing influences.[20]

Lone-actor radicalization also often involves online settings and virtual interactions with radical activists. These ties range from strong interpersonal bonds formed in prolonged interaction with the same people in closed online forums to singular, anonymous encounters

or affiliative ties and passive reception of content.[21] They serve different functions with some central to sustaining motivation and reinforcing existing beliefs in the lead-up to an attack and occasionally they are present in incipient phases of radicalization. Online and offline patterns of radicalization often occur simultaneously and are mutually reinforcing, and exclusive online radicalization of isolated individuals is exceedingly rare.

Methodology and Data

To maximize generalizability, we sampled 25 homegrown lone-actor terrorist cases covering the US, Europe and Australia, perpetrator characteristics (political/religious orientation, gender), and attack types (attack/failed attack) from 1993 to 2015. Richness of data, especially in terms of settings of radicalization and social relationships and their transformation over time, was also a factor. The 25 cases were selected from an updated version of the dataset (n=119) created by Gill and colleagues and mirror the distribution in the larger dataset in terms of case characteristics.[22] The data consist of open-source material (newspaper articles identified using LexisNexis, declassified inteligence reports and court documents).

Based on initial analysis of our sample, we selected five cases for in-depth analysis. Case selection was nested in the sense that we wanted the in-depth cases to include the two main patterns of lone-actor radicalization identified in the larger sample. For these cases, we engaged in further data collection. In a first step, we selected cases in Denmark and Germany because of our existing relationships with security authorities in these countries.[23] We acquired a large number of restricted documents such as police investigation files, transcripts of police interrogations, witness testimonies, intelligence investigations of internet browsing histories, and psychiatric reports. However, we were only able to obtain access to restricted material on three German and Danish cases. The analysed material for these cases sums to

22,000+ pages, we therefore included two additional cases, which had the richest available data (Anders Breivik and Timothy McVeigh). The in-depth case studies were reinforced by interviews with more than 20 subject matter experts (police officers working on particular cases, intelligence officers etc.). For reasons of practicality and resources, interviews were only conducted in Germany and Denmark.

Table 1 here

The data analysis was carried out in three stages. First, we conducted extensive within-case analyses, coding the sampled cases according to a modified version of Gill et al.'s codebook, including more variables relevant to radicalization (e.g. relationships in various settings, strength of ties, online behaviour).[24] Codebook dimensions were combined with a timeline in a spreadsheet where each piece of data containing a timestamp could be plotted (see online supplement for details). This procedure resulted in 25 cross-time displays, which in a condensed and visual format reproduced rich data and aided identification of recurrent patterns of lone-actor radicalization.[25] This analytical move was informed by theory-building process tracing, which entails moving backwards from the event under investigation (in our case, lone-actor terrorist attack/arrest) and tracing the causal mechanisms, which combined to account for the observed outcome.[26]

Second, we used cross-case comparison to condense the individual 25 cross-time displays into two overall patterns of lone-actor radicalization – peripheral and embedded. This condensation represents a theorization of data; recurrent empirical observations are categorised and the causal mechanisms connecting them are specified. The online supplement accompanying this article includes analytical summeries of all twenty-five cases.

Finally, we used our in-depth case studies to further specify varieties of the dominant patterns of lone-actor radicalization and the workings of the identified causal mechanisms. The richness of data made it possible to trace radicalization in great detail and thereby unpack the complex ways in which personal characteristics, relationship patterns and settings interact in leading individuals to adopt beliefs that condone and compel violence and a motivation to act on this alone.

The richness of the data utilized in this study and the systematic cross-case comparative analysis constitute a methodological step forward in a research field charecterized by limited data and dominated by single-case studies. However, limitations remain. The comparison of cases utilizing different types of data – open sources vs. restricted sources – will necessarily be unbalanced. No doubt further, restricted material would uncover new details on cases for which we only have open source material. We have tried to counter this potential bias by organizing the data analysis in three consecutive stages as described above, which make use of the richness of the closed source material to corroborate and further specify empirical patterns identified on the basis of open source material. Furthermore, although our case selection is designed to maximize generalizability, our sample is most importantly limited to Western democratic settings. Further research is therefore needed to assess if the identified patterns hold across different conctextual settings.

Relational Patterns of Lone-Actor Terrorist Radicalization

A key finding is that rather than representing one coherent type of perpetrator and trajectory, lone-actor terrorists have very different personal and social characteristics, and their radicalization unfolds in different patterns. Therefore, any attempt to explain processes of lone-actor radicalization based on one particular set of risk factors will yield limited results. Moreover, patterns of radicalization are not random. Based on our theoretical framework, we

found that the cases in our sample cluster around two main types of lone-actor radicalization – *peripheral* and *embedded*. The defining logic underlying this distinction is basic patterns of interaction with (and exposure to) radicalizing settings and agents. Again, while lone actors do not act as members of terrorist groups, they are not entirely "alone" but interact with wider political/religious or radical milieus, activists, or virtual communities, in different ways. We argue that such relational patterns interact with personal abilities to engage in and sustain social relationships in forming lone-actor radicalization. While grounded in extensive empirical analysis, these relational pathways are ideal types, heuristic tools to interpret complex social phenomena, and their validity must be further investigated in future research. Below, we describe the two main types of lone-actor radicalization in detail before using our in-depth case studies to empirically illustrate patterns and further specify variations and causal mechanisms.

