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RESEARCH ARTICLE

UNDERSTANDING THE LONE WOLF PHENOMENON

P. Iorillo

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Abstract

This study explores the intricate dynamics of lone wolves within the context of terrorism, examining the conceptual challenges in their definition, distinctive behavioral patterns, and their impact on security perceptions in Europe. Through rigorous analysis, the research highlights transformations in contemporary terrorism. It underscores the critical importance of preventive strategies in addressing this emerging threat within the academic, technological, and international security environment.

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Lone Wolves and the Evolution of Terrorism in Europe

Since the beginning of the new millennium, Europe has witnessed, on its soil, a series of unusually violent attacks. On several occasions, this dense array of war scenes, exported from the farthest corners of the globe, has reached directly into the streets and buildings of the old continent, profoundly disturbing the sense of security among European citizens. Undoubtedly, various factors have contributed to creating this condition of vulnerability. On the one hand, several defining aspects mark our era. These include the shift in globalization, now seen more social as than purely industrial or financial, the rapid advancements in technology and informatics, the wild and unregulated increase in urbanization in major metropolitan areas, contributing to the deterioration of suburbs. On the other hand, there is the rise of profound geopolitical instability, primarily in the Mediterranean basin (Fig.1), which has led to a growing permeability of borders and frontiers (Fig.2) and an increased sense of insecurity.

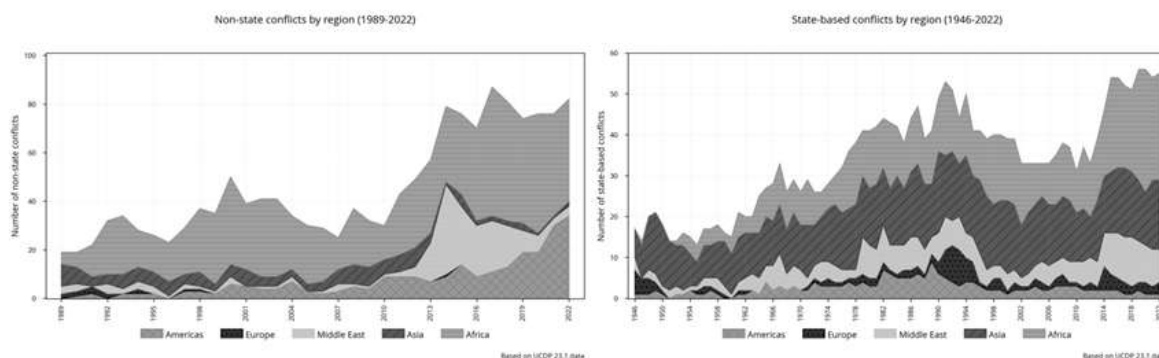


Fig. 1:- State and non-state conflict by region.¹

¹ Davies, Shawn, Therese Pettersson & Magnus Öberg (2023). Organized violence 1989-2022 and the return of conflicts between states. Journal of Peace Research.

