PRIME
Preventing, Interdicting and Mitigating Extremism

D3.1
Risk Analysis Framework
Public Version

WP 3 – Data Requirements

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Table of contents

Keywords

Risk Analysis Framework; matrix; theoretical background; terminology; radicalisation; attack preparation; attack; lone actors; literature review; meta-model; Situational Action Theory; IVEE; criminology

Acronyms

Acronym	Definition
DOW	Description of Work
IVEE	Individual Vulnerability, Exposure, Emergence
LAE	Lone Actor Extremist
LAEE	Lone Actor Extremist Event
RAF	Risk Analysis Framework
RAPA	Radicalisation, Attack Preparation, Attack
SAT	Situational Action Theory

1. Introduction

1.1 Context

PReventing, Interdicting and Mitigating Extremist events (PRIME) is a collaborative research project funded under the European Union's Seventh Framework Programme (FP7). PRIME started on 1 May 2014 and is slated to run for 36 months.

PRIME sets out to improve our understanding of lone actor terrorism and to inform the design of social and physical countermeasures for the prevention of lone-actor radicalisation, the disruption of lone-actor terrorist plots, and the mitigation of terrorist attacks carried out by lone extremists. In this endeavour, PRIME adopts a multidisciplinary approach, which combines formal modelling techniques drawn from security engineering with relevant expertise from the ecological, social, behavioural and criminological sciences. The end-product will be a decision-support tool for end-users whose remit is to deal with the lone actor terrorism threat.

PRIME's research activities involve a range of social scientific research methodologies for the purpose of collecting empirical data needed to produce scripts (integrated script and subscripts) of lone-actor extremist events (LAEE) and related analytical products. The ultimate aim of these combined products is to enable the identification of 'pinch points', where interventions (i.e. countermeasures) can be implemented to prevent, disrupt or mitigate lone-actor terrorist activity.

PRIME seeks to go beyond the state of the art in the study of lone actor extremism in a number of ways: firstly, by modelling factors, processes and indicators associated with LAEEs at several levels of analysis, and, secondly, by developing for this purpose a more rigorous theoretical and analytical approach than has heretofore been used in this domain to produce scripts and explanations of LAEEs.

The purpose of this document is to set out an analytical framework, founded upon past and current research in criminology, as well as scholarship on lone actor terrorism, group-based terrorism and extremist violence more generally, which integrates the aforementioned levels of analysis into a general causal account of LAEEs. The function of this framework is to:

1) guide and motivate the project's data collection activities, which ambition to collect new and innovative data on LAEEs; and

2) provide the 'bare frame' around which to build the LAEE script by identifying key categories of factors indicators associated with LAEEs, which are theorised

to signposts opportunities for the prevention, disruption or mitigation of these events.

Hence, the theoretical model described herein is intended for use as a risk analysis framework (i.e. a model which sets out the relationships between categories of risk factors and indicators at different analytical levels).

1.2 Objectives

The specific objectives of this deliverable are as follows:

- To synthesise the knowledge-base on LAE radicalisation, attack preparation and attacks, as well as related factors and processes, drawing from neighbouring problem domains as relevant.

- To outline the project's theoretical background and the Risk Analysis Framework, which will guide the project's data collection activities, and, ultimately, inform the development of the LAAE script, the identification of intervention points (i.e. 'pinch points'), and the design of the countermeasure requirement portfolios.

- To define key terms that have informed the inclusion of cases in the study population, taking into account a number of constraints and requirements established over the course of the project.

2. Radicalisation

Several themes can be distinguished within the literature on lone actor extremism. To begin, many publications introduce the topic as a phenomenon that, while certainly not fundamentally new (for historical accounts, see Coffey, 2011; Bach Jensen, 2014; Kaplan, 1997; Michael, 2014; van Buuren & de Graaf, 2013), has been occurring with greater frequency over the past two decades, especially in the United States, but also in Western Europe (Appleton, 2014; Coffey, 2011; Eby, 2012; Nesser, 2012). Some studies provide more conservative figures than others (COT, 2007), but by and large the consensus appears to be that "lone wolf terrorism is on the rise by all accounts, and by every indicator" (Feldman, 2013, p. 270). There is also data to suggest that lone actor extremist attacks have increased in lethality over the past two decades (Teich, 2013)), or may be even more lethal than group-based attacks in the US and France (Phillips, 2015). Even so, LAEEs remain a marginal phenomenon compared to group-

based terrorism, and the latter is, on balance, still considerably more deadly (Nesser, 2014; Spaaij, 2010).

A second prominent theme is concerned with defining lone actor extremism, and the difficulties associated with the exercise. As in the broader field of terrorism studies, there is no commonly accepted definition of what constitutes lone actor extremism or terrorism (Appleton, 2012; Borum, 2013; Borum et al., 2012; COT, 2007; Spaaij, 2010; Spaaij and Hamm, 2015). A number of studies have attempted to provide typologies or profiles of lone actors, (the third theme), perhaps seeking to go around the definitional obstacle (Bates, 2012; Borum et al., 2012; McCauley and Moskalenko, 2014; Pantucci, 2011; Philips & Pohl, 2012). Reviews of LAEs' ideological motivations and their psychology constitute a fourth major area of interest, including the role of media, such as online media, in motivational development and ideological change (Berntzen & Sandberg, 2014; Borum, 2013; COT, 2007; Gardell, 2014; Michael, 2012; Moskalenko & McCauley, 2011; Peddell et al, 2016; Spaaij, 2012; Springer, 2009; Weinmann, 2012). Fifth, a number of authors have dealt with (the difficulties of) preventing, countering or responding to LAEs and the attacks they may execute (Bakker & de Graaf, 2010; Barnes, 2012; Bry* nielsson et al., 2013; Carter & Carter, 2012; Coffey, 2011; Hewitt, 2014; Meyer, 2013; Striegher, 2013). Sixth, although not focused on particular a particular topic, numerous publications on lone actor extremism utilize datasets and (some form of) statistical analysis to identify key characteristics of offenders and attacks, in the search for significant indicators and predictors (COT, 2007; Eby, 2012; Gill et al., 2014; Gruenewald et al., 2013; Jasparro, 2010; Spaaij, 2010; Teich, 2011). Finally, some authors have looked at different types of lone actor violence in a comparative perspective (Gill & Corner, 2013; Gruenewald et al., 2013; Malkki, 2014; McCauley & Moskalenko, 2014; McCauley et al., 2013).

In the following section, we review specifically literature and research on the radicalisation process of LAEs. We then broaden the synthesis to radicalisation and processes akin to radicalisation associated with other types of terrorism and cognate problem domains (e.g. school shooters), in appreciation of the relatively young state of the LAE literature on this subject.

2.1 Lone actor radicalisation

Despite of a steep increase in research and publications on terrorist behaviour associated with lone actors during the past few years, the share occupied by empirical research remains relatively limited; this is particularly the case with regards to studies of the process of radicalisation. Perhaps predictably, given the very nature of lone actor terrorism, the knowledge-base into processes of radicalisation remains relatively superficial.

The focus of available studies is varied. Some rely on single or small-n case studies to examine biographical trajectories, to develop broad typologies of lone actors or to generate models of lone actor radicalisation (e.g. Waits and Shors, 1999; Michel and Herbeck, 2001; Willman, 2011; McCauley and Mosalenko, 2011, 2014; Pantucci, 2011; Van der Heide, 2011; Weimann, 2012; Berntzen and Sandberg, 2014; Gartenstein-Ross, 2014; Van Buuren and De Graaf, 2014). Others, largely reliant on anecdotal evidence or case studies, are concerned with more specific issues, such as the strategic orientation of lone extremists (Centre for Terror Analysis 2011), the challenges posed by lone actors for counterterrorism and the perception of the threat of lone extremists within law enforcement (Chermak et al., 2010; Gordon et al, 2015; Hewitt, 2014; Michael, 2014; Peddell et al, 2016), or the ideological narratives that underpin and promote lone actor extremism (Kaplan, 1997). While informative as a first approach to the phenomenon, these studies tend to be descriptive rather than explanatory and the external validity of their conclusions is limited.

A few, notable studies are based on larger-n datasets, mostly in the form of databases that rely on open sources (mainly media reports) (Spaaij, 2010; Nesser, 2012; Gill et al., 2012; 2014). While a significant improvement in terms of generalizability, these studies' findings often remain descriptive, without claim to establishing causality, and mostly concerned with behavioural indicators associated with LAEEs. Furthermore, while a great deal of attention is paid to individual variables (e.g. offender background), and some attention is devoted to situational variables (e.g. characteristics of targets), there is much less focus on environmental factors implicated in the radicalisation process (e.g. types of settings in which the radicalisation occurred). Despite these limitations, some observations drawn from the empirical literature on lone actor radicalisation is summarised in the remainder of this section.

As stated, insights from large-n studies, as well as from biographically oriented small-n case studies, are richest on the individual level of analysis. Similar to research on perpetrators of political violence in general, one of the key findings of these studies is the absence of any general socio-demographic profile of lone actor terrorists with respect to social and educational backgrounds, age, and so on. Nevertheless, in the work by Gill et al. (2014), some patterns are observed:

1) their sample includes a comparatively higher proportion of unattached individuals – unmarried and without children – particularly when taking into account that most of these individuals are well into adulthood;

2) relative to their level of education, a large proportion of lone actor terrorists is unemployed (40.2%);

3) a significant proportion have a criminal record (41.2%); and

4) almost a third of the sample have a history of mental illness or personality disorder (31.9%) (Gill et al. 2014: 428), which is in line with other studies that have identified mental illness as a notable characteristic of lone actor terrorists (see also Nesser 2012: 66; Spaaij 2010: 862), compared with group actors.

Within the general diversity of lone actor terrorists, Gill et al. (2012; 2014) also found distinguishable differences between ideological subgroups. For example, compared to extreme right-wing offenders and single-issue offenders, al-Qaeda-influenced offenders were significantly younger, less likely to have criminal convictions, more likely to acquire knowledge through virtual sources, and display elements of command-and-control links.

With regard to the social context of lone actor radicalisation, almost all studies – though with varying degrees of emphasis – conclude that lone actors are often not all that 'alone'. While a few individuals are described as loners and socially isolated, research tends to unearth evidence of meaningful connection to the immediate and broader social contexts, including family and friends, political movements, terrorist organizations, individual mentors, or virtual communities (see Pantucci, 2011; Nesser, 2012; Kaplan et al., 2014; Gill et al., 2012, 2014; Berntzen and Sandberg, 2012, 2014; Weimann, 2012). Several typologies, in fact, distinguish types of lone actors according to their degree of connection to radical movements or terrorist organizations (Pantucci, 2011; Nesser, 2012).

With respect to the links between LAEs and their immediate social environment, Gill and colleagues found that in 79% of the cases in their sample, other people were aware of the individual's commitment to an extremist ideology, and in 63.9% of the cases family members or friends were aware of the intent to engage in terrorism-related activities, because the individuals verbally told them so (Gill et al. 2014). Concerning relations to political movements or organizations, they found that in almost half of their cases, lone actors had interacted face-to-face with members of a wider network of political activists, and in 68.1% they had consumed literature or propaganda from a wider movement. Finally, more than half of the lone actors characterized their actions as associated with a wider movement.

These latter findings point to the role of the radicalising environment, even in processes of lone actor radicalisation. These findings are echoed in other large-N studies. Nesser (2012), for example, stresses that most of the lone actors in his sample had – or wanted to have – ties to extremist groups or extremist environments, and received some degree of assistance, encouragement or instructions at some stage in their trajectory. In-depth case-studies likewise tend to stress two aspects of social embeddedness: firstly, the lone actors' reference to a wider movement and connection to a "virtual community", either in the form of shared worldviews and frames of interpretation, or in the form of claims to belong and act as part of this movement (see, for example, Berntzen & Sandberg, 2014; Gartenstein-Ross, 2014);

secondly, the role of the internet and particular online publications, platforms, or high-profile figure, such as Anwar al-Awlaki (Weimann, 2012) in informing the LAEs' ideology.

Yet, while the literature frequently mentions links between lone actors and the radicalising aspects of the environment in which they evolve, little of any specificity is known about the nature of the places where LAE radicalisation happens. Likewise, information about the trajectories that result in LAEs' exposure to (and the factors that shape their interactions with) these environments and the people in them remains scarce. Whether some types of such places are specific to lone actor radicalisation (as opposed to group radicalisation) remains unanswered. When the radicalising environment is mentioned in studies on LAEs it is, chiefly, in relation to the Internet and to the availability of propaganda and other terrorism-supportive narratives promoted by terrorist organizations or movements, who seek to instigate and support violent action by lone actors, as part of a broader strategy of "leaderless resistance". In fact, this strategy is sometimes, but not always, interpreted as the result of a process of decline and fragmentation of a movement (see Kaplan, 1997; Pantucci, 2011; Michael, 2012; Weimann, 2012).

The emergence of the internet in its current form and its capacity to allow conversation between disconnected, like-minded individuals and to put them in touch with wider 'virtual communities' has been identified as both a factor of 'incubation' and 'acceleration' of the LAE phenomenon (Weimann, 2012: 79; Pantucci 2011: 34). The case of Anders Behring Breivik, in particular, has brought to the fore the connection between the internet and LAEEs (Ravndal, 2013). Al-Qaeda and Daesh are also now widely known to use virtual spaces and networks to encourage unaffiliated individuals to commit violent acts, through media such as AQAP' "Inspire" magazine (the archetypal example of the genre) and, more recently, through social media networks (Thompson, 2011).

Research carried out by Gill et al (2015) on the role of the internet in terrorism cases, as part of the EU FP7 VOX-Pol project, highlights the multitude of ways in which the internet has been used to facilitate terrorism. The study exploited a database of 227 individuals who were convicted of terrorism offences in the UK between 1990 and 2014, a number of which are lone actors, and compiled and analysed information gained through open-source data on over 100 variables related to radicalisation and attack preparation. Findings of note include that 54% of the actors in the database used the internet to learn about terrorist activity, a figure which rises to 76% from 2012 onwards. The open source data suggest that 44% of actors found or downloaded online extremist media (including videos, photographs and lectures) and a third prepared for their attacks using online resources. Just under a third of actors (29%) communicated online with others, while 15% disseminated terrorist propaganda online. The fact that the database included actors from the 1990s and early 2000s, who were much less likely to use the internet, given its lesser diffusion at the time

means that many of these percentages would be much higher if one considered only recent cases.