Peripheral and Embedded

A striking result of our cross-case comparisons of lone-actor terrorist radicalization is that in a large subset of cases (11 of 25), individuals remain marginal or peripheral vis-à-vis the radical settings they interact with. The key question is why these individuals do not integrate further and engage in collective violence. *Peripheral Lone Actors* are individuals who interact with radical groups but, due to a range of personal dispositions, fail to comprehensively integrate in any radical political organization/network and remain at their margins. Many peripheral lone actors are unable or unwilling to engage more closely with radical settings; others are held at a distance by the groups through mechanisms of rejection or exclusion. In the latter case, the peripheral position is partly a product of strategizing on behalf of the radical group, which finds certain personality traits (e.g. impulsivity) a risk vis-à-vis the group's operational security.[27] Although our peripheral cases encompass very different types of personalities, they

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follow broadly similar patterns of radicalization. In some cases, the motivation to carry out an act of violence alone is shaped by experiences of ostracism in the interaction with established radical groups caused by social aversive personality traits (narcissism, social dominance, impulsivity, interpersonal hostility, low empathy etc.).[28] In other cases, the formation of stronger and more sustained ties to radical groups is constrained by more withdrawn personality traits (introversion, neuroticism, indecisiveness, low self-belief etc.).

We identified a second pattern of radicalization in which lone-actor terrorists become fully submerged and embedded in radicalizing settings and develop strong and sustained social ties to other radicals. Here the key analytical challenge is to explain why these individuals become embedded, before detaching to carry out violence alone. *Embedded Lone Actors* have a close relationship to a radical movement/group – and may at some point have been a member of a terrorist group – but ultimately carry out an attack alone. In some cases, the break from the larger radical group is voluntary and based on, e.g., perceptions of efficiency or a desire to move ahead faster than the group. In other cases, the disembedding is involuntary, e.g., radical activists are 'burned' by security services or the group dissolves. Likewise, the period between the attack/attempted attack and the break-away from the path of group violence varies substantially. Some lone actors remain embedded in the radical group throughout planning and preparation. Embedded lone actors are much more concretely influenced by their relationships with movements/groups than peripheral lone actors, and steps towards joining a radical group are similar to patterns of group-based radicalization, including intense small-group socialization.[29]

Empirical Illustrations

Our five in-depth case studies, presented below as brief case vignettes (see online supplement for detailed case studies), empirically illustrate the patterns of peripheral (three cases: 'Fedja',

'Kirill', Anders Breivik) and embedded lone-actor radicalization (two cases: 'Abdi' and Timothy McVeigh). The empirical richness of the case studies is subsequently used to further specify the patterns, identify variations and recurrent causal mechanisms.

"Fedja" (Peripheral)

Fedja was 21 when he carried out a shooting attack against American soldiers in a large German city.[30] He was born in Kosovo and relocated to Germany with his family as a child. His family were Muslims but not particularly observant. In school Fedja was a mediocre student but well integrated with his classmates.[31] One of his teachers remembered him "as a calm, unobtrusive student who did not voice radical attitudes in class,even when topics like the US' role in Afghanistan were discussed".[32] In his mid-teens, his father fell ill and the family had financial problems. Around this time, Fedja was advised by a school counsellor to seek help for suspected depression; he dropped out of school and lessened contact with his school friends.[33] He performed a period of obligatory civil service helping older people and took a part-time job to ease the financial pressure on his family. He was described in positive terms by his work colleagues.

At the same time, Fedja began to demonstrate a greater interest in religion and began researching Islam on the internet. He passively consumed a large amount of moderate literature before drifting away from neutral sites toward more radical ones. He downloaded lectures by noted Salafist preachers such as Anwar al-Awlaki,[34] began to frequent different mosques and attended lectures by visiting radical Salafist scholars. He thus had access to open settings of the Salafist movement and spaces that can be described as radicalizing magnets, but he never brought himself to the attention of any radical actors themselves.[35] He became convinced of the righteousness of jihad but felt unable to realize it. Despite his shared worldview, he deliberately did not initiate personal contact with radical agents in online or

offline settings. He continued to consume online material and after watching a particular Jihadist propaganda video he felt compelled to act.[36] He conducted the armed attack on his own but he remained indecisive on committing the attack up to the very last minute.