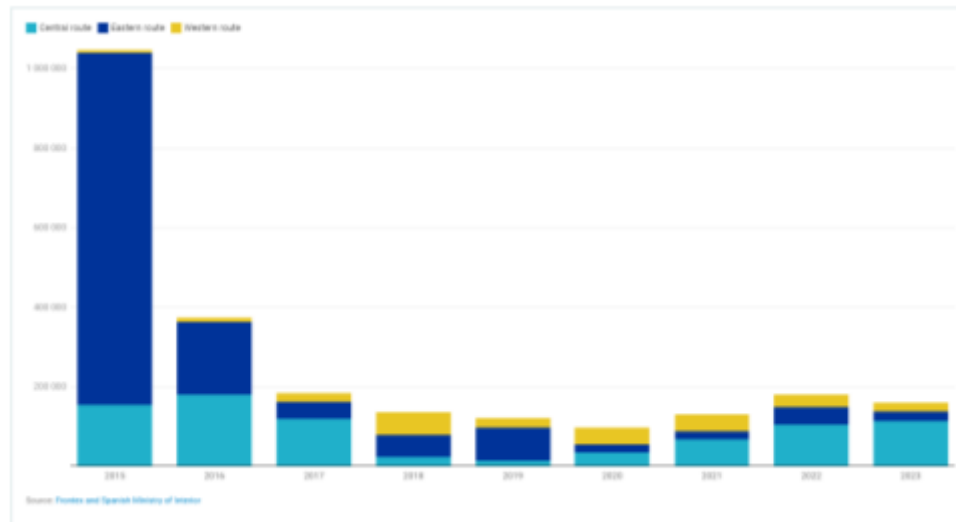


Fig. 2:- Migration flows: Eastern, Central and Western Mediterranean routes.²

In recent years, major terrorist groups, primarily associated with Islamic extremism, have undergone significant transformations in terms of their nature, methods of conducting actions, and recruitment procedures for their militants. It is undeniable that the driving forces behind these constant and alarming metamorphoses have been Al-Qaeda and ISIS over the past two decades, along with all entities, large or small, affiliated with their networks. These terrorist organizations have fully embodied the concepts clearly described by Bauman, who argued, "*The most fearsome fear is the widespread, scattered, indistinct, free-floating, unmoored, fluctuating fear that lacks a clear source or cause. It is the kind of fear that haunts us without reason, the threat we should fear, glimpsed everywhere but never clearly revealed.*"³ In all of this, fear, bloodshed, explosions, and firearm discharges in the heart of urban centers are no longer the exclusive domain of distant, exotic, and unknown lands. They have begun to affect the vibrant core of Europe, from London to Brussels, from Paris to Cologne.

It is, however, important to emphasize that the presumed asymmetric conflict witnessed, in which Europe has become just one of the arenas⁴ (Fig.3), is predominantly psychological, albeit of military or political typology. It is founded on the differing approaches the two sides adopt in the face of death.

² European Council - Council of European Union. (2023, October 13). Infographic - migration flows: Eastern, central and western routes: Yearly irregular arrivals (2015-2023). [www.consilium.europa.eu](https://www.consilium.europa.eu/en/infographics/migration-flows-to-europe/). Retrieved October 26, 2023, from <https://www.consilium.europa.eu/en/infographics/migration-flows-to-europe/>

³ Bauman, Z. *Liquid Fear*. John Wiley & Sons, 2013, 4.

⁴ While the occurrence of terrorist events in Europe and North America garners significant media attention, the primary regions afflicted by these phenomena continue to be the Middle East and Central Asia, as depicted in Figure 3. The data is sourced from START (National Consortium for the Study of Terrorism and Responses to Terrorism). (2022). Global Terrorism Database 1970 - 2020. <https://www.start.umd.edu/gtd>.



Fig. 3:- Terrorist Attack, 2020 Concentration and Intensity.

On the one hand, western inhabitants rediscover themselves as alone and powerless in the face of death. At the same time, radicalized Islamic society remains distant from this strong psychological path due to its religious creed. In this regard, Giannuli argues, “*jihadists terrify secularized European man by confronting him with death through their willingness for martyrdom, rendering them monstrous beings in the eyes of the European social reality founded on hyper-individuality*”⁵. The described conditions are further reflected by introducing common language terminologies previously unfamiliar to many, such as lone wolves. This “category” of terrorism has rapidly become a concern for both global intelligence agencies and national security organizations, proving to be an elusive phenomenon even in its theoretical definition. Lone wolves represent a growing security threat in Europe, challenging citizens' perceptions of normalcy and necessitating an in-depth analysis of their causes, behavioral profiles, and societal impact. This article will delve into the lone wolves phenomenon and its effect on security perceptions in Europe, emphasizing the importance of addressing this challenge comprehensively and effectively through preventive measures and targeted investigations.

Defining the Phenomenon and Its Nature

The phenomenon of lone wolves in the context of terrorism is an increasingly significant topic in the global security arena. Despite the growing involvement of lone wolves⁶ in events in both the United States and Europe, a globally shared and multilateral definition of this terrorist phenomenon has yet to be formulated and adopted. Furthermore, although the current language and daily discourse associate the phenomenon with Islamic extremism, Alex Curtis and Tom Metzger⁷ initially theorized the term itself, proposing a concept related to racial supremacy in the United States during the 1990s, to define individuals or small isolated groups responsible for violent, routine, and anonymous acts.

This aspect highlights an inherent complexity in defining lone wolves, posing a challenge for academics, security agencies, and policymakers. The elusive and multifaceted nature of this phenomenon makes a unified definition difficult. However, it is essential to emphasize that despite the challenges in defining who lone wolves are, their impact is significant and cannot be ignored.

Burton and Stewart proposed a possible definition of lone wolves, stating that a lone wolf is “*an individual who acts alone without receiving orders or having apparent connections to any organization*”⁸. This description represents

⁵ Giannuli, A. *Guerra all'ISIS*. Ponte delle Grazie, 2016, 141.

⁶ Spaaij, R. *Understanding Lone Wolf terrorism: Global Patterns, Motivations and Prevention*. Springer Science & Business Media, 2011.