A recurring question when examining lone actor radicalisation is whether there are factors, processes and mechanisms of radicalisation, at any level of analysis (e.g. individual), which are particular to this type of terrorism, or whether the insights and theoretical models developed in more general research on (group-based) radicalisation have something to tell us (Spaaij 2010, 2012; Pantucci, 2011; Moskalenko & McCauley, 2011). As previously stated, several studies would suggest that the picture of the individual 'self-radicalising' in complete isolation is misleading (Spaaij, 2012; Berntzen & Sandberg, 2014; Gill et al. 2012, 2014), if only given the increasingly prominent role that seems to be played by online extremist communities, as well as the fact that many lone actors are known to have had some kind of link to broader movements or political organizations. Conversely, in recent years, the phenomenon of so-called 'homegrown' radicalisation has been portrayed as typically involving elements of 'self-radicalisation' in trajectories of individuals who later joined radical milieus or terrorist groups, as well as small, autonomous cells of so-called 'self-starters' (Kirby 2007) or *quasi-lone* 'wolf packs' (Pantucci ,2011).

In other words, in the domain of radicalisation studies, the boundaries between 'types' of radicalisation, on a spectrum of 'lone' to 'group', appear increasingly hazy as more information comes to light on individual cases. A significant number of cases, many of them labelled 'lone actor', seem to occupy the middle ground on a spectrum marked by cases of completely isolated lone attackers on the one side and individuals who join (or are recruited into) an established terrorist organization on the other, and a middle ground characterized by evidence of some kind of connection to radical movements or terrorist organizations. This suggests that the study of lone actor radicalisation has something to learn from research on 'home-grown' and group-based radicalisation, much as the study of 'cell-based' or so-called 'bunch of guys' radicalisation, which tends to focus chiefly on the socio-psychological connections, can learn from research on mechanisms of 'self-radicalisation'.

Without losing sight of the distinguishing characteristics of lone actors, it is therefore worth reviewing the broader literature on group or movement-based radicalisation, with particular attention to research on 'home-grown' jihadist radicalisation in Western countries and to the growing field of comparative research on political violence that has developed out of social movement studies.

2.2 Group-based radicalisation

2.2.1 Overview

In the last decade, much conceptual and empirical knowledge has been added to our understanding of the process which leads individuals to engage in acts of terrorist violence. Unfruitful profile-based approaches have been largely discarded in favour of process-based or 'pathway' models, which seek to identify shared sequences of stages common across the trajectories of individual actors (Borum, 2011; Horgan, 2008; McCauley & Moskalenko, 2008). Several authors have emphasized the need to distinguish between violent and non-violent radicalisation, between radicalism and political activism, and between beliefs and actions (Borum 2011; McCauley and Moskalenko 2014; Moskalenko and McCauley 2009; Barlett and Miller 2012). Borum (2011), notably, argues that 'action pathways' must be clearly distinguished from developmental pathways, in a domain where radicalisation, recruitment and involvement are often imprecisely delineated.

Overall, radicalisation is depicted as a complex, multidimensional phenomenon, emerging from the interaction of individual, situational, organisational, socio-environmental, and even global factors (see, for example, Sprinzak 1990; della Porta, 1995; 2013; Wiktorowicz, 2005; Horgan, 2008; 2009; Dalgaard-Nielsen, 2010; McCauley & Moskalenko, 2008; 2011; 2014). The main categories of accounts of radicalisation (sociological; social movement and networks; empiricist) are said to contribute saliently to an understanding of radicalisation, though no model has yet been put forward which fully integrates them (Dalgaard-Nielsen, 2010).

Given the diversity of trajectories and context-specific particularities of patterns of radicalisation, some have argued that the search for general frameworks is altogether futile, and that the best that can be hoped for is to account for the radicalisation process in a given context (Borum 2011). The aforementioned 'pathways', it is believed, are ultimately discrete, each of them reflecting intensely individual circumstances. As such, a not insignificant part of the research literature on radicalisation associated with terrorist groups consists of an aggregation of observations drawn from the backgrounds and histories of known terrorists.

2.2.2 Jihadist 'home-grown' radicalisation

The so-called phenomenon of Jihadist (or Islamist) home-grown radicalisation, whereby individuals commit acts of terrorism against their home countries at the behest of foreign organisation promoting an extremist form of Islam, has attracted a lot of attention and motivated much empirical research in the wake of 9/11. To the extent that LAEs are, in significant numbers, inspired by extremist readings of Islam, frequently act on their home soil, and may have had contact, in the course of their development, with 'home-grown' cells or networks, a synthesis of empirical findings on

(mainly Western) home-grown radicalisation may contribute insights into the development of a general risk analysis framework. The following is organised by broad categories of observation (individual, social-ecological and systemic), in line with the integrative outlook of the PRIME project.

Individual-level observations

In a Western context, Islamic-inspired radicalisation concerns a very small number of individuals – relative to populations at large. Within that minority, the socio-demographic picture is heterogeneous. Although national or ethnic clusters occur within discrete networks, no general profile emerges. Individuals vary in terms of familial and social background, marital status, education level or employment history. However, gender and age do display some regularities. The population of radicalised individuals is in large majority male, with evidence of peripheral involvement by women (de Poot & Sonnenschein, 2011). They appear to undergo radicalisation as teenagers or in early adulthood. For example, Sageman (2004)'s sample averages 25.7 years, Bakker (2006)'s 27 and Porter and Kebbell (2011)'s 28. Precht (2007) reports an age range of 'teenager to mid/late 20s,' with a few individuals in their thirties. Silber and Bhatt (2007)'s subjects also fall within a broad 15-to-35 bracket. de Poot and Sonnenschein (2011) do uncover clusters of 'older actors' implicated in Dutch Islamist networks, many of them foreigners with prior involvement in jihadi activities. Age is typically recorded at time of arrest, which may occur years after the onset of radicalisation, therefore figures are only indicative and likely skewed.

With regard to timing, radicalisation is reportedly associated with specific events in the lives of individuals. Referred to as turning, crisis or crossroad points, life events are thought to impact the individuals in some significant way, setting them on the path to radicalisation. Such events range from the mundane to the traumatic. Moving house, starting school, losing a job, migrating, going to prison, being victimised, losing a loved one are but a few examples, which illustrate the phenomenological diversity of these life experiences. Events may accumulate into overall experiences, such as experiences of segregation or discrimination (Silber & Bhatt, 2007), which the subjects themselves sometimes hold up as explanation for their later involvement in terrorist activity.

Such events may be associated with, or be the cause of, observable changes in the relationships experienced by these individuals. Whether a change in the pattern of the interpersonal attachments which existed prior to radicalisation is a factor in the process, or the outcome, of radicalisation is difficult to establish. In a number of cases, the life events which preceded radicalisation significantly impacted people's social ties. Sageman (2004) observes that expatriation and relocation severed the supportive family bonds of men who had been well-integrated in their society of origin. That situation finds an echo in the experience of prison inmates deprived of the intimate

support provided by family and friends (Brandon, 2009). At other times, ties may be wilfully broken, as friends and family react with worry or hostility to the individual's newfound beliefs (Neumann & Rogers, 2008). Pressure from intimates may drive people to hide their activities, hastening the severance of prior attachments (Wiktorowicz, 2005). In other cases, pre-existing bonds provide the very foundation of jihadi networks, whereby family and friends radicalise together and network members intermarry (Bakker, 2006; de Poot & Sonnenschein, 2011; Sageman, 2004). Conversely, Bartlett and colleagues (Bartlett, Birdwell, & King, 2010) describe young radicals turned away from violence by family members and other role models instrumental in presenting them with an alternative.

These turning points may be accompanied by, or manifest as, a change in religiosity. Precht (2007) notes that radicalised individuals tend to go from no faith to faith, from faith to a more radical observance of the same faith, or from one faith to another. Converts and 'born-again' Muslims are represented in most study samples. Bakker (2006) reports that 28% of the European jihadists for whom that information is available are converts. Of the rest, half were raised in secular Muslim families and rediscovered their faith as adults. The picture is similar in Australia, where converts and 'born again' Muslims together represent 66% of Porter and Kebbell (2011)'s sample. Almost half of the 108 individuals for whom Sageman (2004) had information went from a secular upbringing to a religious outlook, as did the Al-Muhajiroun members studied by Wiktorowicz (2005), who lacked any kind of religious foundation or commitment to a spiritual framework before joining the movement (see, also, de Poot et al.'s case studies). Hamm (2007), too, writes of convicts who rejected the evangelical upbringing which couldn't prevent them from ending up behind bars. Conversely, anecdotal evidence suggests that a pre-existing religious or ethical commitment (to a stable religious identity, or to non-violent moral values, such as tolerance) has a protective effect against radicalisation (Gartenstein-Ross & Grossman, 2009).

Other observations relate to the nature of the beliefs adopted by radicalised individuals. Home-grown radicalisation is characterised by the adoption of beliefs associated with the Salafi variant of Islam. This new religiosity is often "legalistic" or "rules-based." It relies on "strict guidelines" covering "virtually every aspect of one's daily life," which diminishes the need for "moral decision-making" (Gartenstein-Ross & Grossman, 2009, p. 12). In this sense, it offers "simple solutions to complex questions," which might explain its appeal in inhospitable environments, such as prisons (Brandon, 2009, p. 19). Such a framework provides structure for people faced with concrete or existential challenges (de Poot & Sonnenschein, 2011). The preference for legalistic religiosity contrasts, however, with evidence that many radicalised individuals hold no more than a superficial knowledge of the faith, and will often stray from its precepts, failing to put religious rules of conduct into practice in their everyday life (Taarnby Jensen, 2006).

With regards to their cognitive state, individuals who undergo radicalisation are by and large psychologically normal. However, many reportedly experience psychological difficulties prior to radicalisation, such as problems coping with stressful or complex life situations, resulting in what Wiktorowicz (2005) terms a "cognitive opening". This is variously depicted as a sense that "certainty in previously accepted beliefs" has been undermined (Wiktorowicz, quoted in Neumann and Rogers, p. 67), a pervasive lack of direction, a feeling of helplessness, of psychological distress, diminished agency, alienation, or a craving for control, certitude, or security. In the context of prison radicalisation, Trujillo et al. (2009) hypothesise that hostile circumstances combine with inmates' "lack of psychological autonomy," until they desire nothing but to shed "all responsibility in decision-making" (p. 563). de Poot and Sonnenschein (2011) describe two types of jihadi activists, 'criminals' and 'seekers,' who turn to Jihadist ideology out of an encompassing need for guidance, while Olsen (2009, p. 14) writes of uncertain young people seeking a moral and spiritual engagement "that [they] didn't have at home". Neumann and Rogers (2009) contend that similar processes may operate among some second generation Muslims, who have rejected parental value systems; for them, proselytising organisations can pose a paradoxical danger, preaching non-violent jihad but refusing to engage on political issues, leaving people's view "completely undefined" (p. 53). They recount how, in the aftermath of 9/11, one man was moved to make contact with a Hizb-ut Tahrir activist at the Leeds Grand Mosque: "I remember thinking: 'This [9/11] changes everything.' But I admit I was confused about it. I didn't know what Islam made of it. *Nobody was offering me direction*" (Neumann & Rogers, 2009, p.36; emphasis as original).

Aside from these cognitive aspects, emotional states are also associated with the radicalisation process under the heading of priming factors, or drivers or motivators, notably negative affective states, such as anger, loneliness or frustration. These feelings are said to arise out of specific and often cumulative life events, such as experiences of (real or perceived) political injustice, discrimination, social exclusion or economic frustration, which crystallise into grievance. Sageman (2004) contends that several of the men in his sample, who were either unemployed or underemployed, could have perceived themselves as deprived. The prison studies suggest that daily experiences of dispossession, racism and victimisation, as well as constant clashes between religious requirements and the constraints of incarceration, can prime individuals for radicalisation (see, notably, Brandon, 2009). Jihadist media, notably videos depicting scenes of conflict and violence against Muslims, are intended to trigger negative arousal, to induce "moral shock" (Silber & Bhatt, 2007, p. 40) and open people up to radical ideology. Empathy may also be at play in this process. For example, Olsen (2009)'s interviewees came to see their actions as a way of relieving humiliations suffered by helpless others. Bartlett and colleagues (2010) observe that "violent jihad is about emotion," but also find that intense feelings of anger and grievance inspired by Western foreign policy are shared equally among terrorists and non-violence radicals (p. 31).

Notably, not all affective states or drivers associated with Islamic-inspired radicalisation are negative. Positive experiences of safety, belonging, kinship,

companionship, and other stress- or uncertainty-relieving circumstances may contribute to radicalisation through the provision of incentives to participation (see, notably, Sageman 2004; 2008). Thrill-seeking, an orientation towards action, an impatience felt as an 'urge to act', a 'bodily restlessness' characteristic notably of younger individuals have also been linked to the process (Olsen, 2009, p. 47).

Lastly, with regards to individual-level patterns of observations associated with jihadist radicalisation, studies report that several individuals involved in high-profile Western terrorist plots had previously tangled with the justice system (Silber & Bhatt, 2007). de Poot and Sonnenschein (2011) state that, among their Dutch sample, a significant sub-group of jihadists showed evidence of past or present criminal involvement. Based on his sample of 242 European terrorists, Bakker (2006) estimates that almost a quarter have a record for a common offence unrelated to their terrorist activity, sometimes coupled with a history of abusing alcohol and drugs. Of a population of 21 Australian jihadi terrorists, 6 had a criminal record and 8 had addiction issues (Porter & Kebbell, 2011).

Social ecological-level observations

Many kinds of places are associated with home-grown radicalisation, such as restaurants, tea houses, gyms, prison courtyards, cellblocks, youth clubs, bookstores, pubs, mosques, prayer halls, immigration centres, online forums, social clubs and other sites, which bring together friends and like-minded people. Genkin and Gutfraind (2008) distinguish between "neutral sites" and "radicalisation magnets," such as places of worship or religious study, and contend that neutral sites, which facilitate the "rewiring of ties" between people, play as important a role as more visibly 'radical' settings (p. 33).

Although mosques and other cultural centres have acted as hubs and may remain places of first contact, the trend has been reportedly for activists to withdraw into private and semi-private spaces (Neumann & Rogers, 2009), away from prying eyes. The web, which affords at least the illusion of privacy, may also enable this displacement. Contemporary research into the role that the internet plays in individual radicalisation reveals social media's role in expanding the social ecology of radicalisation. Religious instruction, battlefield reports, interpersonal communications and strategic propaganda messages spread quickly from the battlefields of Iraq and Syria to the rest of the world through online networks of individuals who belong to, or support terrorist organisations, connecting – often in real time – expatriated Western fighters with sympathisers or collaborators in the West (Klausen, 2015; Winter, 2015a).

Cultural differences between authorities and space users – such as imams not speaking the language of the local youth (Precht, 2007) or prison guards not speaking the language of prisoners – can also prove barriers to effective supervision. So too can the

resources, or lack thereof, available to guardians. Neumann and Rogers recount how mosque committees took action to expel activists recruiting on the mosque's grounds, only for them to move their operation outside, beyond the committee's sphere of influence. In other instances, religious authorities have let proselytising activity go on unchallenged. Conversely, Useem and Clayton (2009) attribute the lack of endemic radicalisation in US prisons to successful governance and a general increase in social order, which has made it easier for correctional staff to spot "deviant activity" (p. 569).