Anders Breivik (Peripheral)

In 2011, Breivik, a 32-year-old Norwegian, killed 77 people in Oslo and on Utøya.[37] Breivik was born into an upper-middleclass family and was raised by his mother after his parents divorced. His mother was emotionally unstable, and her relationship with Breivik was complicated, characterized by phases of inappropriate intimacy and explicit rejection.[38] His upbringing made him "a contact-adverse, slightly anxious, passive child but with a manic kind of defense, restlessly active and with a feigned smile".[39] He never developed adequate social skills. He was largely isolated, and his contacts with other youths were characterized by him bullying his peers.[40]

As a teenager, he sought acceptance in numerous settings, for instance a graffiti gang of migrant background, and subsequently a far-right Norwegian gang. As a young adult, he joined a far-right political party, *Fremskrittspartiet*, and thus progressed into an open setting of the right-wing movement. He was rejected from all settings because of his determination to dominate and his inability to interact with others in a convivial fashion[41] and he became more isolated. He immersed himself in the online counter-jihad milieu where he was once again confronted by his social limitations and failed to forge any meaningful online contacts with noted far-right actors.[42] Due to rejection and subsequent self-exclusion, he focused on his own political project and composed a huge compendium (1000+ pages) warning against the perils of "cultural Marxism".[43] His political vision and the necessary means to attract attention to it (the attacks) became his sole concern. Breivik's psychological well-being remains a matter of contestation; he was diagnosed as a paranoid schizophrenic and as a narcissist.[44] We can

conclude that his personality, characterized by diagnosed illness or otherwise, was a key impediment to him establishing close personal ties and engaging in collective political endeavors.

"Kirill" (Peripheral)

Kirill, a Belgian national of Chechen descent, attempted in 2010 to post a bomb to *Jyllands-Posten,* the Danish newspaper that published the infamous Muhammed cartoons. The device exploded prematurely, injuring him in a hostel bathroom in Copenhagen. Kirill was born to a middle-class family in Chechnya where he was wounded by a landmine and had part of his leg amputated. After the incident, his parents split up, and he emigrated with his mother to Belgium.[45] His personality changed and he became more aggressive and impulsive. He took up boxing, according to his mother "to not feel inferior to his friends".[46]

In Belgium, his family moved frequently. Kirill continued his boxing career with reasonable success. His notable aggression in his boxing spilled over outside the gym, and he was involved in street brawls. He attended university but left before obtaining his degree. Parallel to dropping out, he appeared to suffer a personal crisis, and he became more religiously observant. He also appears to have become immersed in organized Chechen criminal networks, although he was not convicted of any offences.[47] Due to some feuding with other Chechens, he was forced to relocate his family for their safety. He established ties with members of the Salafi-jihadist milieu and was observed by German intelligence in the presence of noted radical Islamist figures in mosques known as radicalzing magnets in Germany. However, he was deemed untrustworthy by many in the milieu.[48] He maintained a multi-faceted lifestyle, he married a Chechen woman and fathered two children with her, yet he combined his religious convictions with highly irreligious behavior.[49] On the eve of his attack, he socialized with a Japanese tourist in his hotel, consuming alcohol.[50] He thus became

radicalized while shifting between different settings and lifestyles, moving between Chechen organized crime circles, a religiously observant milieu, his family and a more hedonistic lifestyle.

"Abdi" (Embedded)

Abdi is a Somalian national who in 2010 attempted to kill the Danish cartoonist Kurt Westergaard in Aarhus, Denmark. He was a senior operative with Al-Shabab in Somalia before his militant career was interrupted by arrest.

He moved to Denmark as a child with his family after his father was killed in the civil strife in Somalia in the 1990s. He quickly adapted to Danish society, spoke fluent Danish and did well in school. Although he was religious, he was perceived as moderate in his views, and he dated non-Muslim girls. He married a Danish-Somalian woman and they had children,[51] but they experienced marital troubles and separated. At this point, he began to travel regularly to Somalia and fight in the ranks of Al-Shabab, returning with combat wounds on one occasion.[52] He appears to have risen rapidly in the ranks of the movement and was up for a major promotion when he was arrested in Kenya. After some weeks in prison, charges were dropped and he was deported to Denmark. However, he was thereafter known to international intelligence agencies, which hampered his advancement in the group.[53] Upon his return, he failed to re-generate his former social ties and moved away from the city where his family lived. He attempted to continue some political activities, e.g. fundraising for Al-Shabab, but apparently became disillusioned with such banal activism. He began to express increasingly radical opinions to his work colleagues. He occasionally frequented mosques, but his ties with his former radical comrades weakened. He began to consume large amounts of jihadist propaganda online before deciding to martyr himself in an attack against the cartoonist.[54] His

immersion in radical online settings sustained his motivation to attack during this phase. The attack would have been one final contribution to the struggle.

Timothy McVeigh (Embedded)

Timothy McVeigh, a Gulf War veteran, bombed a federal building in Oklahoma City in 1995, killing 168 people.[55] McVeigh was raised by his father after his parents separated.[56] His childhood was unremarkable, and he displayed no violent proclivities. He performed poorly at school but he had a wide circle of friends and was viewed as socially well-adjusted. His fascination with weapons put him in contact with the far-right patriot milieu, which promotes deep suspicion of the federal government. Due to his poor job prospects, he enrolled in the US army. He was a model soldier and was decorated for his service in the Gulf War. In the army, he made friends who were active in the broader American far-right milieu. He failed in his efforts to join the Green Berets and became gradually disillusioned with the US army.[57] He subsequently re-connected with his friends in far-right activism and began to limit his ties to family and former friends who did not share his political views. McVeigh began to frequent gun shows, which are key open settings in the far-right milieu, at the margins of which radicalizing magnets assemble. He was well known in these circles and enjoyed strong ties with a range of actors across the American mid-West. He eventually drifted closer to radicalizing magnets and more extreme activists supporting the legitimacy of violence. McVeigh became convinced of the necessity to take violent action against the government following the Waco siege in 1993 and conceived an elaborate plan to bomb the Alfred Murrah building in Oklahoma.[58] He believed that any collective efforts would fail due to the lack of commitment in the milieu. Yet, the scale of his plot required co-conspirators, and he inveigled some of his close former army friends to assist him at different stages. When they expressed reluctance, he coerced them by threatening their families. Although he had assistance at

certain phases of the planning process, he was its orchestrator and he ultimately carried out the last phases of the bombing alone. He was captured and sentenced to death.