⁷ White Aryan Resistance (WAR) leaders.

⁸ Burton, F, Stewart, S. *The lone wolf disconnect*. STRATFOR Global Intelligence, 2008 - http://www.stratfor.com/weekly/lone_wolf_disconnect.

one of the most comprehensive definitions of the nature of this terrorist figure, deeply integrated into their social context and able to strike at any moment. This definition highlights the critical aspects of lone wolves, namely their autonomy and the absence of clear organizational ties.

However, the definition of lone wolves goes beyond the absence of organizational connections. It is essential to understand the motivations and factors that drive these individuals to engage in acts of extremist violence in solitude. Many lone wolves are motivated by political, ideological, and religious factors that lead them to seek to influence public opinion or policymakers through violent attacks.⁹ These individuals often aim to promote a specific cause, ideology, or a different view of the world.

The emergence of lone wolf figures or the notion of endorsement from major terrorist network like Al-Qaeda for small scale, organized attacks in incidents associated with Islamic extremism is a relatively recent development, at least within the collective perspective.¹⁰

Starting in the year 2006¹¹, major jihadist organizations began to pay closer attention to the possibility of employing this alternative form of terrorism. However, it was in the writings of Abu Musab al-Suri in 2009 that a new connotation of jihad was proposed to be fought on Western soil, in which the figure of the lone wolves would assume greater prominence.

Even the so-called Islamic State, linked to the principles of al-Zarqawi¹², has shown, over the years, a greater focus on conducting terrorist events in Europe compared to the war fought (and lost) in Syria and Iraq. In this regard, in recent years, several appeals to lone wolves have come from ISIS via Telegram, urging attacks on the West.¹³

The recurring, central, and defining element of the development of this terrorist phenomenon seems to be the use of the internet and social networks. The latter now represents the primary means through which terrorist groups recruit and influence lone wolves. This phenomenon has been described as “*remote radicalization*” and is a crucial aspect of understanding.¹⁴

The use of media is also justified by the employment of specific communication channels such as the Global Islamic Media Front (GIMF) and the Al Hayat Media Center, targeting western populations with publications in English, German, Russian, and French on behalf of ISIS. Additionally, online magazines, often in English, such as “Inspire” and “Resurgence” (associated with Al-Qaeda) and “Dabiq” (an online publication of ISIS), facilitate the connection between lone wolves and the appendages of terrorist groups.

The recruitment and indoctrination of lone wolves occur gradually. The involved actors, often experienced recruiters, understand the conditions in which they live and their sense of frustration. These individuals often have had run-ins with the police for theft, drug dealing, minor acts of vandalism, or other infractions.¹⁵ Recruitment typically begins through online platforms like Facebook pages or, more recently, Telegram, which has become a vital tool for jihadists.¹⁶

⁹ Leenaars, J. *Understanding lone wolves: Towards a theoretical framework for comparative analysis*. International Centre for Counterterrorism, 2016.

¹⁰ Inside an article published in 2003 on a jihadist forum called “Sada al-Jihad” (The Echo of Jihad), sympathizers of Osama Bin Laden were encouraged to carry out terrorist actions without waiting for specific instructions.

¹¹ In 2006, Abu Jihad al-Masri circulated “How to Fight Alone” within jihadist forums.

¹² The terrorist organization led by al-Zarqawi distinguished itself by its ability to transition between periods of clandestinity and established power, its hostility toward Arab ruling classes, and its primary focus on the “internal” enemy in the Middle East theater.

¹³ The “SITE Intelligence Group,” which monitors the online activities of jihadist organizations, has highlighted the use of the social media platform Telegram by ISIS to transmit invitations to lone wolves, encouraging them to carry out terrorist events in Europe.

¹⁴ Vidino, L., Marone, F. and Entermann, E. *Jihadista della porta accanto. Radicalizzazione e attacchi jihadisti in Occidente*. Istituto per gli Studi di Politica Internazionale (ISPI), 2017, 93.

¹⁵ Thijssen G. et al. *Understanding Violent Extremism: Identifying Motivational Classes in Male Jihadist Detainees*. International Journal of Offender Therapy and Comparative Criminology. 2023.

¹⁶ Aae B. *A Short History of Jihadism Study*. Tidsskrift for Islamforskning, 2018.