A reported hallmark of home-grown Islamic radicalisation is that individuals come to trust exclusively in the pronouncements of select "spiritual sanctioners" (Silber & Bhatt, 2007), who they may encounter in physical or virtual radicalising spaces. These sources of moral authority do not have to be physically present, but can operate through media. Nor do they need to hold an office, but can be self-proclaimed religious experts with no formal sanction or training (Taarnby Jensen, 2006). Experienced members of a radical group or community can also be agents of influence. Olsen (2009, p. 26) speaks of figures who appear as "rock stars of the subculture" to novices looking in. "Propagandists" and other "charismatic figures" can play the role of hubs, connecting local actors, as well as providing a bridge to the global movement (Taarnby Jensen, 2006, p. 60). Activists also connect prisoners to the outside world, enabling the introduction of radicalising material during visits, over mobile phones or through the provision of books and DVDs (Hamm, 2007; Trujillo et al., 2009).

Reportedly, an individual's companions in radicalisation are the foremost source of radicalising influence. Sageman (2004) argues that Salafi terrorism should be blamed on "in-group love" (p. 135), and though the so-called "bunch of guys" explanation may be overstated (Neumann & Rogers, 2008), most studies concur that Islamic home-grown radicalisation is a group-based phenomenon and that attachment between group members, who come to provide for each other's well-being, along with peer pressure, enables radicalisation. de Poot and Sonneschein (2011) describe at length the deep bonds formed between men in precarious situations (e.g. illegal foreigners) and the 'brothers' who look after their material and psychological needs, literally taking them in.

As far as studies of home-grown radicalisation suggest, individuals tend not to radicalise in complete isolation. People are most often exposed to radicalising contexts in the first place through friends, relatives or acquaintances. Networks involved in terrorist plots in the West are often built around long-held friendships and blood ties (Jordan, Mañas, & Horsburgh, 2008). Kinship bonds exist side-by-side with newly formed ties to relative strangers, who are quickly brought into the fold. Genkin and Gutfraind (2008)'s simulation of cell self-assembly suggests that groups which come together through pre-existing bonds are more likely to lead to larger, more stable cells: a friend met through another friend is more likely to be a good match than someone met on some other basis. This hypothesis ties in with observations that terrorist networks tend toward homophily (Sageman, 2004; Bakker, 2006).

The moral teachings transmitted through these networks and through exposure to radicalising environments characteristically draw on an interpretation of the Islamic faith favourable to the use of violence. Wiktorowicz (2005) describes how Al-Muhajiroun's teachings, such as Muslims' obligation to "cooperate on all good deeds," laid out the groundwork for later support of terrorist acts (p. 64). Radicalising teachings are characterised by their borderline quality, drawing upon references shared with mainstream religious frameworks, though oftentimes in a piecemeal, "cut-and-paste", de-contextualised fashion more than in an organised way (Silber & Bhatt, 2007, p. 38). The trappings of legitimacy and authenticity often supersede theological coherence. Ideas are conveyed through existential narratives meant to elicit powerful moral emotions (eg. shame, guilt, anger, disgust, sympathy, awe; Haidt, 2003), to connect personal wants and desires to straightforward prescriptions for (violent) action, and to exploit youths' inclinations towards romanticism and counter-culture (Bartlett & Miller, 2012). Both radicalising and non-radicalising teachings can be present in the same context, with less mainstream ideas being promulgated in the background. In other situations, radicalising ideas are promoted openly and draw an audience in search of this specific discourse (Taarnby Jensen, 2006).

Systemic-level observations

Relatively few home-grown radicalisation studies afford as much attention to systemic factors as they do to individual and psychosocial variables (SAFIRE, 2011). To the extent that systemic processes are examined, it is often through the background of radicalised individuals. For instance, Taarnby Jensen (2006) notes that members of the Glostrup cell "did not originate from the bottom of society but from the top," coming from well-integrated families (p. 64), while Jordan and colleagues (2008) observe that Spanish Jihadi terror networks are composed both of socially integrated and marginalised individuals. They conclude that social marginalisation must not be a key factor in radicalisation and that systemic social measures cannot, therefore, be expected to prevent the emergence of jihadi networks. Meanwhile, de Poot and Sonnenschein (2011)'s observations regarding the involvement of migrants in jihadi networks has been taken to suggest that migration patterns and measures of immigration control can combine to create situations where vulnerable individuals are exposed to radicalising influence out of sight of the authorities.

Regarding the broader factors that may impact social monitoring and the emergence of radicalising spaces, one of Neumann and Rogers (2008)'s interviewees observes that tight-knit communities are keen to police themselves to "preserve [their] good names," rather than involve the authorities, but that community leaders 'scared of the foreign state' simply end up displacing the problem out of view (p. 50). The generational gap between Muslim youths and their parents may have its own adverse effect on social trust. Youths' attachment to social institutions is weakened in the face

of political, cultural, social and economic structures "geared towards the needs of the older generation," rather than their own aspirations (p. 49). Meanwhile, Genkin and Gutfraind's (2008) simulated model of cell formation would suggest that radicalisation is more likely to occur in cities with low population diversity and low migration rates – cities where "homogeneous ethnic ghettoes" may form (p. 33).

The broader political environment is little addressed, at least empirically, though Western foreign policy is an oft-cited source of 'grievance' at the individual level (see, notably, Bartlett & Miller, 2012), although Precht (2007), among others, observes that European hotspots of radicalisation are found in countries which did not support or were not directly involved in recent Middle Eastern conflicts. The EU FP7 SAFIRE project undertook an investigation of 'national cultural' factors associated with violent extremism and terrorism, including socio-demographic and economic factors, what SAFIRE termed "psychosocial and cultural indicators", as well as political and institutional factors (SAFIRE, 2011). National, European and international databases where sourced for information about 48 different variables, in order to test their relationship with levels of extremism or terrorism at a country level. A number of proxy variables to assess the potential for radicalisation were utilised: multiculturalism; attitudes towards immigrants; tolerance towards diversity; and experiences of discrimination. Measures for terrorism included the number of attacks and perceived likelihood of attacks in Europe as a whole and the individual's own country. Analysis revealed that countries with higher GDP had better integration policies and tolerance towards migrants, while wealthier countries held more positive attitudes towards multiculturalism; these countries also put less importance on religion and scored higher on happiness ratings. Variables such as state instability, poor integration and income inequality were strongly correlated with the SAFIRE proxy indicators of radicalisation. Researchers concluded that, while historical and cultural factors might correlate with terrorism in a country, factors such as political instability or economic deprivation were also likely to contribute (SAFIRE, 2011: p27)

Finally, with regards to systemic factors, media are consistently identified as vectors through which the Al Qaeda narrative and related ideas are disseminated, with emphasis on the radicalising role played by the internet. The (perception of) anonymity provided by social networking platforms, and the (perceived) difficulties involved in preventing suspect social media accounts from re-emerging and multiplying as quickly as authorities can shut them down explains how and why the sophisticated communication machinery used by jihadist groups can emerge and, by and large, be maintained (Maggioni and Magri 2015; Klausen 2015). With regards to content, Jihadist organisations are said to be particularly skilled at crafting and disseminating radicalising narratives which appeal to some categories of young people (Klausen, 2015; Maggioni and Magri, 2015; Winter 2015a), including women. Messages are tailored by the gender, their location and culture. Propaganda aimed at women promotes an 'idyllic' way of life in the 'Caliphate' Syria and Iraq, a future role as wife of

fighters and mother to a new generation, as well as sisterhood with other recruits, contrasting these promises with the perceived failure of Western societies to deliver on their expectations (Peresin and Cervone 2015; Winter, 2015b). ISIS is believed to maintain a department dedicated to social media communication and propaganda. Broader factors and circumstances (e.g. the Syrian conflict) which contribute to this state of affairs can be considered distal systemic factors of radicalisation.

2.2.3 Social movement studies and comparative research on political violence

In recent years, research on political violence, terrorism and radicalisation has been increasingly influenced by theoretical approaches from social movement studies and by social movement scholars engaging directly with the topic of political violence. This has resulted in the emergence of a distinct perspective and line of research on terrorism and political violence (see for example Hafez, 2004; Wiktorowicz, 2004; Gunning, 2007; Goodwin, 2012; Hegghammer, 2010; Malthaner, 2011; Alimi, 2011; Alimi et al., 2012; 2014; Della Porta, 1995; 2008; 2013; Bosi and Della Porta, 2012; Bosi et al., 2014). Given this growing influence, and the relative dearth of empirical research on the environmental processes and mechanisms associated with radicalisation (in comparison to the attention paid to individual characteristics and backgrounds), and given a growing literature on lone actors which challenges the common view that these individuals develop in social vacuums, this literature is worth synthesising here.

The social movement literature on political violence is characterized, first of all, by an emphasis on contextualizing, de-exceptionalizing, and de-essentializing violence (see Goodwin, 2012; Gunning, 2009; Della Porta, 2013). Contextualizing violence means examining the phenomenon as one of several forms of confrontation within a wider repertoire of (violent and non-violent) actions and strategies, and to understand it as the result of relational dynamics. Militant groups, in this view, are embedded within broader fields of actors involved in the conflict. They not only shift back and forth between violent and non-violent forms of action, but adopt violent forms of action as a result of processes of interaction between, for example, militant movements and state agents, counter-movements, and audiences. Social movement perspectives on political violence thus emphasize the relational, dynamic, and emergent quality of political violence by locating it within social processes and focusing on the recurring mechanisms that shape them.

With respect to individual trajectories of radicalisation, the social movement perspective is of-a-kind, to some extent, with the popular and aforementioned 'pathway' models of radicalisation described, but tends to put even greater emphasis on the non-linearity of these processes, as well as on their context-dependency. Radicalisation, according to this perspective, must not be reduced to a linear development with a specific point of culmination (the violent act), but rather as part of

an "activist career", understood as "a long-lasting social activity articulated by phases of joining, commitment, and defection" (Fillieule, 2010; see also, Fillieule, 2001; 2005), which involves different forms of violent experiences and violent action at different points in time. Pathways of political activism and radicalisation can be traced through various steps of engagement with different movements or political groups, and of belonging to different milieus or subcultures. Hence, attachment to a political cause or ideology, as Fillieule points out, rarely precedes involvement in militant activities, but is acquired gradually as a result of socialization during the process of mobilization and experiences of collective action (Fillieule 2010).

This literature is relevant for the study of lone actor radicalisation, insofar as it suggests frameworks to capture complex social trajectories, such as those of recent cases of lone jihadist terrorists in Europe, who were radicalised in local milieus, then travelled abroad for training and took part in insurgent campaigns, before finally carrying out a terrorist attack after returning to their home countries. Moreover, the social movement perspective has inspired a number of studies that have addressed micro-contexts of radicalisation in the form of personal networks and radical milieus, offering further insights into the ways in which radicalising environments shape individual trajectories (and the ways individuals interact with these environment). Finally, by addressing the radicalisation of social movements, the formation of radical-subcultures and milieus, as well as the role of safe spaces and other types of settings and local spaces, the social movement literature can contribute to our understanding of structural conditions and processes from which radicalising spaces emerge.

Micro-level observations

Having emerged, to some extent, from a critical stand towards grievance- and psycho-socio-pathological accounts of protest and political violence, this literature, in general, does not particularly refer to, nor emphasize, individual factors which contribute to engagement in political violence. Nevertheless, Bosi and Della Porta (2012), for example, in their comparative study of the Italian Red Brigades and the Irish Republican Army examine different types of individual motivations for involvement with armed groups (ideological, instrumental, and solidaristic), which shape different patterns of micro-mobilization. Similarly, motivational distinctions were uncovered by Viterna (2006) among female guerrillas in El Salvador (ideological commitment, lack of alternatives, search for adventure). In a comparative analysis of political violence in Italy and Germany, Della Porta (1995) also identified micro-characteristics of different generations of militants, linking them to specific phases of escalation of the violent conflict and specific political entrepreneurs. Summarizing these findings, she argues that these different 'motivations' are connected to instrumental, ideological, or solidarity incentives. Beyond merely reflecting varying initial reasons for the same act (i.e. joining armed groups), they shape different pathways into armed groups, which

also involve different patterns of social networks (and different patterns in the way in which individuals relate to these networks) (Della Porta, 2013; see also Viterna, 2013).

It is with respect to this latter aspect – the role of social networks in processes of micro-mobilization – that social movement research has contributed most significantly to our understanding of the processes through which individuals enter into contact with political movements and radical groups. One of the most consistent findings of studies on political mobilization is that participation in (or recruitment into) movements and political groups is predominantly initiated via pre-existing social ties and personal networks (see e.g., Snow et al., 1980; McAdam, McCarthy and Zald, 1988; McAdam and Paulsen, 1993; Passy, 2003; McAdam, 2003). Processes of micro-mobilization are initiated and sustained by personal, as well as 'personal-political', relationships – in particular, shared histories of previous political or social activism among friends or within families – that serve as access-channels to the movement. Families, friendship-groups, and teacher/mentor-figures crucially influence individual decisions and pathways (Snow et al., 1980; McAdam, McCarthy and Zald, 1988). Moreover, frameworks of interpretation and notions of collective identity are adopted and reinforced via personal relationships. Network ties and personal relations thus have, in Passy (2003)'s terms, crucial structural-connection, decision-shaping, and socialization functions, facilitating and shaping processes of micro-mobilization.

In her comparative study of clandestine violent groups, Della Porta (2013) finds friendship networks to be of crucial importance in initiating and shaping individual pathways into left-wing, as well as into ethno-nationalist and religious, organizations. Participation is facilitated by family and friendship ties, which also help to establish trustful relations, which are necessary to emotionally sustain high-risk activism. The peer groups to which individuals of all four types of organizations belonged played a very important role in determining, in particular, the choice to engage in militant activism. These networks change over the course of violent conflicts (and the evolution of clandestine groups). Whereas the first-generation of activists was more linked to political traditions and family ties, the second generation, which grew up in an environment already shaped by established clandestine groups, were socialized into violence at a very young age, with violence being less of a taboo (Della Porta, 2013, p. 143-144). Yet, what Della Porta (ibid) as well as Viterna (2006; 2013) show is that in many cases, the most relevant networks are not pre-existing ones, but those formed in action, that is, militant networks.

In summary, network approaches to the study of micro-mobilization processes provide valuable insights into the mechanisms that determine how individuals get in contact with and are exposed to radicalising agents and spaces. Even if lone actors are not part of broader movements and networks the way organized militant activists are, case studies suggest that family and friendship relations, as well as contacts with like-minded radicals, are important in initiating and shaping lone trajectories of radicalisation, too. One of the main challenges is to identify specific patterns of

relational embeddedness (and disembeddedness) at different stages of these trajectories, as well as to specify the effect of newly emerging relationships, as well as of those that break up.