A Typology of Lone-Actor Terrorist Radicalization

We have argued that the "loneness" of lone actors is relative. As the case studies indicate, most lone-actor terrorists have social ties of varying strengths across settings, and their loneness is derived from interactive patterns of relational embedding and disembedding in various social settings. Thus, loneness is not an inherent quality but a result of social processes shaped by individual lone actors' personalities and capacities for social interaction. However, not all patterns of lone-actor radicalization are alike. We have identified two distinct categories, peripheral and embedded. In this section, we further theorize lone-actor radicalization based on the cross-case analysis of our entire sample and the in-depth case studies. We tentatively propose a typology of variations of Peripheral and Embedded lone-actor radicalization and identify composite causal mechanisms. We outline five sub-types (three peripheral, two embedded) in which we find slightly different answers to why some lone actors remain at the margins of the radical groups they interact with, and why other lone actors who do become embedded in radical groups end up committing violence alone rather than collectively.

Peripheral Lone Actors: Withdrawn, Anti-Social, Volatile

When we cross-analysed the cases identified as peripheral lone actors, we found striking differences in the way these individuals engaged in social relationships and radical settings, as well as in their trajectories of radicalization and progression towards violent action. In some cases, we found an overall pattern of passivity, indecisiveness, and withdrawal that kept these individuals in the periphery of radical milieus. In others cases, peripheral lone actors appeared

very pro-active and interacted with various groups or activists but displayed anti-social, domineering or highly aggressive behavior that repeatedly led to rejection from radical groups. In a third pattern, individuals interacted intensively and convivially with others but proved unstable in their commitment, behaved impulsively resulting in erratic patterns, shifted between radical activism, hedonistic lifestyles, and/or criminal activities and militant groups therefore kept them at bay. These patterns, which we term *withdrawn, anti-social, and volatile* types of peripheral lone actors, correspond to particular personal characteristics. Yet, the perspective developed here is relational as it does not focus on psychological traits per se but rather on how they shape relationships and dynamics of interaction. The following sections describe each sub-type.

Table 2 here

Withdrawn Lone Actors are individuals who fail to integrate into radical groups because of social dynamics shaped by their indecisive, unassertive personalities, and low self-belief. The case of "Fedja", and well-known cases in our larger sample, such as Roshonara Choudry and Martin Couture-Rouleau, correspond to this pattern. These individuals were not renowned for past militancy or violent behavior and were generally unknown to police/intelligence networks. Previous studies have labelled withdrawn lone actors as "loners".[59] According to our findings, this is inaccurate, as they tend to be socially relatively well adjusted, and generally maintain good relationships with family, friends and co-workers. Withdrawn lone actors interact with broader radical milieus but fail to integrate more comprehensively and remain at the margins. Rather than increasing integration and socialization, the pathways of withdrawn lone actors are shaped by patterns of weak and affiliative ties often forged in online settings. Individuals like "Fedja" lean toward introspection and sometimes exhibit

symptoms of depression, but they are often very empathetic and concerned about the well-being of others.

A key causal mechanism in understanding withdrawn lone actors' peripheral embeddedness is "anxious inhibition", which impedes one from acting on acquired values. As the case of "Fedja" illustrates, the tension between internalized radical perspectives and the inability to bridge the gap between individual beliefs and the necessity to forge ties for collective action produces strong feelings of guilt and inadaquacy due to the inability to act.

The gradual, prolonged build-up of guilt is crucial in explaining extreme, sudden reactions to, e.g., moral shocks that trigger emergence of motivation. Moral shocks occur when an event raises such outrage in people that they "become inclined toward political action, even in the absence of a network of contacts".[60] They can transform fear or apathy into anger, which serves as an emotional bridge between grievance and action.[61] Furthermore, indirect encouragement cues, such as calls to action by radical authority figures, can act as a trigger mechanism for withdrawn lone actors.