Once potential lone wolves are identified, recruiters assess their personalities and social relationships. Cautiously, they steer them towards extremist websites and forums and introduce them to mosques where radicalized imams preach, whether or not they are affiliated with terrorist groups. This recruitment and radicalization process is nuanced and can take months or even years.¹⁷

In addition to the religious and ideological aspects, the recruitment of lone wolves often relies on a narrative that promotes martyrdom as a heroic and altruistic act. This concept is present in various forms of extremism and terrorism, not just within the realm of Islamic extremism. The promise of an afterlife reward, such as paradise, is recurring in many of these narratives. Some academics believe that martyrdom is used to instill a sense of purpose and meaning in the lives of lone wolves and motivate them to act.¹⁸

Within this framework, an essential reference is Ali Shariati, one of the inspirations behind the struggle against the Persian Shah and an Islamic martyrdom theorist who asserted, "*For a human being, dying is equivalent to ensuring the community's life. His martyrdom is a means to preserve faith*"¹⁹. This concept of martyrdom as a means to preserve faith is central in the mindset of many individuals involved in acts of terrorism.

In this regard, the sociologist Émile Durkheim²⁰, in his 1897 study on suicide, proposed a classification of types of suicide, including altruistic suicide. This concept refers to generosity towards one's community or group of affiliation. The cases of Islamic terrorists often fall into the category of altruistic suicide because the narrative constructed by preachers revolves around the gesture of generosity towards the community.

It is crucial to reflect on this narrative and understand how it was created to promote martyrdom as a noble act. Religious symbolism plays a crucial role in the construction of the mindset of the religious suicide bomber, who believes that personal sacrifice is pleasing to the deity and adequately rewarded in the afterlife. The promise of paradise is a significant component in encouraging individuals to engage in acts of terrorism.

However, it is crucial to note that the phenomenon of lone wolves is not limited to Islamic extremism. On the contrary, this phenomenon extends to various forms of extremism and terrorism worldwide. Nevertheless, even in a secularized world where religions seem to have disappeared, nowadays, they are making a solid comeback, influencing aspects of daily life. This aspect challenges western secular thought emerged from the Enlightenment and stands based on rationalist principles.

Rationalist thinking has often excluded considerations of the importance of irrationality in people's lives. However, the resurgence of religions and the spread of religious narratives in extremist ideologies require a more profound reflection. Secular thought must confront the reality of a world where religious beliefs play a significant role in human behavior, suppressing the contradictions and disorder of our daily lives through logic and language that are only seemingly simplified and coherent.

Behavioral Profile

The phenomenon of lone wolves in the context of terrorism represents a complex and ever-evolving area of study that requires detailed analysis to comprehend its deeper aspects to the full. Although specific studies related to lone wolves are not as numerous as those concerning terrorism in general, significant efforts have been made to try to establish a categorization that can provide valuable frameworks for reading and interpreting this terrorist figure. However, as already described, a universally accepted and comprehensive definition, in particular from the psychiatric perspective, has not been reached, and some academics emphasize the impossibility of identifying a

¹⁷ Martinez-Vaquero, L.A., Dolci, V., Trianni, V. *Evolutionary dynamics of organised crime and terrorist networks*. Scientific Reports, 2019.

¹⁸ Kibria, N., Watson, T. H., & Selod, S. *Imagining the radicalized muslim: race, anti-muslim discourse, and media narratives of the 2013 boston marathon bombers*. Sociology of Race and Ethnicity, 2017, 4(2), 192-205.

¹⁹ Inspirer of the Hezbollah suicide campaign in the 1980s. In his idea, faith becomes a fundamental element in becoming a martyr, infusing fresh blood into the veins of religious belief. Similarly, "*Martyrdom is equivalent to a blood transfusion in a particular human society, especially in a society suffering from anemia. It is martyrdom that injects fresh blood into the veins of such a society*" writes shiite thinker Murtada Mutahari in 1979.

²⁰ Émile Durkheim, in his study on suicide - Durkheim, E. *Suicide*. 1951, Free Press, discusses three types of suicide: egoistic, altruistic, and anomie.

single psychological profile of suicide attackers. Crenshaw²¹, a leading terrorism academic, has pointed out that most of these individuals do not suffer from any severe mental illness, they are mostly ordinary people. This consideration highlights the complexity of the lone wolves phenomenon since it cannot be simplistically attributed to obvious psychological problems. However, some academics, such as Lankford²² and Merari²³, suggested that recruiters tend to involve unstable and psychologically more susceptible individuals in these acts of terrorism. This element raises the intriguing question of psychological manipulation by recruiters and the influence they can exert on vulnerable individuals.