Meso- and macro-level observations

A second way in which this literature may contribute to informing a general risk analysis framework of LAE radicalisation is by helping to specify the role (and makeup) of those environments in which radicalising activity occurs and the processes and determinants of their formation. In her comparative study of clandestine violent groups, Della Porta (2013) finds that one important factor that increased the likelihood that a particular individual would participate in a radical organization was their involvement in milieus that had formed at the radical fringe of movements, focusing on "the mobilization of militant networks as mechanisms of radicalisation in the formation of specific milieus, in which radical practices are accompanied by cognitive radicalisation as well as the development of strong affective ties in small groupings of friends-comrades" (p. 117). Participation in radical milieus was sometimes facilitated by family and friendship ties, and then intensified in everyday, physical experiences of violent confrontations with police and militia groups.

While these radical milieus are only briefly mentioned in Della Porta's study, Malthaner and Waldmann (who introduced the concept in 2008) have made them the object of a focused study and a collaborative research initiative on the immediate social environment of terrorist groups (Waldmann, 2008; Waldmann et al., 2009; Malthaner and Waldmann, 2012; Malthaner, 2014; Malthaner and Waldmann, forthcoming). Based on a comparative analysis of a number of cases, they offer a more refined approach to studying radical milieus. Whereas Della Porta focuses exclusively on social movements, they also consider the formation of radical milieus at the fringe of religious or ethnic communities. They differentiate between several types of milieus (radical subcultures, radical communities, and radical networks), as well as several patterns of their formation and resulting relations with broader movements and communities. Radical milieus can emerge from broader movements in a process of gradual radicalisation and escalation; they can form simultaneously in reaction to a perceived threat or attack (co-constitution); or they can form at a later stage, either autonomously or deliberately created by clandestine groups (secondary milieus) (Malthaner and Waldmann, 2012; forthcoming). Complementary works have extended and adapted the concept to address the issue of virtual communities (and non-face-to-face relations). Conway (2012), in particular, has examined the formation of radical online milieus in the case of al-Qaeda, as well as other militant movements.

With respect to mechanisms that contribute to the formation of radical milieus, Della Porta and Malthaner and Waldmann all focus on relational processes. The formation of radical milieus is, firstly, driven by dynamics of interactions between movements/communities and actors within their political and social environment

(state authorities, counter-movements, media), which often result in a mutually reinforcing pattern of gradual escalation. A second set of relational mechanisms result from interactions between radical parties and other groups within the same movement or community, which involve patterns of political outbidding, self-separation, positioning and isolation (Malthaner and Waldmann, 2014; Della Porta, 2013; see also, Bosi et al., 2014). Moreover, Malthaner and Waldmann (forthcoming) identify a number of structural preconditions for the formation of radical milieus, which include social segregation and social and spatial limits to state-control in certain societies, as well as histories of political and violent conflict that have shaped relations between minorities and central governments.

The concept of radical milieus refers to the immediate (formative and supportive) social environment of clandestine groups, and can be physically grounded in a number of very different places and spaces. The concept suggests ways of analysing relational patterns that can inform our understanding of the types and formation of radicalising socio-physical environments involved in lone actor radicalisation, which often are – directly or indirectly; in concrete or virtual social relations – linked to extremist components of broader movements, or religious or ethnic communities. The notion of milieu further emphasizes the fact that not only prior personal ties and networks shape processes of micro-mobilization, but so do movement networks, communities and milieus – that is, particular spaces and environments; these constitute sites of the formation and evolution of crucial relational dynamics that provide opportunities for socialisation into radical frames of interpretation and entail mechanisms of cohesion and control that, over time, sustain the actors' commitment to certain ideas and beliefs.

Another line of research within social movement studies relevant for the study of radicalising environments is the literature on *free spaces* or *safe spaces* (e.g. 'safe havens', 'autonomous preserves', etc.), which refers to small-scale places within a community or movement that are removed from the direct control of dominant groups and play a crucial role in generating the cultural challenge that precedes or accompanies political mobilization, as well as provide social spaces that facilitate and protect mobilizing networks, and thus help sustain mobilization under pressure (see inter alia, Tilly, 2000; 2003; Gamson, 1996; Tarrow, 1998; Evans and Boyte, 1986; for an overview, see Poletta, 1999). The various, more or less synonymous concepts have been used in different ways, emphasizing either the element of protection these places offer for mobilization and the preparation of collective action, or their autonomous, culture-producing dimension, as "seedbeds" for the emergence of certain thoughts and debates. Based on historic examples, Tilly (2000) distinguishes between geographic areas which offer protection from routine surveillance and repression because of their terrain or legal status; institutions which permit otherwise forbidden activities because of their legal privilege, state neglect, organizational

structure, or social composition; and public events during which authorities exceptionally tolerate certain activities.

This analysis contributes a better appreciation of the role of the socio-physical environment in radicalisation, insofar as it specifies different ways in which certain spaces can be removed from – or entail constraints on – state control, which can foster the formations of places in which radical socialisation can take place, radical subcultures can emerge, and so on, and thereby suggest the structural (macro) conditions which may play a part in the formation of such environments.

Reviewing a large set of case-studies, Poletta (1999) distinguishes different relational structures on which, as she argues, these free or safe spaces are based: transmovement structures are composed of activist networks of wide geographical reach that link various organizations in various places (today e.g. via the internet); indigenous free spaces are structures that are indigenous to a community, but which were initially not necessarily political or oppositional (i.e. churches, mosques, culture houses etc.); and prefigurative free spaces are "autonomous" spaces and institutions created by movement activists as a model "new society" (i.e. autonomous communes) (p. 8-12). This relational reading of safe spaces is informative from the point of view of LAE radicalisation, as it draws attention to the networks and social institutions that create or facilitate spaces that come to support radicalising activities.

Given the above, as well as anecdotal observations, such as, for example, that radical mosques have been largely replaced as spaces of radicalisation and recruitment by meetings in private spaces (Bouhana & Wikström, 2011), it seems important to think about radicalising environments in terms of relationships and networks *in connection with* specific localities and places, rather than to focus on certain networks *or* certain places independent of each other.

2.3 Neighbouring Problem Domains

This section offers a brief review of two neighbouring areas of research, which can help refine our understanding of processes of LAE radicalisation at different levels of analysis, in complementarity or by comparison. Here again, an effort is made to organise observations by categories of factors, to facilitate conceptual.

2.3.1 School shootings

School shootings are another type of (predominantly) high-impact, low-probability, lone actor driven event. Historically, the phenomenon has been largely disregarded in discussions of lone actor terrorism, but several recent studies have drawn attention to the issue and argued the value of comparative analysis: McCauley and colleagues

(2013) have comparatively examined assassins and school attackers, finding a number of interesting commonalities; Gill and colleagues (forthcoming) are currently conducting a research project to compare a large-N dataset of lone terrorist attackers with cases of school shootings; and the work of the TARGET project, a consortium of several research-institutions in Germany, has included a study of radicalisation processes of school shooters and lone actor terrorists in Germany (Boekler et al., forthcoming).

Similarly, Mallki (2014) has argued in favour of a broader, comparative perspective, although she brings the two phenomena together from a somewhat different perspective: In her in-depth study on a set of 28 school shootings, she argues that there is a political quality to many attacks by school shooters, who often refer to a (however crude) criticism of society and voice quasi-political claims, and are to some degree embedded in a virtual community of the like-minded, thereby emphasizing the fluent boundary between lone actor terrorism and incidents of large scale violence perpetrated by lone actors that are conventionally defined as 'non-political'. In the same way, Sandberg et al. (2014) have challenged the widespread distinction between school rampage shootings and lone actor terrorist events. They draw from the case of Anders Behring Breivik to show how 'school shooting', as a cultural script, influenced Breivik in his attacks.

The broader literature on school shootings offers valuable insights into factors which contribute to the psychosocial development of lone actors who engage in violent acts, as well as into the social dynamics that shape the violence-supportive characteristics of social spaces in which these actors evolve, such as the failure of surveillance systems and the availability of cultural values (e.g. cultural scripts) that emphasize violence and hyper-masculinity (see inter alia, Boeckler et al., 2013; Langman, 2013; Larkin, 2007; 2011; Leary et al., 2003; Muschert and Ragnedda, 2011; Newman et al., 2004; Newman and Fox, 2009; Newman, 2013; Vossekuil, 2002).

As the field of research on school shootings is quite extensive, the following discussion draws from representative studies that offer relevant insights based on empirical research (i.e. in-depth case studies and larger-N dataset analyses).

Individual-level observations

In their report on a research project for the Safe School Initiative, Vossekuil and colleagues (2002) state that, based on their sample of 41 school attackers, no 'profile' of individuals who engage in this type of attack could be identified (p. 19) – a familiar refrain to students of group and lone actor terrorism alike. Beyond the fact that most attackers were white male teenagers (although 25% had another racial or ethnic backgrounds), individuals varied broadly with respect to social background, academic achievements (although most were doing well), disciplinary problems, and so on.

Several findings, however, stand out. Firstly, while few had been diagnosed with a mental disorder, the sample of school attackers showed a disproportionally high rate of suicide attempts or suicidal thoughts (78%), extreme depression (61%), and desperation; and some (24%) had a history of substance abuse (Vossekuil et al., 2002, p. 21). Secondly, although most attackers had no record of violent or criminal behaviour, a large proportion (59%) exhibited a fascination with violence (movies, computer games, and other media). Finally, most attackers reported feeling persecuted, bullied, or threatened by others prior to the incident. McCauley and colleagues (2013), who discuss these findings in comparison with a similar study on assassins, report an even higher proportion of individuals with a history of depression, despair, and suicidal ideation (78%), using a modified coding protocol. They argue that the data point to the prevalence of personal grievances among school attackers (similar to assassins, among whom personal and political grievances are closely interlinked). Moreover, they report that almost all school attackers (98%) showed elements of "unfreezing", that is, of having experienced major loss (i.e. losing the everyday reassurance of relationships and routines), which may have resulted in a personal crisis of disconnection that induced "a search of new directions" (McCauley et al., 2013, pp. 8, 14); once again, this echoes, sometimes word-for word, the research on radicalisation summarised above.

The general pattern of these findings has been confirmed by other research projects, although in contrast to Vossekuil et al., other studies have put greater emphasis on problematic or dysfunctional family relations (Newman et al., 2004; for an overview, see Heitmeyer et al., 2013). International comparative studies, which analyse data on school shooters in the U.S. in comparison with data on similar incidents in other countries, as well as data on rampage shootings at colleges in the U.S., find differences in the age of perpetrators and – connected to that – more advanced stages of trajectories of mental disorders (see Newman and Fox, 2009). Based on a sample of 35 cases, Langman (2013) distinguishes between three types of school shooter: psychopathic, psychotic, and traumatized, who differ with respect to grievances (e.g. peer harassment), as well as to the types of attacks.

In sum, while not able to identify a particular "profile" of school shooters, empirical studies point to troubled individuals, characterized by a prevalence of predisposing factors such as depression and (to some extent) mental disorders, family problems, as well as strongly perceived personal grievances and feelings of exclusion, threat, or injury, within their social environment – echoing in some significant aspects the broader literatures on lone actor and home-grown terrorism.

Socio-ecological and systemic observations

Newman et al. (2004; 2013), among many others, have highlighted the difficulty in referring to factors such as mental illness and family problems as causal factors in explanations of school shooting, emphasizing the need to study them in connection

with relational patterns and social processes in school settings. In a more general sense, school shootings are associated with social failure in adolescent status competition, reinforced by adults and cultural scripts about masculinity, as well as the particular density and social pressures of small towns, where adolescent failures are magnified (Newman et al., 2004; Newman, 2013; see also Larkin, 2007; 2011). More specifically, the trajectories of school shooters point to the fact that the perpetrators were (unpopular) loners or fringe figures, teased and bullied, subjected to "masculinity tests" that they failed, and strongly perceived themselves as excluded even in the absence of evidence to this effect; that is, they were marginalised (Newman and Fox, 2009; Newman, 2013; see also, Leary, 2003; Vossekuil et al. 2002).

In contrast to rampage shooters at colleges (who appear even more disconnected altogether), school shooters evolve in close proximity to social groups (cliques, friendship groups) in their immediate social environment within school communities, experiencing their marginality and rejection from others on a daily basis. Rather than isolated loners, they are "failed joiners" (Newman and Fox, 2009). Marginalization within (and problematic relations with) their social environment is increasingly proposed as one of the main factors shaping trajectories of school shooters, although some studies advise caution against over-emphasizing the attackers (self-)description as loners, pointing to the fact that some of them were well integrated or part of "cliques of loners" (McGee and Bernardo, 1999; for a discussion, see Heitmeyer et al., 2013).

Schools, as the socio-physical environments in which the criminal trajectories of school-shooters are shaped, have not only been examined with respect to patterns of adolescent competition and the social pressures of dense small-town societies, but also with respect to particular failures of surveillance and breakdowns of communications between teenagers and adults that inhibit early recognition of risky developments (Newman et al., 2004; Heitmeyer et al., 2013). Newman et al. (ibid) show that despite the fact that most school shooters talked about their plans with others, doubts about their seriousness and barriers to teenager-adult communication prevented this information from reaching authorities able to intervene. Fox and Harding (2005) argue that institutional school structures contribute to this failure to discover and respond to violent plots.

At this structural (i.e. systemic) level of analysis, the literature on school shootings has largely focused on cultural factors, in particular hyper-masculinity constructs (and challenges to cultural notions of masculinity) and normative depictions of violence as heroic and problem-solving in American culture (in the media, as well as in the moral contexts of small town societies). The research has also looked at the influence of the consumption of certain types of movies and computer games (Newman, 2013; Larkin, 2007; 2011; for a discussion on the influence of media and computer games, see Sitzer, 2013). Larkin (2011) links bullying, humiliation, harassment, and marginalization at schools to hegemonic notions of masculinity, stressing the fact that aggression is often

aimed at those who do not measure up to norms of gender performance; he argues that rampage shootings are not only revenge for past humiliations, but also a reassertion of masculinity. Similarly emphasizing the shooters' need to reassert their masculinity, Newman (2013) uses the concept of "cultural scripts" to analyse how marginalized and socially failing individuals choose "masculinity-scripts" and cultural scripts involving violence to establish themselves as people to be respected (see also, Sandberg et al., 2014).

In short, neighbouring research and conceptual frameworks in the school shooting domain further suggest that a risk analysis framework, which would seek to model the violent development of lone actors, should set out to integrate factors at levels of analysis going beyond the individual, but including the social ecological and the systemic.