In addition to the cases mentioned above, we propose that the more recent case of Thomas Mair, who shot and stabbed British MP, Jo Cox, in 2016, radicalized in this way. Tellingly for the Withdrawn pattern of lone-actor radicalization, supporters of far-right organizations in West Yorkshire, which Mair frequented, claim that he was never a part of the local scene, and local anti-fascist groups report that he had never crossed their radar.[62]

Anti-Social Lone Actors to some extent match popular misperceptions of "lone wolves" as isolated, pathologically motivated loners (we identified three in our dataset: Richard Baumhammers, Man Haron Monis, and Anders Breivik). These individuals were, indeed, the most "lone" of all lone actors, but their journey to "loneness" was characterized by disrupted interactions with others in neutral and open settings. They remained at the periphery of radical movements because of interactions triggered by their domineering, imposing and narcissistic

personalities. The individuals in this sub-category are notable for their limited social capacities; their behavior is often socially awkward and they seem unable to to read social cues, which limits their ability to forge strong social ties in their personal lives and political efforts. Breivik, or Monis, sought to connect with other people but were repeatedly rejected due to their poor interpersonal skills and delusions of grandeur. The experience of ostracism seems to be a distinctive characteristic of anti-social lone actors' radicalization, central to the consolidation of an antagonistic personality. The individuals in this sub-category had an extended history of violent behavior and bullying. Their personalities were often shaped by difficult and unsupportive family backgrounds.

Unlike withdrawn lone actors, who tend to avoid publicizing their beliefs, anti-social lone actors are remarkable for the determined promotion of their own views in online forums and debates.[63] Their online and offline interactions mirror each other: Breivik's bullying social behavior also resulted in his rejection or marginalization in online settings.

Individuals indentified as anti-social lone actors displayed an ability to obsessively focus on a specific goal – a trait sometimes referred to as monomania – which represents a particularly intense form of commitment-shift away from any other interests beyond the realization of that particular objective.[64] Monomania seemed to crystallize after repeated instances of social rejection; denied the possibility of acting in a group setting, they embarked on individual projects.[65]

Progression towards violent action among anti-social lone actors is difficult to delimit chronologically. Rather than a critical juncture or moral shock, we found a gradual descent into a detached personal radicalising vortex with few countervailing forces. Their self-perception as leaders, unacknowledged by society, leads them into a dual process of rejection, frustration, and self-isolation.

Volatile Lone Actors comprise five of our sampled cases ("Kirill", Carlos Bledsoe, Mohamed Merah, Omar El-Hussein, Michael Zehaf-Bibeau) and are, in light of the attacks in 2016-2017, which are not included in the dataset (e.g.the Berlin Christmas market attacker Anis Amri), arguably one of the most common forms of lone-actor terrorist radicalization.[66] Individuals in this sub-set remain on the periphery of radical groups primarily because of their unstable commitment and because others perceive them as erratic and therefore untrustworthy. They have functional social skills and enjoy reasonable if inconsistent relationships with friends, families, and romantic partners. Yet, these relations are characterized by abrupt breaks or shifts between settings, with periods of consistent family life before a switch to a more delinquent or devout lifestyle. Unlike anti-social lone actors individuals in this sub-category are relatively capable of maintaining social ties, , but are prone to aggression and violence, often displaying an impulsive disregard for the consequences of their actions, as confirmed by their often extensive criminal convictions and stints in prison. A striking feature of the volatile lone actors in our sample is their relative youth; all except one were in their early 20s. Their tumultuous lifestyles coincide with problems like anger issues, often exacerbated by substance abuse. The clarity of fixed moral frameworks of radical groups may thus appear as an attractive counter-balance to the chaos of their normal lives.[67] The strong, if seemingly contradictory, cross-over between their criminal pursuits (often immersed in gang culture) and sometimes radical religiosity has also been noted in research on foreign fighters.[68]

Volatile lone actors' patterns of radicalization are thus distinguished by the presence of a circular logic where they flit between intensified engagement in radical milieus and immersion in criminal pursuits. A central causal mechanism in the later stages of radicalization is "unfreezing", which occurs when an individual becomes "disconnected from everyday routines and relationships".[69] Volatile lone actors are likely to experience rupture

with prevailing social structures, as the switching between settings engenders multiple occasions of disembeddedness and potential disorientation (e.g. after release from prison). Interestingly, several volatile lone actors in our sample actually sought help from authorities during such crises but were left unsupported.[70] This suggests that in the specific cases of volatile lone actors who are commonly already on the radar of criminal and social authorities because of their lifestyles, particular opportunities for intervention may exist to disrupt or re-direct processes of radicalization.

Embedded Lone Actors: Formerly Embedded and Autonomous

Within the cluster of embedded lone actors, differences were discernible mainly with respect to the patterns of embeddedness prior to the violent attack. In some cases, individual activists prepared and carried out attacks on their own while still embedded in radical milieus; in other cases, a rupture occurred and former members of a militant group found themselves detached.

Table 3 here

Formerly Embedded Lone Actors are ex-militants of radical groups who have become detached, voluntarily, due to disagreements over ideology or strategy, or involuntarily, because of internal clashes, exposure to security agencies, or changes in their personal lifes (e.g. migration).[71] Detachment from a radical group can lead to an identity crisis, which, combined with barriers inhibiting a return to one's former life, can put them on a path to becoming lone-actor terrorists. With just two cases ("Abdi" and Mehdi Nemmouche) they are underrepresented in our dataset, but this category is of contemporary relevance as foreign fighters return home from conflicts in Syria, Ukraine, and Somalia.