Some common characteristics emerge when analyzing the cases of lone wolves in recent years. Firstly, although it is not possible to assert that those involved in terrorist events suffer from specific psychopathologies or defined mental disorders, a relatively high rate of psychopathological disorders combined with social ineptitude has been recorded among those who have become perpetrators of terrorist attacks.²⁴ This raises the question of the relationship between psychological dysfunction and radicalization. Secondly, lone wolves are often isolated and solitary figures within the society in which they live. This isolation can be both a cause and an effect of their involvement in terrorism. It means that, even though they are integrated into society, they may feel like outsiders or marginalized, potentially making them more susceptible to external influences, such as those of terrorist recruiters.

Another element of relevance is the age of lone wolves. Most of them are composed of young individuals, typically ranging from eighteen to thirty years old, although this trend is gradually decreasing. These young people have been driven to suicide-sacrifice by terrorist organizations like ISIS, which often claim responsibility for the attacks. Laqueur²⁵, in his 1987 book "The Age of Terrorism" highlights that age is the only common element among them. Furthermore, most lone wolves are unmarried and do not have children, and most are male. This raises questions about the involvement of organizations in the radicalization and recruitment processes of the young.

Another interesting aspect is the socioeconomic background of these individuals. Often, contrary to what one might expect, they do not come from working-class or lower-class backgrounds but from families of good socioeconomic status. They often possess a higher level of education than the average population they belong to.²⁶ This challenges the traditional view that associates terrorism with socioeconomic disadvantage.

In this context, Ignatieff²⁷ coined the term "Erastost syndrome" to describe the deep desire to transform a human nonentity into an "avenging angel" through terrorism. The idea of becoming famous and gaining posthumous notoriety can be one of the deepest motivations for the suicidal martyr revealing a potentially immeasurable narcissistic aspect. Furthermore, research has shown that there are rewards in terms of social and economic prestige for the families of Palestinian martyrs, with rituals such as the publication of photos, honors, and compensation both in monetary and symbolic forms from the community of belonging or the organizations that promoted the suicidal act. This incentivization system can further influence some individuals' choice to become a martyr.

²¹ Crenshaw, M. *The causes of terrorism*. Comparative politics, 1981, 13(4), 379-399. The author highlights how recruiters are careful not to select individuals who are weird in appearance and psychological profile, as they would attract much attention and might not be entirely reliable for the assigned task.

²² Lankford, A. *The Myth Of Martyrdom: What Really Drives Suicide Bombers, Rampage Shooters, And Other Self-Destructive Killers*. New York: Palgrave Macmillan, 2013.

²³ Merari, A., & Elad, S. *The international dimension of Palestinian terrorism*. Routledge, 2019. Following the research conducted on candidates for "martyrdom" during the Second Intifada (aspiring suicide bombers who failed, were arrested before the attack, or were already recruited for an attack), academics concluded that many had mental disorders. These include independent personalities, individuals suffering from a sense of inadequacy and a need for comfort, emotionally unstable individuals with disruptive character traits, and events with depressive aspects and post-traumatic stress syndromes.

²⁴ Hewitt, C. *Understanding Terrorism in America: From the Klan to Al-Qaeda*. Routledge, 2003.

Spaaij, E. *The Enigma of Lone Wolf Terrorism: An Assessment*. Studies in Conflict & Terrorism n. 9, 2010, pag. 854-870;

Bakker, R., de Graaf, B. *Lone Wolves – How to Prevent This Phenomenon?* International Centre for Counter Terrorism (ICCT), 2010.

²⁵ Laqueur, W. *The age of terrorism*. Little Brown & Company, 1987. In the book, the author reported that the majority are unmarried and childless (90% of Palestinian suicide bombers are single), and most are male.

²⁶ Marone, F. *La Politicadel Terrorismo Suicida*; Rubbettino. Italy, 2013. The author emphasizes that they often do not come from proletarian or sub-proletarian classes but from families of a higher socioeconomic status, possessing an above-average level of education compared to the population they belong to.

²⁷ Ignatieff, M. *Il male minore. L'etica politica nell'era del terrorismo globale*. Italia: Vita e Pensiero, 2006.

In the propaganda of martyrdom, many terrorist organizations tend to downplay ideological and theological aspects. Instead, they focus on constructing compelling narratives that elicit a strong emotional response, favoring concrete storytelling over abstract discussion.²⁸ In this regard, in an investigation of videos and biographies of jihadist martyrs in Iraq, a researcher, Hafez²⁹, found that there are three main themes in constructing the stories: the humiliation and suffering experienced by Muslims, revenge in the name of Islam, and the promise of a divine reward in the afterlife. These themes are used to create engaging narratives that can attract vulnerable or impressionable individuals into the orbit of extremism. These jihadist martyrs, through their acts of violence, seek to convey the message that their action is a response to the outrages suffered by the Muslim community. Often, propaganda videos highlight situations of conflict, repression, or violence against Muslims in various parts of the world to justify their terrorist actions.