2.3.2 Enclave deliberation and group polarization

Studies of radicalisation – group-based as well as lone actors – have, as indicated, often stressed social interaction in closed settings as an important factor in radicalisation (Wiktorowicz, 2005; della Porta, 1995; McCauley & Moskalenko, 2008; 2011). Agreement seems to exist that intense interaction in small groups often contributes to radicalisation by fostering cognitive and moral development, which makes terrorism acceptable. These radicalising social dynamics have, among other things, been referred to as 'moral disengagement' (della Porta, 1995), 'system de-legitimation' (Sprinzak, 1990), and 'ideological cultivation' (Wiktorowicz, 2005). Yet, the exact nature of these interactive and deliberative social dynamics remains understudied within research on radicalisation. One obvious reason for this neglect is the difficulty in studying such interaction and deliberation as it unfolds, and in providing compelling data.

In recent years, however, a number of scholars with backgrounds in experimental social psychology and communication studies have suggested that the study of political violence and radicalisation could progress by looking to social psychological research on small-group dynamics (see Sunstein, 2009; Hogg, 2012; Wojciezak, 2010). In that field, the social dynamic aspect of radicalisation has been studied indirectly since the early 1960s under the heading of 'group induced attitude polarization' (Meyers & Lamm. 1976). This research agenda was ignited in the 1960s by Stoners' (1961) finding of the so-called 'risky shift', which showed that groups were more willing to take risks, following deliberation, than the individuals who made up the group taken on their own. It has since been established as a very robust finding that individual attitudes tend to become more extreme following group deliberation (understood as a movement away from a neutral position in either a negative or positive direction) (Brown, 1986; Brandsätter, 1978; Meyers, 1975; Isenberg, 1986; Zuber, 1992). This empirical finding has been reproduced across a range of experimental conditions, as

well as in real life settings, including university campuses, local communities, religious groups, and, more recently, internet fora (Schakade et al., 2010).

'Group polarization' is said to occur when deliberation in groups moves positions towards a more extreme point relative to pre-deliberation ideological preferences (Sunstein 2000). One particular type of group polarisation relevant to the study of radicalisation concerns the dynamics of groups referred to as 'enclaves' - that is, self-contained groups of like-minded people who share some measure of ideological preference (Sunstein, 2009; Hogg, 2012). As could be expected, experimental data suggest that deliberation in enclaves reliably leads to group polarisation.

The factors and processes involved are reviewed further in this section.

Individual-level observations

Not unsurprisingly, the literature on enclave deliberation and group polarisation is more concerned with social dynamics than with individual characteristics. Nevertheless, some studies have attempted to explore the relationship between enclave deliberation and individual factors. For example, Hogg and colleagues (2012) have developed what is called a 'psychology of uncertainty', which they link empirically to extremism through processes of self-selection to 'high entitativity groups'. Broadly, the argument is that individuals have a fundamental motivation to reduce feelings of uncertainty about themselves, their perceptions, attitudes and their place in the world, and that such feelings of uncertainty are effectively reduced by identifying with a group; this is especially the case with identification with high entitativity groups, such as extremist groups, because in such groups in-group stereotypes are clear, prescriptive, consensual, and so on (Hogg, 2012; p. 29). Another way to put it is to say that what makes some (radicalising) environments attractive to some (vulnerable) individuals more than others are the features of strong socialisation, comradeship, clear boundaries, and intolerance to diversity that characterises them, and which may contribute to a reduction in experiences of uncertainty.

The work of Hogg and colleagues aside, it remains that, to date, little is understood about individual differences in sensitivity and resilience to group polarisation dynamics; i.e. what characterises those individuals who change attitudes the most and the least during group discussions?

Social-ecological level observations

Within the experimental social-psychological literature, two different strands of research seek to explain how and why deliberation in groups can lead to group polarisation, one focusing on 'informational influence' and the other on 'normative influence' (Isenberg, 1986; Abrams et al., 1990).

The *informational influence* analytical strand includes theories that stress the rational processing of information in groups. Group polarisation is explained with reference to "cognitive learning resulting from exposure to arguments during discussion" (Myers & Lamm, 1976, p. 613). Group polarisation is understood as an active process in which individuals receive, reformulate and articulate information, and by doing so internalise new attitudes (ibid). Attitude change is seen as a product of informational input. 'Persuasive argument theory' is one well-documented variant of this line of reasoning, which states that an individual's attitude with regard to a specific topic is the product of the number of arguments for and against, which is present in the memory of the individual at the time when an opinion is to be articulated (Isenberg, 1986, p. 1145). Group discussion will accordingly lead to individual attitude change in a certain direction if the discussion makes available to the individual persuasive arguments in that particular direction. Research has shown that the magnitude of the polarisation effect depends primarily on: 1) the novelty of the arguments and ideas exposed through group discussion; 2) the validity of the information disclosed, i.e. how certain one can be that the information is correct; and 3) the degree to which it fits with the individual's prior understandings (ibid).

In enclaves of like-minded people, who interact and discuss face-to-face or online, the argument pool tends to be limited and skewed. In such a group, one will hear many arguments to the same effect (e.g. immigration is the real cause of America's economic decline). Because of the initial distribution of views, one will hear relatively fewer opposing views. It is likely that one will have heard some, but not all, of the arguments that emerged from the discussion. After one has heard all that is said, they are likely to shift further towards thinking that immigrants are to blame for economic hardship (Sunstein, 2009, p. 22). Research shows that when new arguments are associated with the perceived authority of the group, information is perceived as valid and, thus, is more persuasive (Isenberg, 1986, p. 1146).

Normative influence is an umbrella term, which covers a number of theories that explain group polarisation by reference to social and emotional processes. The key assumption is that individuals in group settings compare themselves and their attitudes to those of others. Two theories stand out: social comparison theory and social corroboration theory. According to social comparison theory, individuals are motivated to position themselves and be socially attractive to other people. To do this, individuals are constantly collecting and processing information about others' positions and attitudes. Group polarisation occurs because individuals are comparing themselves to others on a range of attitudinal dimensions, and because extreme positions tend to be held in high-regard socially, and therefore are seen as attractive and admirable (Myers, 1982). Thus, individuals will have a propensity to affiliate themselves with more extreme positions than would otherwise be suggested by the estimated average, in order to become socially noticed (Baron et al., 1996).

In social corroboration theory, the focus is not so much on the effect of knowing other group members' position on an attitudinal dimension, but on the effect of realising that other group members share your own position pro or against a certain issue. Suppose that one is asked what they think about some question on which they lack information. They are likely to avoid extreme answers. It is for this reason that cautious people, not knowing what to do, tend to choose some midpoint (Brown, 1986). But if other people appear to share their views, the individual becomes more confident that they are correct in their answer. As a result, they may move further away from a neutral position. This finding seems relevant to the study of radicalisation, when one thinks of the work of Sageman (2008), who states that, at a certain stage, "the interactivity among a 'bunch of guys' act[s] as an echo chamber, which progressively radicalise[s] them collectively to the point where they [are] ready to collectively join a terrorist organisation", a process which now also occurs online (Sageman, 2008; for a discussion of group polarisation online, see Spears, 1990; Price & Capella, 2006; Sia et al., 2002; Lee, 2006).

These social psychological explanations of group polarisation contribute to opening up the black box of 'group dynamics' in radicalisation studies. With regards to lone actors, as previously discussed, it has been suggested that they are not that 'lone' after all; many of them have, at a certain point in their lives, been parts of physical or virtual enclaves, where their moral beliefs have been shaped.

Systemic-level observations

Sustein (2007; 2009) has argued that enclave deliberation, and with it group polarisation, are a growing phenomenon on a societal level. People are increasingly choosing to expose themselves (sometimes exclusively) to 'sub-public' arenas, where they are prone to meet like-minded people. We increasingly live with, go to school with, and work with like-minded people. We get our news from outlets, whose basic views we share. We self-select to Facebook groups, blogs, Listserves and discussion forums, where opinions are aired that we are already inclined to agree with.

One important driver of this transformation is the technological development of social media, which has caused an explosion in the number and accessibility of specialised sub-public settings (Sunstein, 2007). At the same time, some of the traditional institutions of diversity and exchange of different arguments, such as local public schools attended by children from different socio-economical and ethno-religious backgrounds, or such as national news outlets, are under pressure, with more and more people opting out of them. At a structural level, this development can be seen as contributory to extremism and group polarisation. In this view, radicalisation is going to be a growing problem. According to Sunstein (2007), efforts should be made to try and 'de-polarise' society and communities, by supporting the maintenance and formation of channels of deliberation among *unlike-minded* people.

From a counter-radicalisation perspective, this could mean making efforts to propagate counter-narratives in 'enclaves' and engaging radical actors in discussion. However, others have argued that this development towards self-selection into enclaves serves an important democratic function, as more marginal positions and views gain the opportunity to be formed and aired, encouraging a greater level of social diversity. The problem seems to be that channels of discussion *across* sub-public arenas remain scarce (see Fishkin, 1997; Mutz, 2006).

3. Attack and attack preparation

Moving on from an overview of known factors and processes associated with LAE radicalisation and cognate domains, this section moves away from the problem of individual *development* (how actors come to have the propensity to engage in actions that qualify as terrorist and extremist), to review the knowledge-base about the *behaviour* of LAEs, as it relates to the preparation and the commission of attacks.

As was the case with regards to radicalisation, compared to the more extensive number of publications on group-based terrorism, research on the characteristics of LAE attacks is distinctly limited in size and scope (Spaaij, 2010; 2012; Barnes, 2012; Hamm, 2012; Feldman, 2013; Gruenewald et al., 2013). The vast majority of publications used in this review date from the last couple of years, reflecting the recent rise of interest in the topic, brought about by such incidents as the 2009 Fort Hood shooting and Anders Breivik's much-publicized 2011 attack in Norway (Kaplan et al., 2014). Within the relatively small body of literature on LAEs, the specific subjects of attack preparation and planning, and of attack commission, have received even less dedicated attention. To compensate for this scarcity, here again the review has been expanded to include publications that deal with group-based terrorism.

Unsurprisingly, much of the literature on lone actor attacks (or attempted attacks), overlaps with the literature on lone actor attack preparation and planning. This is in no small part due to the narrowness of the literature on LAEs overall, meaning that the degree of specialisation and fragmentation that characterises more mature fields is absent. Therefore, although PRIME distinguishes between attack preparation and attack commission phase when modelling LAEEs (as seen below), they are not systematically distinguished in the remainder of this section.

3.1 LAE attacks and preparation

There is not yet a distinct theme within the literature on lone actor extremism that focuses specifically on attack preparation, though one would expect that increasing our understanding of what happens "left of bang" will significantly strengthen preventative efforts (Appleton, 2014, p.136). Although not an area of specialization, some useful insights and findings can be drawn from more general literature on LAEs, which are summarized below.

The PRIME project's interest in LAE attack preparation is based on the assumption that many LAEs do not carry out their acts of violence spontaneously, absent any planning. Indeed, Gill et al. (2014) find that LAE attacks are "rarely sudden and impulsive" (p. 434). Preparatory conduct appears to be a general characteristic of lone actor extremism, even if the degree to which individuals engage in it can vary considerably (Spaaij, 2010; 2012). A study of the Breivik case, in particular, bears out the idea that LAEs can conduct long and meticulous preparations prior to engaging in violence (Appleton, 2014), although it must be said that Breivik appears to have been an exception rather than the rule in the complexity of the attack he prepared and executed. The literature would suggest that most LAE attacks are characterized by a low level of sophistication with regard to the weapons and methods utilized (Bakker & de Graaf, 2010; Jasparro, 2010; Barnes, 2012; Ackerman & Pinson, 2014; Appleton, 2014).

All but one (Eby, 2012)[1] of the publications reviewed for this report, which look at this issue, found that firearms were the weapon most frequently used by LAEs, with explosive devices coming in second (COT, 2007; Gruenewald et al., 2013a; 2013; Jasparro, 2010; Spaaij, 2010; 2012; van der Heide, 2011). The proposed explanation is that little to no training or expertise is required to use firearms, such as handguns or assault rifles, and that, at least in the United States, these can be easily and inexpensively acquired (Jasparro, 2010; van der Heide, 2011). Constructing a successful explosive device is considerably more difficult, and lone actors seem less likely to have the requisite knowledge and expertise (Ackerman & Pinson, 2014; Kenney; 2010). With regards to preference for firearms vs. explosive devises, and to weapons choice more generally, it appears that there may be differences between lone and group actors (Spaaij, 2012). Jasparro (2010), observing a further preference for vehicle-collision based attacks, suggests that LAEs, overall, make relatively more use of low-skilled, 'pragmatic' weaponry. Of course, weapon selection is not independent from target choice, as specific target characteristics will render the use of certain weapons more or less inappropriate (Clarke & Newman, 2006).

With regards to target choice, people are the most commonly selected target, with civilians or the general public much more likely to be attacked than government

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[1] Eby found that the reverse was true for his sample: explosives came first and firearms second in terms of weapons most frequently used by lone actor extremists.

officials or politicians, who are more likely to be protected (COT, 2007; Eby, 2012; Spaaij, 2010; 2012; van der Heide, 2011; Teich, 2013). More specifically, Gill et al. (2014) report that lone actors targeted people in 41% of cases, 12% targeted property, while another 33% targeted both people and property. Based on in-depth interviews, Spaaij (2012) concludes that, typically, lone actors attack targets of symbolic, rather than strategic, importance; he adds that knowledge of the target is likely to reveal the source of the individual's grievance.

The lower lethality of lone actor attacks compared to group-based attacks found by Spaaij (2012; 0.62 deaths per incident versus circa 1.60 deaths per incident respectively) may be another indicator of the LAEs' tendency to execute simple, straightforward operations. Exceptions do exist, of course, and not just in the case of Breivik. Four of the individuals in Eby (2012)'s sample used a biological or chemical weapon and five committed a suicide attack. The likelihood of a growing interest in using nuclear, chemical, biological or radiological weapons of mass destruction, or suicide attacks has discussed by several other authors as well (Ackerman & Pinson, 2014; Ellis, 2013; Gordon et al, 2015; Heffron Casserleigh et al, 2012).

Research reveals a variety of motivations that drive lone actor extremists' decisions to engage in an attack. In Ackerman and Pinson (2014)'s sample, approximately 30% of lone actors were driven by 'single-issue' concerns (e.g. animal rights or anti-abortionist), while 9-18% held some kind of personal grudge. This latter point is an interesting one that is repeated by several other authors, suggesting lone actors may be more strongly driven by personal grievances than members of terrorist groups (Eby, 2012; Nijboer, 2012; Spaaij, 2010; Stern, 2003). A 2007 study found that white supremacy and associated motives was the number one ideology driving lone actors, followed by Islamist convictions and, in third place, nationalist/separatist goals (COT, 2007). Spaaij's 2012 book on the subject similarly states that right-wing extremism is the most prevalent fodder of ideological motives for attack, followed by Islamism, but with anti-abortion violence in third place. In Eby's (2012) work, the rather broad category of 'anti-government' takes up first place, with 47% of lone actors presumably affiliated with this ideological category, followed by Islamism. The more recent study by Gill et al. (2014) puts Islamist-inspired LAEs squarely in the lead; 43% of the 119 individuals in their sample were al-Qaeda-inspired, 34% held right-wing views, and 18% were allegedly motivated by single-issue concerns.