As the case of "Abdi" shows, one form of involuntarily disembedding is when militants come to the attention of the police and are perceived as likely to imperil further collective

initiatives. Alternatively, counter-terrorism efforts can lead to the dismemberment of radical networks, leaving individual militants without the support of their colleagues. Additionally, militants with problematic personality traits (from a movement perspective), such as instability or a weakening of resolve, can be forced out because they are viewed as potential threats, or physical/mental injury may end participation in combat operations. In the case of foreign fighters, conflicts might simply end or local populations might reject non-locals fighting in their territories.[72]

The key causal mechanism specific to formerly embedded lone actors is "consolidation of loneness", which occurs alongside the emergence of motivation to act alone. Again, we do not consider isolation a naturally occurring phenomenon but the result of an interactive process of detachment. Consolidation of loneness can be defined as actively cutting ties with former comrades and a lack of effort to re-establish ties with non-radical actors such as friends and family, which might have lapsed during radicalization. As in the case of "Abdi", re-connecting with society beyond a radical group is often difficult, hindered by the social stigma of having participated in radical politics and institutional impediments such as a criminal record or a stunted professional career. Individual psychological challenges include reconciling a self-identity as a political militant, engaged in (according to their self-perception) dangerous but important work, with the more banal status of an ex-militant.

Autonomous Lone Actors. Certain lone actors are well integrated in broader radical milieus but prefer to act autonomously. They are not necessarily members of specific organized groups but often rather immersed in open political settings and radicalizing magnets. They combine conventional forms of mobilization with parallel, semi-private radical projects. Their loneness is limited to the strategic necessities of their attacks rather than a broader feature of their political activism and personal lives. They are typically respected individuals with good

social skills. With five cases, they are one of the most common type of lone-actor radicalization in our sample.[73]

Among the autonomous lone actors we found extended periods, often several years, of progressive radicalization, in which individuals graduated from non-violent, peaceful campaigning to confrontational forms of protest and ultimately violence against people. Their increasing radicalism can be tracked by the evolution of their social ties within the radical milieu, intensifying their interactions in radicalizing micro-settings with other violence-oriented actors, thereby consolidating their radical convictions. This thickening of radical ties coincides with progression towards violent forms of action. In several cases, moral shocks which they believe warrant a response push them to commit violent attacks, and they hold that the onus falls on them as individuals to act.

Autonomous lone actors are particularly prevalent among the American far right, where the concept of leaderless resistance emerged in the 1980s as an attack strategy by autonomous individuals or small groups.[74] The active pursuit of individual violent projects when autonomous lone actors are immersed in radical milieus with the potential to organize collective projects seems to disavow Joosse's argument that lone-actor attacks are the fallback option when joint violent enterprises are not possible.[75] Conversely, autonomous lone actors commonly prefer individual attacks for strategic, logistical and ideological reasons.

Conclusion

By analysing lone-actor terrorists according to their degrees of relational embeddedness, the present study emphasizes similarities with other forms of (group-based) radicalization and facilitates their analytical inclusion in the broader field of research on radicalization. It also captures the dynamic nature of radicalization. We argue that key kinetic elements of the process are recurrent causal mechanisms, which propel individuals into new settings or

transform ties forged with radical activists. We thereby bridge the individual-level analysis with the environmental and situational and argue that lone-actor terrorist radicalization is best understood as an interaction between personal dispositions and relational dynamics in radical groups and settings.

As mentioned, lone-actor radicalization is not an entirely separate phenomenon. Mechanisms of group-based radicalization as identified in the broader literature on political violence may therefore be relevant (e.g. unfreezing and moral shocks). Yet, the trajectories of lone actors also display distinct patterns – failure to integrate into radical milieus or disconnection from radical groups – which are shaped by causal mechanisms specific to lone actors.[76] We identify three sets of mechanisms. First, mechanisms that account for the lack of closer integration into radical groups. Here, we focus on social dynamics triggered by – and in interaction with – personal characteristics, such as anti-social or impulsive behavior triggering a dynamic of conflict, rejection, and isolation, or anxious inhibition, which leads to a pattern of peripheral embeddedness.[77] Second, mechanisms that cause an individual member of a radical group to become disconnected, voluntarily or involuntarily. This includes internal disputes and rivalries, being 'burned' by police surveillance, injury, or disintegration of the group. This process of becoming disconnected, especially in the case of foreign fighters, represents a particular form of unfreezing. Third, we consider mechanisms that drive and sustain radicalization in situations of isolation and weak embeddedness, including monomania and consolidation of loneness as the active process of disengaging from settings, cutting prevailing ties, and failure to (re)integrate in other settings.

What are the implications of our findings for the prevention and interdiction of lone-actor terrorist attacks? We argue that since the rupture or weakening of social ties, as well as dynamics of conflictive or evasive interactions, are key to understanding lone-actor radicalization, measures should focus on understanding relational configurations of

individuals undergoing radicalization. Social relations are already a component of most risk-assessment tools vis-à-vis radicalization, but our findings underline the need to pay attention to patterns of progressive integration into radical groups as well as patterns of peripheral integration and disembedding. Under certain conditions, disembedding from a radical group can be considered a risk factor. Furthermore, the importance of the peripheral pattern of radicalization, in particular that of volatile lone actors, seems to constitute a challenge to most existing counter-radicalization programs. Only if authorities coordinate across departments (i.e. social services, police, schools, probation services etc.) and share information, can this inconsistent and discontinuous pattern of radicalization be identified. Finally, we argue that (dark) personality traits, e.g. sub-clinical disorders like narcissism and phycophathy, should be factored into risk assessments, not as risk factors but as factors that shape individual ability to form and maintain social ties, which again help to explain why some pursue violence alone.