Another relevant aspect is that "lone wolves" usually share their thoughts, the defining elements of their radicalization process, and their sinister intentions with the outside world before conducting terrorist attacks. This sharing can occur through various forms of communication, including social media, and represents an opportunity to detect early signs of radicalization.

Lastly, particular attention is drawn to the fact that, regardless of their diverse backgrounds, many "lone wolves" adhere to jihadist ideology through the internet. This is where they assimilate content and images from groups like Al-Qaeda, ISIS, or other jihadist groups, deciding, individually, how and when to act.

European Population's Perception of Security

Within the context of the situation outlined above, there is an increasing need, if not an obligation, to thoroughly study and analyze the impact that events related to terrorist actions may have on the perception of security among the European population. In this regard, one of the tools used for this purpose is represented by using surveys.

In order to observe variations in the citizens of the European Union's perception of security and terrorism, the "Standard Eurobarometer"³⁰ research was examined. The analysis carried out highlights a complex picture regarding the perception of terrorism by the European population, divided into three distinct levels: personal, national, and collective (intended as European).³¹

On a personal level, it emerges that terrorism is not one of the main concerns for European citizens, with a relatively low percentage (ranging from 0% to 3%) identifying terrorism as one of the two most relevant issues at the moment. This data may suggest that, at the individual level, terrorism is not perceived as an imminent or top-priority threat to personal security.

At the national level, the perception of terrorism appears equally limited, with values ranging between 0% and 3%. This data suggests that, at the national level, terrorism is not one of the main challenges or concerns, at least according to the perception of most European citizens.

However, at the collective level, the picture changes significantly. Although the research does not directly address the issue of terrorism, it emerges that a considerable percentage of respondents have identified terrorism as one of the main issues that the European Union must currently address (with scores ranging from 3% - Italy, Austria, and Netherlands to 11% - Portugal). In absolute terms, in this case, there is a general increase of 1% compared to the previous survey in a period marked by concerns arising from the war in Ukraine and the recent terrorist events in

²⁸ Marone, F. *La PoliticadelTerrorismo Suicida*. Rubbettino, Italy, 2013.

²⁹ Hafez M. *Suicide Bombers in Iraq: The Strategy and Ideology of Martyrdom*. Washington DC: United States Institute of Peace; 2007.

³⁰ The "Standard Eurobarometer" is a survey conducted by the TNS Opinion agency, commissioned and coordinated by the European Commission. It has been conducted semi-annually since 1973.

³¹ Within the "Standard Eurobarometer – Wave" survey, the following questions were identified:

- "QA4a. and personally, what are the two most important issues you are facing at the moment?" to study the orientation of the population's perception related to the issue of terrorism at a personal level.
- "QA3a. What do you think are the two most important issues facing (OUR COUNTRY) at the moment?" to study the orientation of the population's perception related to the issue of terrorism at a national level.
- "QA5. What do you think are the two most important issues facing the EU at the moment?" to study the orientation of the population's perception related to the issue of terrorism at a communal level.

Europe before to the events in Brussels on October 16, 2023. These events occurred in France, in Arras on October 13, 2023, and in Paris on December 23, 2022. This data may indicate that, although terrorism is not perceived as a top-level personal or national threat, there is a greater awareness of the importance of addressing this challenge at the European level, probably in consideration of the recent terrorist events in Europe.

Looking Ahead: Anticipating Trends in the Lone Wolf Phenomenon

Despite the efforts of institutions and the numerous studies, essays, and articles produced over the years, the explanations found so far remain insufficient to argue why young people from various backgrounds decide to embrace a suicide mission and carry out armed attacks in barracks, clubs, theaters, or schools, brutally killing anyone in their path. Understanding such phenomena remains a complex and evolving task.

That being said, the threat of terrorism has affected and will likely continue to do so shortly in various parts of the world, abruptly and drastically ending the lives of countless innocent victims. The setbacks in the Middle East of some of the major terrorist networks, particularly the Islamic State, will lead to a new transformation of the phenomenon, or rather, a return to its roots, characterized by propaganda actions against the Western world and an "afghanization"³² of guerrilla operations on the ground. Europe is poised to play an increasing role in this process, emerging as a prominent amplifier. This phenomenon will be linked to the ever-increasing use of the internet and social media for broadcasting radicalization messages, often closely connected to local terrorist events that will assume a greater global significance.