Rounding off this general overview of research on the preparation and planning phase of LAEEs are studies that look at the geospatial characteristics of such attacks, though these have been little examined. Eby (2012) found that on average, LAEs travel 122 kilometres (76.15 miles) to the location where they commit their attack and that 87% of attacks, attempts and arrests take place during a weekday. This finding is particularly interesting and calls for replication with large-N samples, as it seems to run counter to findings in other areas of crime studies, including group-based terrorism, where offenders are found, by and large, to abide by the least effort principle (Zipf,

1950), which states that when faced with multiple equivalent options for action an individual will select the closest one, minimising effort (Lundrigan & Czamomski, 2006).

On aggregate, these findings present a picture of an attack preparation phase that is, in many cases, characterized by a low level of sophistication (relative to, for example, group-based terrorist incidents) and driven by a variety of ideological motives. However, what this accumulated research does not provide is an abundance of concrete details about the modus operandi of LAEs. One reason for this is that such data has, so far, not been captured in detail by quantitative analyses (COT, 2007). Another factor is the variety of attack styles that LAEs have displayed, the above observations aside; although most have used firearms, others have opted for explosives, while others still have adopted more unusual means, such as using cars to run over their victims (Eby, 2012). As Bakker and De Graaf (2010) have argued, lone actor attacks are characterized by a "wide variety in target selection, use of weapons and modus operandi" (p. 4).

What we do know about the specifics of LAE attack preparations stems in large part from the quantitative work of Gill et al. (2014). Based on their sample of 119 individuals who engaged (or planned to engage) in LAE violence in the United States or Europe, the researchers found that:

- 50.4% **changed address** in the five years prior to planning an act of violence with 45% of that number moving within 6 months of their eventual attack or arrest;

- 40.2% **were unemployed** at the time of their attack or arrest – 26,6% of which had lost their jobs within the previous six months;

- 32.8% **were under an elevated level of stress**, with 74,3% of those people reporting that this had arisen within the previous year;

- 12.6% noticeably increased their **physical and outdoor activities**;

- 16.8% **sought prior legitimization** for the attack

- 33.6% recently **joined a group engaged in contentious politics**;

- 34.5% tried to **recruit others** prior to their (intended) attack;

- In 57.7% of the cases **others knew of the lone actors' intentions**;

- 21% received **hands-on training**;

- 46.2% **learned through virtual sources**;

- 50.4% had access to **bomb-making manuals;**

- 29.4% executed **'dry-runs'** to prepare for their attacks;

- And 47.1% **stockpiled weapons**.

These findings suggest potential indicators of intent to act. Especially interesting from the perspective of detecting LAEs' intent to commit violence is the finding that in almost 60% of cases, someone had some level of awareness of the offender's plans. This is echoed in the work of Cohen et al. (2014), as well as that of Hamm (2012), who report that LAEs tend to spread their views (online) before committing an attack. Of course, as Appleton (2014) reminds us, it can be very difficult to distinguish between hollow threats and actual intent to commit violence. Yet some of the capability-related indicators may have the potential to help differentiate between the 'hollow' and the 'actual', as activities such as the stockpiling weapons, dry runs, and increased physical activities are all essentially observable behaviours and signal some level of commitment to action on the part of the actor.

Another finding from the Gill et al. (2014) study, which is worth noting, relates to the role of the internet and its importance as a virtual learning environment for the practical aspects of preparing and committing acts of violence. Similar conclusions are reached by several other authors (Bakker & de Graaf, 2010; Barnes; 2012; Brynielsson et al; 2013; Pantucci, 2011; Stenersen, 2008; Weinmann, 2012). Bakker and De Graaf (2010) contend, however, that such online learning is no substitute for real experience and may therefore prompt LAEs to approach others for advice, potentially marking a point in time at which they are vulnerable to detection and interdiction. The internet, as a medium through which individuals can find and exchange extremist notions, may also play an important role in creating and maintaining LAEs' intent to commit violence (Brynielsson et al; 2013; Pantucci, 2011). In the words of Pantucci (ibid, p. 11), the internet may have "fostered the growth of the autodidactic extremist". Interestingly, Phillips (2011) finds that, after a period of preparatory activity, LAEs are likely to temporarily cease their activities, meaning that during this period observable indicators may no longer be present.

Other findings on LAEs' attack preparation stem from case studies. While these have the benefit of being very detailed, they also tend to be largely idiosyncratic, making it hard to generalize from their findings to the wider LAE population. Meyer (2013) draws from the Breivik case to develop detailed, step-by-step narratives of the planning, preparation, and implementation of the attacks carried out in Norway. Gartenstein-Ross (2014)'s case study of Carlos Bledsoe charts his discrete pathway to violence. After adopting a radical interpretation of Islam, Bledsoe reportedly developed the

intent to commit an attack during his incarceration in Yemen in 2007, following a failed attempt to reach Somalia. He began working on a specific plan after his return to the United States in early 2009. During what could be called his planning phase, Bledsoe searched for possible targets, acquired weapons and ammunition and engaged in some basic operational security practices to ascertain whether the authorities were on to him. He then moved on to the execution phase of his attack and ended up shooting two American servicemen, one of whom fatally.

Two of the four case studies in the COT (2007) report likewise present detailed information on the preparatory phase of one individual. David Copeland, who committed a series of nail-bomb attacks in London in April 1999, acquired knowledge of explosives through online bomb-making manuals and proceeded to buy bomb-making equipment and ingredients. As this did not cover all his needs, he also stole chemicals required to make explosives. After what seems to have been a process of trial and error, Copeland succeeded in constructing an explosive device and moved on to the attack execution phase. Interestingly, he does not appear to have conducted reconnaissance of potential targets beforehand, but instead chose a suitable location on the go. He then repeated the attack pattern until his arrest. By contrast, Volkert van der G., the Dutchman who murdered politician Pim Fortuyn in 2001, was more meticulous in his preparation and planning. Using the internet, Van der G. researched his target's whereabouts on the day of his planned attack and then mapped the target's location. On the day of the attack itself, Van der G. attempted to disguise his appearance, then removed incriminating evidence from the weapon and conducted reconnaissance at the target location before commencing his attack.

What these narratives suggest is that the steps undertaken by the LAEs are not dissimilar to the various phases of the more general 'terrorist planning cycle', highlighted by several authors as a useful analytical guide (Kaati & Svenson, 2011; Rosoff & von Winterfeldt, 2007; Stewart, 2011). The reported lack of reconnaissance activity in the Copeland case, however, illustrates the need to find a balance between general models, such as the planning cycle, and other modelling approaches which would preserve the specificity of such cases. Reconnaissance is thought to be a vulnerable stage in the LAE's planning activity (Stewart and Burton, 2009), whereby the risk of detection and disruption is at its highest. This may be particularly the case when the target is a specific individual and when the attacker is inexperienced in surveillance techniques (Burton, 2007). If the length, intensity, and even occurrence of reconnaissance activity varies between lone actors (Spaaij, 2012), then the practical implications for counter-terrorism are profound.

Before rounding off this section, it is worthwhile to note that, based on a historical analysis of lone actor terrorism from the late 19th Century onwards, Van der Heide (2011) concludes that the characteristics of LAE attacks, such as their motives and

preferred targets, have evolved over time. She finds that the proportion of attacks targeting specific individuals dropped from 90% to 40% over that time; towards the end of the period, the most common targets had shifted from public figures to private citizens and property. While this may not be surprising, this observation reinforces the need to develop a general risk analysis framework, which can guide the development, if need be, of period-specific scripts and scenarios in future, so as not to have to 'start from scratch' with every new historical incarnation of the LAE threat.

3.2 Terrorist group attacks

Given the limited breadth of the LAE attack preparation research literature, and the observation made above that the attack planning cycle of LAEEs doesn't appear, on the face of it, drastically different from the self-same cycle of group-based terrorist events, this section presents an overview of key findings in relation to terrorist organizations' attack preparation and planning. Yet it must be noted that, despite the sizeable body of literature on group-based terrorism and its rapid rate of expansion (Silke, 2009), terrorists' pre-attack behaviour likewise appears to have attracted (relatively) little scholarly interest. Anecdotally, we may note that the first ten pages of Google Scholar search results using the keywords 'terrorist attack preparation' and 'terrorist attack planning' return numerous articles on crisis response and preparation with regard to terrorism, but not a single article about how terrorist groups plan, prepare or organize their operations. Searching for 'terrorist target selection' returned more promising results. These are summarized below.

Targets

Striegher (2013) describes the characteristics of the common dichotomy of terrorist targets: *hard and soft*. Hard targets are commonly seen as attractive by attackers due to their strategic value or their symbolism, and may include government buildings, schools, and military establishments. Consequently, they are protected by defensive tools, in order to limit their vulnerability and decrease their attractiveness as potential targets. It is commonly argued that, as a result of target hardening, the likelihood of a terrorist attack is today relatively higher for soft targets, which do not enjoy as much protection (Magnuson, 2011; Perry, 2014; Striegher, 2013).

The most detailed description of terrorist groups' attack preparation and attack cycle found in the literature on target selection is provided in a 1998 article by Drake. The author describes ten generic steps undertaken by groups in the run-up and follow-up to an attack:

> 1) setting up a logistical network;

2) selecting potential targets;

3) gathering information on those targets;

4) reconnoitring those targets ('hostile reconnaissance');

5) planning the operation;

6) inserting weapons into the area of operation;

7) inserting operatives into the area of operation;

8) executing the attack;

9) withdrawing the team responsible for the attack (if applicable); and

10) issuing a statement about the attack if appropriate.

An important point that the literature on terrorist groups' target selection reiterates, and which is illustrated by Drake's meta-script above, is that terrorist attacks are usually the result of a deliberate decision and are preceded by a planning process of variable length (Silke, 2011; Røislien and Røislien, 2010). In other words, terrorist groups tend not to strike spontaneously or without giving any thought to what their acts are meant to accomplish. While there is, in theory, an unlimited number of potential targets (individuals, public buildings, transports, etc.), not all potential targets provide the attacker with the same opportunity (Clarke & Newman, 2006). When seen from a strategic and rational perspective, terrorist groups' overarching goals, e.g. their *strategic rationale*, plays an important role in the target selection process (Libicki et al., 2007; De La Calle & Sanchez-Cuenca, 2007; Drake, 1998). *Ideology* is thought to be a significant component in the development of that strategy. Asal et al. (2009) found that religiously motivated terrorist groups were more likely to attack civilians. Writing of the global jihadi movement, Sageman (2004) has argued that its Salafist ideology "determines its mission, sets its goals, and guides its tactics" (p. 1). Gruenewald and Pridemore (2012) identified target differences across right-wing terrorists, and non-ideologically motivated offenders: extreme right-wing terrorists were significantly more likely to target strangers.

Of course, terrorist organizations' target selection processes are influenced by more than their ideological frames and political goals. They are also affected by constraints. The concept of 'bounded rationality' captures the idea that these groups are likely to possess information upon which to base their choices imperfectly and may not be able to accurately assess the impact of their actions (Simon, 1995). External constraints such as a state's counterterrorism measures, public and private efforts at target hardening, the need to preserve the support of constituencies, the (un)availability of external (state) sponsorship, and organizational factors such as the quality of leadership, may all affect the target selection (Brandt & Sandler, 2010; De La Calle &

Sanchez-Cuanca, 2007a, 2007b; Schuurman, 2013; Silke, 2011). Even seemingly 'successful' actors have to contend with such constraints.[2]

Context matters. As research by McCartan et al. (2008) and Røislien and Røislien (2010) shows, both the targets selected and the means employed to strike at them are influenced by location. For instance, Chechen rebels were found to strike at civilian targets more often within Russia than Chechnya, while Palestinian terrorists used suicide bombings more frequently within Israel than the occupied territories, where shootings were the preferred means of attack.

In summary, the literature on terrorist groups' target selection raises several important points. First, it suggests that ideological convictions influence target selection, and may also influence the preferred methods of attack. Second, a variety of constraints may influence target selection and the ability of terrorists to implement and execute their plans successfully. Third, the selection of targets and methods may be influenced by the location of both attacker and targets.

<u>Pre-attack behaviour</u>

There has been considerable interest in the question of how to detect and prevent terrorist groups and this burgeoning literature on pre-attack indicators provides some useful insights. Pioneering work on this topic was conducted by Brent Smith and colleagues (2006; 2008), whose research on the pre-incident indicators of terrorist attacks tackled issues like the average length of the planning process and the spatial characteristics of terrorists' preparatory behaviour, such as the distance between the terrorists' residence, their targets and where they conducted preparatory activities. Based on a quantitative analysis of international and domestic terrorist incidents in the United States between 1980 and 2004, Smith et al.'s work reached several interesting conclusions. For instance, they determined that on average, terrorist incidents were preceded by 2.3 activities known to the authorities, even if these activities were not recognised as part of the run-up to a terrorist attack at the time. Of these 2.3 activities, 32% were crimes (e.g. construction of explosives devices; robbery; murder). Furthermore, their findings reveal a period of conspicuous quiet between the completion of attack preparations and the actual carrying out of the attack, lasting an average of three to six weeks.

In *Terrorism as Crime*, Hamm (2007) further shows that terrorist organizations inadvertently leave clues during the preparatory stages of an attack that, if properly interpreted, might have been used by the authorities to detect and disrupt the plots. For instance, while equipped with such skills as those necessary to build an explosive

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[2] Cato Hemmingby and Tore Bjørgo, "The Dynamics of a Target Selection Process," Center for Terrorism and Security Studies, http://blogs.uml.edu/ctss/2014/07/02/the-dynamics-of-a-target-selection-process/.

device, the perpetrators of the 1993 World Trade Center bombing were inexperienced criminals. This led to them inadvertently draw the attention of law enforcement officials at various times prior to the attack. Hamm's case studies of American right-wing extremists also uncovered similar criminal antecedents, as well as a desire for attention and celebrity that undermined these groups' ability to maintain operational security. Hamm concludes that conventional criminal investigations are a powerful tool for detecting and preventing terrorist attacks, and has been echoed by others. Kevin Strom and colleagues (2010) state that over 80% of foiled terrorist attacks on American targets between 1999 and 2009 were initially discovered by law enforcement or the general public. George Kelling and William Bratton (2006) similarly argue that police officers have historically proven not to be just first responders, but also frequently the first preventers of terrorist attacks.