We argue that this research has enhanced our understanding of lone-actor terrorism, but it has limitations. Our extensive reliance on open source data is beset with evident risks due to incomplete or sometimes unreliable information. We have tried to counter this by performing in-depth case analyses based on primary sources, but it remains an inevitable weakness when studying low-occurrence phenomena such as lone-actor radicalization. There is also an overrepresentation of cases that culminated in attacks because they generate the most attention and accordingly the most data. Furthermore, the typology of radicalization and the lone-actor-specific causal mechanisms proposed in this article need to be validated by additional research of more cases in different socio-political and cultural contexts. However, the value of the typology as a heuristic tool for prevention and interdiction is suggested by initial feedback from counter-radicalization practioners (i.e security services, police and local authorities) in Denmark and Germany.

Notes

1. This project has received funding from the European Union's Seventh Framework Programme for research, technological development, and demonstration under grant agreement no 608354.

2. Schuurman et al., 'End of the Lone Wolf'.

3. Feldman, 'Comparative Lone Wolf Terrorism'; Nasser, 'Ideologies of Jihad in Europe'.

4. Berntzen and Sandberg, 'The Collective Nature of Lone Wolf Terrorism' ; Pantucci, 'A Typology of Lone Wolves'; Nesser, 'Single Actor Terrorism', 61–73.

5. Gill et al., 'Bombing Alone', 433.

6. Malthaner, Lindekilde, O'Connor & Bouhana. 'D5.4 Lone actor radicalisation subscript'.

7. Schuurman et al. 'Lone Actor Terrorist Attack Planning and Preparation'; Malthaner, Lindekilde, O'Connor & Bouhana. 'D5.4 Lone actor radicalisation subscript'.

8. McCauley and Moskalenko, 'Toward a Profile of Lone Wolf Terrorists; Sageman, Leaderless Jihad'.

9. Borum, 'Radicalization into Violent Extremism I', 8.

10. Berntzen and Sandberg, 'The Collective Nature of Lone Wolf Terrorism'; Gartenstein-Ross, 'Lone Wolf Islamic Terrorism', 110–28; Joosse, 'Leaderless Resistance and Ideological Inclusion', 351–68; McCauley and Moskalenko, 'Toward a Profile of Lone Wolf Terrorists'.

11. Kaplan, *Leaderless Resistance*, 80–95.

12. Hewitt, 'Law Enforcement Tactics and Their Effectiveness', 58–68.

13. Gill, Horgan, and Deckert, 'Bombing Alone'; Nesser, 'Single Actor Terrorism'; Spaaij, *Understanding Lone Wolf Terrorism*.

14. Bouhana et al., 'Risk Analysis Framework'; Malthaner and Lindekilde, 'Analyzing Pathways of Lone-Actor Radicalization'; Wiktorowicz, *Radical Islam Rising*; Sageman,

Leaderless Jihad. On the interaction of individual trajectories (careers) and their social environment see also Fillieule, 'Some Elements of an Interactionist Approach to Political Disengagement'; Bosi and della Porta, 'Micro-mobilization into Armed Groups: Ideological, Instrumental and Solidaristic Paths'.

15. Mondak & Halperin, 'A framework for the study of personality and political behavior', 335-362; Furnham, Richards & Paulhus, The Dark Triad of personality', 199-216.

16. Sageman, *Understanding Terror Networks*; Sageman, *Leaderless Jihad*; Wiktorowicz, *Radical Islam Rising*; Bouhana and Wikström, 'Al-Qaeda-Influenced Radicalisation'.

17. Malthaner, 'Contextualizing Radicalization', 638–53; Sageman, *Leaderless Jihad*; Edwin Bakker, 'Jihadi Terrorists in Europe'; Wiktorowicz, *Radical Islam Rising*; Bosi and della Porta, 'Micro-Mobilization into Armed Groups'; Snow, Zurcher, and Ekland-Olson, 'Social Networks and Social Movements'.

18. Passy, 'Socialization, Connection, and The Structure/Agency Gap', 173–92.

19. Michael Genkin and Alexander Gutfraind, 'How Do Terrorist Cells Self-Assemble?', 33; Neumann and Rogers, 'Recruitment and Mobilisation for the Islamist Militant Movement'.