However, a particularly compelling aspect lies in the profound disruption that terrorist events have had and will increasingly wield in shaping the perception of normalcy and security among European citizens. The rise of phenomenon such as lone wolves within our societies has significantly contributed to this paradigm shift. Nevertheless, in daily language, far from technical considerations of "experts" and academic assessments, based on terms and definitions, the disruptive novelty represented by the figure of the lone wolf, even more than in "ordinary" manifestations of terrorist events, is in its exasperated ability to instill fear in every citizen. The violation of private spaces, the insecurity of public spaces, the endless search for more extraordinary precautions by state entities, instilling a distrust based on ethnic and religious roots of "us" against "them."

So, how can we address such a complex phenomenon as described thus far? The debate on how to counter the presence of lone wolves in our society will be long and involve multiple aspects. The need to understand "how" the processes of radicalization occur, the motivations behind them, and possible "catalytic" events, the critical role played by communities susceptible to these phenomena, alongside the central significance of intelligence and "counter-narrative" activities, not only constitutes but is progressively emerging as the cornerstone in the ongoing and forthcoming efforts to prevent the discussed terrorism phenomenon.

In this context, it is possible to identify three main aspects closely related to the phenomenon of radicalization, which often precedes the actions carried out by lone wolves, and that deserve special attention in the prevention phase, but even more so in the development of predictive countermeasures:

- identifying socio-territorial areas susceptible to radicalization;³³
- studying social precarity (a phenomenon associated with the "ghettoization" of metropolitan areas), can be defined, for example, by analyzing data related to social inclusion, economic integration, crime rates, and public spending on immigration;³⁴
- implementing legislative and, more importantly, operational tools for controlling cyberspace (generally used term referring to the "online world") ensures that investigators can obtain the necessary information for timely intervention.³⁵

Moreover, embracing new technologies is crucial for addressing and comprehending terrorist phenomena. Artificial Intelligence (AI) and Machine Learning (ML) have substantial potential to significantly enhance and streamline

³² Based on hit and hidetechniques.

³³ Important considerations regarding the significance of radicalization hubs are found within the study conducted by L. Vidino, F. Marone, and E. Entermann, titled *"The Jihadist Next Door: Radicalization and Jihadist Attacks in the West"*.

³⁴ The parameters of social precarity were assessed in a study conducted by the "Leone Moressa Foundation" in 2015.

³⁵ Legislative toolssuch as the *"Investigatory Powers Act,"* adopted in the United Kingdom in 2016, which involves expanding surveillance powers for relevant authorities, could serve as an effective instrument in countering the emerging threats on the horizon.

counterterrorism efforts. By meticulously analyzing extensive datasets and discerning intricate patterns, AI and ML algorithms greatly support forecasting and preempting terrorist activities. Furthermore, they offer valuable insights for devising effective counterterrorism strategies.

Predictive analysis emerges as a pivotal application of this technology in counterterrorism. By examining historical data, algorithms can identify patterns and trends conducive to predicting future attacks or the radicalization process. This is achieved by utilizing classification models such as decision trees³⁶ and random forests³⁷, which furnish probabilistic results regarding the likelihood of an attack occurring in a specific region, the potential type of attack, or the socio-territorial elements indicative of susceptibility to radicalization.