These points – that terrorists prepare for their attacks and that these preparations can be detected – further underline the need to pay careful attention not only to the actions undertaken by attackers prior to the event, but also to the context in which these actions occurred. The literature on terrorist group attack preparation suggests some avenues of enquiry which should be extended to the LAEE problem. Concrete examples of revealing behaviour include various types of fraud, money laundering, narcotics trafficking, tests of security at target locations, attack rehearsals, the unusual movement of known explosives experts and target surveillance (Chengara, 2004; Howard, 2004; Marquise, 2008; Raqqaz, 2007). The small number of studies which deal specifically with potential indicators of so-called home-grown Jihadist terrorism and the ideological radicalisation that precedes it include further indicators that cross the border between radicalisation and attack preparation, such as frequently holding private meetings, the possession of (digital) materials espousing an extremist interpretation of Islam, advocating violence against non-believers, and criminal behaviour justified by a denial of the legitimacy of democratic institutions and laws (Garssen, 2006; Sikkema et al., 2006). These studies emphasize the usefulness of viewing preparatory conduct as consisting of several closely-related 'phases' with associated behaviours (which can be used as indicators).

Two final findings from the literature on group-based terrorism conclude this section. The first emphasizes the importance of looking at capability as well as intent when charting the preparatory behaviour of (would-be) terrorists. Many people and groups issue threats, but only when the stated intent to use violence is accompanied by the acquisition of necessary means can the threat be said to emerge (Borum, 1999). In this regard, it is worth keeping in mind (and briefly mentioning here) a corner of the criminological literature which has concerned itself with the resources criminals acquire prior to engaging in an offence. Interestingly, given that this aspect has been comparatively under-unexamined in the terrorism literature, resources (which together make up capability) are not only material, but social and psychological (Ekblom & Tilley, 2000). In the terrorism context, it may be worthwhile to consider that

capability is also made up of resources of a spiritual nature (e.g. prayers and mantras to maintain resolve and confidence).

Second, it may be a truism to say that terrorism doesn't occur in isolation from broader societal, economic and (geo) political developments (Crenshaw, 1981; Drakos & Gofas, 2006; Paul et al., 2008; Post et al., 2002). Nevertheless, it is worth reiterating that, although knowledge of the background against which terrorism and the phases of ideological radicalisation and attack preparation take place will not, in itself, provide means for detecting and preventing attacks, it can may prove valuable in assessing the kinds of resources an environment affords would-be attackers, and therefore the kind of capability LAEs may acquire.

4. PRIME Conceptual Framework

4.1 Introduction

The preceding synthesis of the research literature on lone actor terrorism and neighbouring problem domains highlights the diversity of factors, indicators, mechanisms, processes, and overall *concepts* that have been associated, analytically or empirically, with the search for an explanation of LAE radicalisation and behaviour.

Empirical efforts to unify this knowledge into general frameworks have been largely aimed at producing typologies of lone actors (e.g. Borum, Fein, & Vossekuil, 2012; Pantucci, 2011). This taxonomic approach, while a necessary step towards progress in any scientific field (Bailey, 1994), has some important limitations. While well-designed and validated typologies can provide useful definition and organisation in a new area of research, their purpose remain essentially to organise observations: a typology *describes what it is*, but it does little to *explain why it is so*. It may be tempting to think that understanding has been improved by slotting a particular event under a labelled category, but an explanation requires more than a taxonomic exercise: it requires conceptual statements as to the causes and causal processes which account for the outcome under study. The ability to tell apart (even deep) description from explanation, and to move from the one to the other, is crucial when the ultimate goal is to do away with the outcome: to prevent a problem from (re)occurring we need to remove or disrupt its causes.

Because empirical findings do not speak for themselves (e.g. statistics tell us about the presence and strength of a relation, not what it means), a knowledge-base capable of supporting policy, which is what PRIME aims ultimately to generate, must be made up of more than a catalogue of statistically significant relationships between a set of factors (i.e. descriptive results). It must include theories which advance explanations as to the role these factors play in producing the outcome of interest (e.g. radicalisation)

and the conditions under which they may come to interact (Wikström, 2011). This necessitates going beyond empirical generalisations to conjecture inherently unobservable, but plausible causal mechanisms (Bunge, 2004). Progress is contingent upon the emergence of theories which can not only make sense of accumulated observations and are compatible with established scientific knowledge in major disciplines, but which can, also, bridge disciplinary silos to integrate levels of analysis and, crucially, produce general rather than strictly local explanations (Bouhana & Wikström, 2008).

While observations about lone actors and their behaviour have multiplied in recent years, few, if any, meta-models or theories of lone actor radicalisation and lone actor extremist behaviour have been put forward, which articulate systematically how the kinds of factors discussed in the prior literature review interact to produce one or the other, and which are able to differentiate between those factors which may act as indicators (needed for the design of detection and mitigation measures) of LAEEs, and those which may be considered causes (needed for the design of prevention and disruption measures). To arrive at this point, a number of key problems remain to be tackled, namely:

- integrating the levels of explanation (i.e. establishing through which concrete mechanisms the different macro and micro levels interact) in order to tackle the problem of specificity (why some individuals radicalise when most others do not);

- transcending the problem of locality (i.e. getting beyond local explanations to general theories), and;

- achieving conceptual clarity, in the absence of which neither of the other problems are solvable.

The following section sets out how PRIME seeks to address these challenges, in order to generate a general Risk Analysis Framework (RAF), which will inform the development of integrated script and subscripts of LAEEs (i.e. radicalisation, attack preparation and attack scripts) as the project unfolds.

The theoretical background against which the RAF is developed is outlined, followed by the introduction of the RAF itself. The section concludes with a discussion of the well-known problem of terminology in this field.

4.2 Theoretical background

4.2.1 Rationale

In spite of a noticeable uptake in data-driven research (LaFree & Ackerman, 2009), the study of the causes of terrorism and radicalisation remains theoretically fragmented, leading at least one prominent scholar to express concern about the so-called stagnation of scientific research in this field (Sageman, 2014). In a recent review of research on Islamic-inspired home-grown radicalisation in Europe, Anja Dalgaard-Nielsen (2010) identified three main categories of accounts of radicalisation, each concerned with a different level of analysis: French sociological accounts, which focus on the role of the macro cultural and socioeconomic context in the radicalisation process, with a particular emphasis on the factors which could explain the appeal of radical Islam for seemingly well-integrated Muslims; social movement and network theories, which privilege the individual's immediate psycho-social environment to explain how they become exposed to, and eventually adopt, radicalising ideologies to the point of involvement in terrorism; and largely atheoretical accounts, which mine the background characteristics of terrorists in search of empirically-grounded indicators and typologies of radicals, their motivations, or their 'pathways' into radicalisation.

Nielsen concludes that, while each category of account addresses salient elements of the radicalisation process, all of them come short of a full theory, which could tackle the 'problem of specificity' (Sageman, 2004) and explain why a majority of individuals experiencing these particular conditions (e.g. an inimical socio-economic context; membership in a social network containing radicalised individuals; socio-political grievances) do not undergo a process of radicalisation. Nielsen goes on to suggest that these accounts should be seen as complementary, rather than competing.

Similarly, Schmid (2014) contends that radicalisation studies have privileged the *micro* level of analysis, but that full explanations should integrate the *meso* (community) and *macro* (structural) levels as well, although the strategy to adopt to effect this integration is not outlined. Taylor and Horgan (2006, p. 587) recommend that the study of terrorism should be brought "within a broader ecological framework", but again their process model of terrorism involvement falls short of articulating those processes through which factors at different levels of analysis are theorised to interact (see, likewise, Hafez & Mullins, 2015, for a more recent synthesis that leaves out interaction mechanisms). The choice to draw from the criminological notion of 'individual pathway' leads to the inevitable conclusion that routes into terrorism are discrete, which would seem to preclude the statement of a general developmental model. Meanwhile, the psychological perspective adopted, while legitimate in itself, means that an examination of the emergence of ecological conditions which support radicalisation or terrorist involvement is largely out of bounds. Veldhuis and Staun (2009) have put forward a 'root cause model' of radicalisation in response to the weaknesses of 'phase models' – which offer, at best, chronological deep-descriptions of the radicalisation process in a particular context (Moghaddam & Moghaddam, 2005; Silber & Bhatt, 2007) and as such do not provide a framework to differentiate between

indicators (symptoms or markers) and genuine causal factors. Veldhuis and Staun (ibid) contribute a valuable synthesis of factors associated with radicalisation at several levels of analysis, but their 'model' relies on enumeration more than integration. How one should determine the exact role, and assess the relative importance, of each category of factors is unspecified; the lack of an explicit integrative framework manifests in the omission of an intermediate level linking the macro and micro levels of explanation. Kruglanski and colleagues' (2014) significance quest theory does take care to articulate the interaction between situational and individual factors, but leaves out a full appraisal of the social ecology of radicalisation (e.g. selection and emergence processes; see further in this report), which is likely necessary to explain variation in incidence between countries and communities at any given time.

This kind of theoretical fragmentation will be familiar to criminologists. In an ambitious paper published in *Crime and Justice*, Weisburd and Piquero (2008) set out to test the respective 'explanatory power' of theories of crime located at different levels of analysis. They conclude that all theories leave the bulk of the variance unexplained and advise that each theoretical framework should look to "what is not explained" (p.453), if scientific progress is to continue. One might be tempted to address this difficulty by throwing any and all 'risk factors' – individual, situational, social, ecological, macro-social – into the pot and hunt for statistical covariates of the outcome of interest (here: terrorism), but the limitations of this approach are recognised even by its proponents (Farrington, 2000) and have been discussed at length elsewhere (Wikström, 2011). In the search for risk factors or so-called 'indicators', one quickly finds themselves overwhelmed by ever-expanding lists of significant correlates, with no way to discriminate between symptoms, markers, cause, or mere statistical accidents.

Alternatively, one might take the more difficult road, stop "segregat[ing] the 'ingredients'" of crime or terrorism, or, conversely, "including everything" willy-nilly, but instead seek to articulate the "rules of interaction" between levels of analysis (Sullivan, McGloin, & Kennedy, 2011); between the person and her (developmental or behavioural) environment: in other words, abandon a factor-based approach in favour of mechanism-based accounts, where *mechanism* is defined, in the scientific realist tradition, as the causal process that links the cause to its effect (i.e. that explains *how* the cause brings about the effect).

Beyond theories of terrorism, the logic and value of such an approach to explanation was deftly illustrated in a seminal paper by analytical sociologists Lieberson and Lynn (2002), in which the authors argue that, rather than emulate the deterministic and deductivist model of the physical sciences, a successful and relevant social science should learn from the example of the natural sciences. Like sociology (and criminology), evolutionary science seeks to understand the trajectory of complex organisms embedded in complex ecological systems. Yet evolutionary theory, arguably one of the most successful theoretical frameworks in scientific history, did not emerge out of attempts to isolate statistically the (potentially infinite number of) possible

conditions that could impact the evolution of species, and attribute to them some fixed amount of variance, net of other influence. Rather, early evidence in evolutionary theory was gathered from observation of natural experiments, and the powerful frame of the theory is not made up of a long list of statistically significant factors, but of a small set of interlocking general mechanisms (e.g. natural selection, migration and genetic drift), resulting in a meta-model or framework, which is adaptable and universally generalizable.

It is true that the general character of a meta-model can come at the cost of predictive power: evolutionary science does not set out to *predict* the evolution of specific species. To do so would require information about local ecological conditions in the very distant future, and it would require ignoring that evolutionary events (as social events) are also the product of chance (Bunge, 2006). Yet one would be hard-pressed to say that this lack of predictive power means evolution by natural selection is a failed theoretical framework. Nor does the ontological status of natural selection as more of a functional metaphor than a concrete causal mechanism in a physical system diminish the value of the explanation. Natural selection (like, for example, 'exposure' in the model discussed in the next section) operates as a fertile synthetic construct which has guided, and continues to guide, the search for the lower-level processes and context-specific factors involved in bringing it about.

Developing a general, analytical, meta-framework capable of explaining, organising, and reconciling a knowledge-base as patchy and disparate as the one synthesised in the previous section of this report, however, is not easily achieved from scratch. To the extent that crime and terrorism research can be considered cognate domains (see Bouhana & Wikström, 2011, for a development of this argument), criminologists have increasingly argued that there is much to learn from research on crime and criminality, which could advance our understanding of the causes of non-state political violence, be it in terms of transferable research methodologies, analytical concepts, approaches to prevention, or theoretical frameworks (Deflem, 2004; Forst, Greene, & Lynch, 2011; Freilich, Chermak, & Gruenewald, 2014; LaFree & Freilich, 2011; Lafree, 2007; Rosenfeld, 2002).

Owing perhaps to the availability of large open datasets which aggregate event-level information, such as the Global Terrorism Database (LaFree & Dugan, 2007), this criminological enterprise has added chiefly to our knowledge of the characteristics, distribution and predictors of terrorist events, thanks to a number of studies guided by opportunity-focused approaches, such as rational choice, routine activities, crime pattern and repeat victimization (Braithwaite & Johnson, 2011, 2015; Canetti-Nisim, Mesch, & Pedahzur, 2006; Clarke & Newman, 2006; Laura Dugan, LaFree, & Piquero, 2005; Hamm, 2005; Parkin & Freilich, 2015), or by deterrence perspectives (Argomaniz & Vidal-Diez, 2015; Dugan & Chenoweth, 2012; Faria, 2006; Hafez & Hatfield, 2006;

LaFree, Dugan, & Korte, 2009). By comparison, efforts to apply general criminological theories to the development of terrorist criminality and individual involvement in terrorist action have been less conspicuous, with some notable exceptions (see, notably, Agnew, 2010; Fahey & Lafree, 2015; Pauwels & Schils, 2014). Yet, to the extent that blocking opportunities for terrorist activity and deterring terrorists have not proven (to date) enough to control the threat of terrorism, and to the extent that governments continue to promote prevention efforts aimed at suppressing the disposition to commit acts of terrorism in the population (see, for example, the 2011 Revised Prevent Strategy in the United Kingdom)[3], then robust theories are needed which can organise and articulate our knowledge-base of how individuals come to perceive acts of terrorism as an alternative for action – the process commonly known as *radicalisation*.

As previously stated, when dealing with a field which faces as many analytical and methodological hurdles as the study of terrorism in general, and lone actor extremism in particular, it is arguably worth drawing upon existing theories from areas where understanding (e.g. the ability to validate constructs and test hypotheses) is somewhat advanced.

To provide a robust foundation for its Risk Analysis Framework, PRIME draws upon a well-developed general theory of crime causation known as *Situational Action Theory* (SAT). Previously, SAT was used to organise a systematic review of empirical observations associated with al-Qaeda-influenced radicalisation (Bouhana & Wikström, 2011). The resulting meta-model clearly hypothesised the general processes (exposure and emergence) which connect categories of causal factors (individual, social ecological and systemic) in the process of radicalisation, while at the same time relating them to the discrete markers (predictors or indicators), which flag the presence of those processes in specific (e.g. geographical) contexts.

SAT has been fruitfully applied *both* to the explanation of terrorism acts and to the process of individual radicalisation (Bouhana & Wikström, 2008; 2010; Schils & Pauwels, 2014; Wikström & Bouhana, in press), hereby demonstrating that it can provide a unifying framework for the whole of the RAPA process (radicalisation, attack preparation, attack), which PRIME set out to investigate.