20. Malthaner and Lindekilde, 'Analyzing Pathways of Lone-Actor Radicalization'.

21. Ibid.

22. Gill, Horgan, and Deckert, 'Bombing Alone'.

23. Due to conditions regarding the use of restricted data, we have anonymized the three cases.

24. Ibid.

25. Miles and Huberman, *Qualitative Data Analysis: An Expanded Sourcebook*.

26. Beach and Pedersen, *Process-Tracing Methods: Foundations and Guidelines*.

27. For a case study which pays particular attention to the strategic screening of potential recruites by radical groups, their organizational/historical context and how the peripheral status of individuals is shaped by these factors see Castelli, O'Connor & Lindekilde 'No country for acting alone? The neo-Fascist Movement and Lone-Actor Terrorist Attacks in Italy'.

28. See also Pfundmair 'Ostracism propmotes a terroristic mindset'

29. della Porta, *Clandestine Political Violence*.

30. Fedja 10/2/2012: *Judgement, Higher Regional Court,* Frankfurt; Fedja 19/05/2011: *Report on Investigation, German Federal Criminal Police*; Fedja 14/03/2011: *Interrogation of Fedja by the German Federal Criminal Police*.

31. Fedja 9/03/2011: *Interview with former teacher by the German Police*.

32. Fedja 17/03/2011: *Interrogation of Fedja by the German Federal Criminal Police*; Fedja 10/2/2012.

33. Fedja 10/2/2012.

34. Ibid.

35. Fedja 19/05/2011; Fedja 17/03/2011

36. Fedja 19/05/2011.

37. Breivik, *2083-A European Declaration of Independence*.

38. Orange, 'Anders Behring Breivik's Mother'.

39. Borchgrevink and Puzey, 'A Norwegian Tragedy'*,* 26.

40. Seierstad, *One of Us*.

41. Ibid.

42. Ravndal, 'Anders Behring Breivik's Use of the Internet', 172–85.

43. Breivik, *2083–A European Declaration of Independence*.

44. Gardell, 'Crusader Dreams', 131.

45. Kirill 12/01/2011: *Second Interrogation of Kirill by Danish Police, at the Danish Police's Headquarter in Copenhagen.*

46. Kirill 28/09/2011: *Interrogation of Kirill's mother by Danish Police at the Danish Police's Headquarter in Copenhagen.*

47. Kragh, Nielsen, Westersø, 'Bombemandens Boksekammerat'; Westersø and Nielsen, 'Bombemandens Dobbeltliv'.

48. Skjoldager and Thomsen, 'Playboyen og Bokseren.'

49. Kirill 1/02/ 2011: *Interrogation of Kirill by Danish Police, at the Danish Police's Headquarter in Copenhagen.*

50. Kirill: *Retsbagen*; *Court Records*

51. Abdi 18/03/2010: *Psychiatric evaluation of Abdi requested by the Danish Police, received by Danish Police on.*

52. Rasmussen, 'Interview: Tegningerne Interesserede Ham aldrig'.

53. Restricted documents relating to the period of Abdi's militancy in al-Shabab in Somalia and his arrest and repatriation to Denmark were not made available to the authors. Here we rely on: Maltesen, 'Han Tog En Enkeltbillet Til Aarhus'.

54. Abdi 30/12/2009: *Selected results of PET interception of internet activity of the 11/11/2009, 29/12/2009.*

55. Wright, *Patriots, Politics, and the Oklahoma City Bombing.*

56. Michel and Herbeck, *American Terrorist*, 26.

57. Ibid. 87.

58. Ibid. 161.

59. Pantucci, 'A Typology of Lone Wolves', 28.

60. Jasper and Poulsen, 'Recruiting Strangers and Friends', 498.

61. Johnston, 'The Mechanisms of Emotion in Violent Protest'.

62. The Guardian, 'The slow burning hatred'.

63. Berntzen and Sandberg, 'The Collective Nature of Lone Wolf Terrorism'.

64. Kruglanski et al., 'The Psychology of Radicalization and Deradicalization', 74.

65. Rejection can cause different reactions, including increased pro-social behavior. See Pfundmair et al., 'The Different Behavioral Intentions', 364.

66. Huggler, Benlakhel, and Mckenna, 'Everything we know about Anis Amri'.

67. Bouhana and Wikström, 'Al-Qaeda-Influenced Radicalisation'.

68. Basra and Neumann, 'Criminal Pasts, Terrorist Futures', 33.

69. McCauley and Moskalenko, *Friction How Radicalization Happens*, 80.

70. Jung & Dalgaard, 'Omar el-Hussein bad kommunen om hjælp'.

71. Schuurman, Eijkman, and Bakker, 'The Hofstadgroup Revisited', 913.

72. Hegghammer, 'Should I stay or should I go', 1-15.

73. The more recent case of the Italian neo-fascist, Luca Traini, also fits this pattern. Castelli and O'Connor, 'An Italian Neo-Fascist Shot 6 Immigrants'.

74. Kaplan, Lööw, and Malkki, 'Introduction to the Special Issue on Lone Wolf', 80.

75. Leaderless resistance has also taken root among right-wing and animal rights activists in Europe; around 2009/10 it was adopted by al-Qaida-inspired jihadist groups and, more recently, by ISIS. Joosse, 'Leaderless Resistance and the Loneliness of Lone Wolves', 53.; Love and Obst, *Ecotage*, 144.

76. Malthaner and Lindekilde, 'Analyzing Pathways of Lone-Actor Radicalization'.

77. Ibid.

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