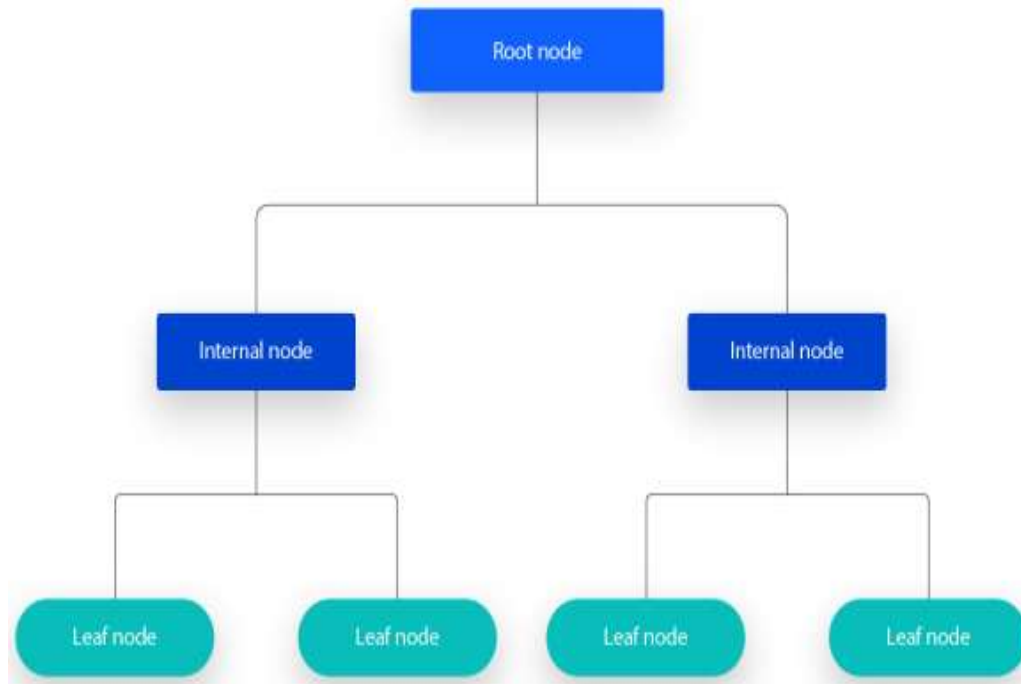


Fig. 4:- Example of Decision Tree.³⁸

³⁶ Decision trees are used for classification and regression. They have a hierarchical structure with a root node, branches, internal nodes, and leaf nodes. Based on features, decisions are evaluated, and leaf nodes, encompassing all possible outcomes, represent forms. This structure offers an easily interpretable representation of decision-making. Learning involves a "divide and conquer" strategy, recursively identifying optimal split points until most records are classified. The homogeneity of data classification depends on the tree's complexity.

³⁷ Random Forest is a widely used machine learning algorithm, crafted by Leo Breiman and Adele Cutler, that blends the output of multiple decision tree structures to yield a single result. Its user-friendly nature and versatility have contributed to widespread adoption, making it suitable for classification and regression problems. This algorithm has three key hyperparameters that must be configured before training: node size, the number of tree structures, and the number of sampled features. Once configured, the Random Forest classifier solves regression and classification problems.

³⁸ IBM web site - <https://www.ibm.com/it-it/topics/decision-trees>.

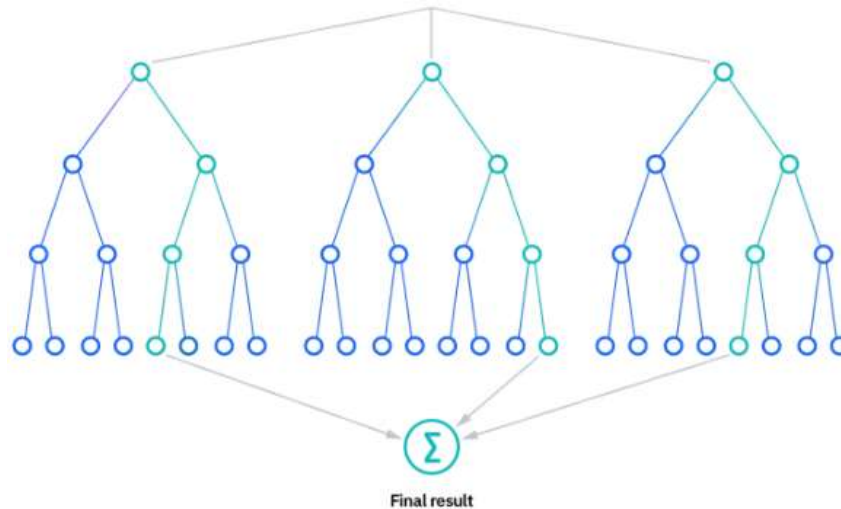


Fig. 5-Example of Random Forest.³⁹

The scrutiny of data aims to unveil patterns, correlations, and trends that might elude immediate detection by human analysts. This approach facilitates a deeper comprehension of the factors contributing to terrorism, thereby aiding in developing effective counterterrorism strategies.⁴⁰

In conclusion, concerted efforts must be directed toward integrating culturally diverse communities into the social and cultural fabric while mitigating internal conflicts rooted in ethnic and religious distinctions. This necessitates transcending simplistic approaches to migration issues and establishing unambiguous, stringent regulations governing the use of the Internet and social networks, both by citizens and regarding security measures implemented by relevant authorities.

However, the utilization of technological tools to aid in the identification of patterns and trends, particularly on social media and on the web, is conducive to predictive activities, supporting a comprehensive strategy in countering terrorist events that must wrestle with one of the most mysterious facets of human existence – the human mind.

The information provided in this article is intended solely for academic and informational purposes. Any opinions expressed herein are those of the author.

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³⁹ IBM web site - <https://www.ibm.com/it-it/topics/random-forest>.

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