4.2.2 Situational Action Theory

Situational Action Theory (SAT) is a general theory of crime, which sets out to explain both how people engage in criminal *acts* (i.e. the criminal event; *the situational model of SAT*) and how they develop individual criminal *propensities* (i.e. criminal

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[3] Available from: https://www.gov.uk/government/publications/prevent-strategy-2011.

development; *the social model of SAT*), by integrating individual and environmental levels of explanation (Wikström & Treiber, 2009; Wikström, 2006, 2010, 2014).

SAT proceeds from two key premises: that humans are essentially rule-guided animals and that human societies are essentially organised around shared rules of conduct. To the extent that people's actions proceed from their wants and desires, or in response to provocations or frictions, they choose to act within the bounds of certain rules (whether they choose or not to follow them). In this context, SAT holds that (all) crime is best conceptualised as *moral[4] action* – action guided by value-based rules that state what is the right or wrong thing to do (or not do) in particular circumstances. Hence, crime is defined in terms of what is common to all crimes, everywhere, at all times, namely the act of breaching a moral rule of conduct stated in law.

What needs to be explained, then, is what moves individuals to breach moral rules of conduct. By choosing to explain rule-breaking rather than particular actions (such as murder or arson or suicide bombing), SAT overcomes an old obstacle to the formulation of *general* theories of crime, namely, that some actions are considered a crime at one time but not another, or in one jurisdiction but not another. SAT proposes that key processes are shared by all crimes, because rule-breaking is common to all crimes. The difference is in the input (chiefly, the specific rule of conduct being broken), not in the process. It also proceeds from this premise that SAT holds that the same general processes which explain why people *follow* rules of conduct in one circumstance or another explain why people break rules of conduct in one circumstance or another; i.e. no *special* theory is needed to explain crime (or terrorism).

The situational model: Explaining acts of crime

In a nutshell, SAT holds that crime arises from the interaction between a person's crime propensity (her tendency to see particular crimes as viable alternatives for action) and her exposure to crime-promoting environments. More specifically, this interaction initiates a *perception-choice process*, which can lead individuals to breach a rule of conduct. When interacting with her environment, a person may be moved to action by temptations or provocations, which lead to the emergence of the *motivation* (from the latin *motivus*: moving; impelling) to act, which initiates the action process by directing the person's attention to a particular goal. The actions she perceives as plausible alternatives (the things she would consider doing in response to the particular motivation) arise out of the interaction between her *moral filter* (morality and associated moral emotions[5]) and the moral norms and their level of enforcement

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[4] In the context of SAT, the word moral is used in a descriptive, rather than normative, sense.
[5] In SAT, moral emotions such as shame and guilt are regarded as measures of strength of particular moral rules.

within a setting. Should personal and setting rules conflict, a process of choice ensues, which is subject to the deterrent qualities of the setting (*external controls*) and the person's capacity to exercise self-control (*internal controls*). If an individual perceives an act of crime as acceptable in a set of circumstances, whether or not they will commit it depends on the effectiveness of deterrents. If an individual is induced to act against their personal morality (e.g. by peers), whether or not they will commit an act of crime depends on their ability to exercise self-control.

In the context of SAT, the distinction between perception, choice and motivation is essential for an understanding of action. People can be moved to the same action (e.g. a terrorist act) by many different kinds of motivation (e.g. anger, greed, grief, ideological commitment, or loyalty). To add to the difficulty, the same motivation, such as frustration with foreign policy, can move people to many different kinds of action. The vast majority of people who are provoked to action by, for example, the behaviour of a state representative (a *motivation* in response to a situation) will not see terrorism as an action alternative. They will not even consider it, but may consider other alternatives for action, such as signing a petition, taking part in a demonstration, or venting to a friend at the pub. Out of those who do perceive crime (e.g. terrorism) as an alternative, not all will decide to carry out such an act in any or all circumstances (*a choice*).[6] SAT also explains how individuals who *do not* perceive terrorism as a possible alternative (who have not been radicalised) may yet become (knowingly) involved in an act of terrorism under situational pressures which overcome their capacity for self-control (i.e., the capacity to act in accordance with their own personal morals).

This brief discussion should illustrate why considering motivation alone is insufficient to explain a given action, and why it is necessary to look at individual propensity and moral context to explain why a particular motivation translates into a particular act in a particular set of circumstances.

The social-ecological model: The causes of the causes

SAT posits a clear analytical difference between the *causes* of acts of crime (e.g. terrorism) and the *causes of the causes.* If people are the source of their actions, and the features of the situations they encounter are the causes of their acts of crime (or their rule-abidance), then the factors and mechanisms which explain:

- how people acquire (different) crime propensities,

- how more or less criminogenic settings emerge (or not) in an environment; and

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[6] Within SAT, perception (influenced by *the moral filter*) is conceptually more important than choice (influenced by *self-control*). If a person does not even see crime as an alternative, she never needs to make a choice about it.

- how people come to be exposed (or not) to these settings are best understood as 'causes of the causes' of acts of crime.

Specifically,

1. to explain why different kinds of people vary in their propensities for particular crime (e.g. why some people radicalise and others do not) is to address the problem of *personal emergence*.

2. to explain why certain kinds of people find themselves in certain kinds of settings, resulting in interactions that may (or may not) lead to criminal action, is to tackle the problem of *selection*.

3. to explain why crime-supportive settings are present in some environments more than others is to address the problem of *social emergence*.

Personal emergence

SAT posits that *propensity* – a person's tendency to perceive and choose a particular action when motivated to act – is acquired as a result of *individual development* (Wikström, 2005), which can be defined as a "lasting change in the way a person perceives and deals with her environment" (Bronfenbrenner, 1979). In other words, propensity development can be understood as the *long-term outcome* of exposure to certain environments. Like criminal acts (a *short-term outcome* of exposure to criminogenic environments), this embodied process of propensity development takes place in *settings*. The constellation of settings to which a person is exposed during a given period makes up their *activity field* (Wikström, Ceccato, Hardie, & Treiber, 2009). A person's activity field affects the kind of developmental (long-term) influences (socialising and habit-forming processes) she will experience.

According to SAT, the key psychosocial processes involved in the development of criminal propensities are those of *moral education* and *cognitive nurturing* (Wikström & Treiber, 2015), because individual propensity, as stated above, is made up of a person's law-relevant morals and ability to exercise self-control. Moral education can be understood as "the learning and evaluation process by which people come to adopt and change value-based rules of conduct about what is the right or wrong thing to do in particular circumstances" (Wikström & Bouhana, in press). As a process, moral education is supported by *instruction, observation,* and *trial and error* (Wikström & Treiber, 2015)*.* Homogeneity (i.e. the degree of correspondence between the experiences of moral education encountered by the person and the moral context of the environment in which she goes on to act) and, by extension, consistency, determine the efficacy of moral education. Yet, people are not passive subjects in this

process; they may dynamically engage in the evaluation of new moral experiences, given their antecedent moral education and their executive capabilities, which is why *cognitive nurturing* matters both in terms of the capacity for self-control people develop and their ability to grasp, internalise, access and appropriately apply rules of conduct in the first place (S.A. Bunge, 2004). Successful cognitive nurturing depends both upon innate neurological make-up and experiences which have influenced the development of neurocognitive abilities over the lifetime (but especially during so-called 'developmental windows' in childhood). Processes of moral education and cognitive nurturing are likely to play a key role in the explanation of why certain individuals, as opposed to others, develop criminal propensities at any stage of the life course.

Selection

SAT explains why different people are more or less exposed to criminogenic settings by reference to processes of *social* and *self-selection* (Wikström, 2014). Social selection is the key process linking the analysis of macro-level and micro-level conditions in the explanation of crime and criminal development (e.g. terrorism and radicalisation). Social selection refers to social forces that facilitate, induce, coerce, dissuade or altogether block certain kinds of people from attending certain settings and/or taking part in activities taking place in particular settings at particular times.

Social selection is influenced, notably, by affiliation or belonging to particular social, demographic, economic, ethnic or cultural groups. Age, gender, religious affiliation, economic status, place of residence: all of these are factors of social selection which, while not deterministic (though they may appear to be so in highly stratified societies), affect the likelihood that a person will spend time in one setting or another, engaging in one activity or another, because of the way the host society is organised.

Within the boundaries drawn by social selection, *self-selection* refers to the preference-led choices that people make to attend particular settings at particular times and to engage in particular kinds of activities in these settings. Being attracted to books, sports, or politics: all of these are personal preferences which will affect the likelihood that a person will spend time in one setting or another, engaging in one activity or another at a particular time.

Social and self-selection are the key processes which explain how people come to be exposed to certain settings, creating opportunities for interactions that may, in the short term, affect their actions and, in the longer term, affect their development (e.g. radicalisation).

Social emergence

Given the role that exposure to particular environments plays in the development of personal propensities and engagement in acts of crime, understanding the *social-ecological and systemic processes* responsible for stability and change in people's activity fields (environments more broadly and constellations of settings more specifically) is key. Processes which explain why settings with criminogenic features appear and remain in particular jurisdictions at particular times, and which explain why some kinds of people are more likely to spend time in these settings than others (selection), are all relevant to the problem of social emergence.

In summary, SAT states that, to explain how people come by their propensities for certain acts of crime (or not) and then choose (or not) to engage in such crimes, one needs to address:

1) the factors and processes involved in the development of people's *vulnerability* to moral change;

2) the factors and processes which affect people's *exposure* to settings with relevant moral contexts; and

3) the factors and processes which affect the *emergence* and *maintenance* of these settings in people's activity fields.

Armed with such a model of how factors at different levels of analysis interact to produce radicalisation and acts of terrorism, it becomes possible to hypothesise the role (or lack thereof) of any given factor by asking how they could be implicated in bio-psychosocial processes of personal emergence, social ecological processes of setting emergence, and processes of selection.

Being able to formulate a plausible and conceptually clear causal account is crucial for the conduct of research. Data and research designs required to investigate social ecological processes will be quite different from data and research designs needed to study bio-psychosocial development. Greater analytical depth may eventually reconcile contradictory claims as to, for example, the role of contentious systemic factors, such as poverty or political structures, in the explanation of terrorism: some factors may play different roles in the emergence of different processes, or impact some but not others.

4.2.3 Beyond SAT

That PRIME's Risk Analysis Framework chiefly draws from a particular criminological theory does not mean that the work of PRIME cannot and will not draw upon other

approaches. SAT has the advantage of being a well empirically-validated, general framework that articulates both developmental and action processes – a necessity for PRIME, which aims to model all stages of the lone actor event, from radicalisation to attack. Specific aspects or stages of the RAF may, however, benefit from insights from other accounts.

The analysis of attack processes (e.g. target selection; modus operandi) will indubitably draw from the extensive literature on opportunity theories (i.e. rational choice theory, routine activities theory; crime pattern theory) and situational crime prevention, while the analysis of the roles of selection processes and social emergence in radicalisation will benefit from accumulated research in social movements, social networks, and other relational approaches, as has been made amply clear in the first section of this report. Since the present deliverable is only concerned with the general RAF, these other theoretical approaches are not discussed in depth, but they will be referred to as appropriate in those deliverables concerned with scripting of the RAPA stages (D5.4-6).

One of the many advantages of a RAF supported by an integrative general theory such as SAT is that it allows, by definition, the organised integration of different analytical approaches that may not have been brought together previously.

5. Risk Analysis Framework

As a general theory, SAT sets out the key mechanisms and processes involved in the acquisition of individual action propensities and in individual action. In this section, these general mechanisms are put in the context of our knowledge of radicalisation and terrorism, with particular reference to LAEs. Given evidence of the growing role of exposure to online settings in the radicalisation and actions of lone actors, examples of social ecological processes and systemic factors relevant to the online environment are provided. These mechanisms are summarised in a Risk Analysis Matrix, which is intended, chiefly, to guide the research activities of the RAPA scripting teams.

5.1 Analysing radicalisation

In light of the analytical background provided by SAT, the categories of factors and mechanisms which are key to explaining how LAEs acquire the propensity to commit acts of terrorism – in other words, *radicalise* – can be summarised in terms of processes that play a role in the emergence of their *individual vulnerability* to moral change, their *exposure* to settings with terrorism-supportive moral contexts, and the *emergence* and maintenance of such settings in these people's activity fields. For

convenience, this analytical model or meta-framework of radicalisation is referred to as IVEE.

5.1.1 Individual vulnerability

Cognitive susceptibility

At the individual level of explanation, SAT suggests how certain experiences, which contribute to moral education and cognitive nurturing, play a part in the emergence of personal propensities for action. This process of personal emergence is, of course, continuous throughout the life-course, meaning that in effect the person is continually *emerging*. It is the outcome of *antecedent* experiences of moral education and cognitive nurturing which determine an individual's level of vulnerability at the onset of the radicalisation process. This outcome we may call *cognitive susceptibility* to moral change. The research observations summarised in Section 2.1 suggest that vulnerability to radicalisation is partly a factor of an individual's prior commitment, or lack thereof, to a moral framework, their capacity for response regulation and executive functioning (self-control, adaptability, and flexibility), and their lifestyle exposure to situations which deplete their (neuro)-cognitive resources.

Executive functioning (EF) is made up of the discrete but interacting higher-order neurocognitive processes which are involved in people's ability to engage in goal-oriented behaviour, maintain motivation and attention, and adapt flexibly to contingencies that require new plans and decisions (Suchy, 2009). EF develops early in life and is responsible for such key tasks as inhibiting responses, updating working memory, and shifting mental sets (switching back and forth between tasks) (Friedman et al., 2008). These processes are cognitively costly and resources can become depleted after use. Because automatic or routine responses demand less energy and guide behaviour much of the time, EF is only solicited when new and/or complex situations arise (Suchy, 2009). Rules of conduct, acquired through socialisation and maintained through habit, moderate EF. As long as it is appropriate to the behavioural context, commitment to well-established rule-guidance allows for automatism, therefore less call for effortful deliberation and self-control, *ergo* lower energy expenditure and less drain on limited resources (Gino et al., 2011).

People vary in their capacity for self-regulation and executive control (Williams et al, 2009). Some are known for their impulsivity; others for being efficient decision-makers under stressful conditions (Baumeister et al, 2003). A number of observations support the hypothesis that this variability could account, in part, for individual differences in susceptibility to radicalising moral change. Many individuals undergo radicalisation as adolescents or young adults. Age, as a marker of biological development, may be indicative of differences in executive capability. The prefrontal cortex, the seat of executive functions, is one of the last brain areas to develop, all the way through

young adulthood (Beaver et al., 2007), with implications for young people's continuing openness to socialisation. Low self-control is one of the factors most consistently associated with crime and substance abuse (Pratt & Cullen, 2000). A delinquent past or a history of addiction (a notable sub-group among the radicalised population) could be evidence of weaknesses in executive control. This might, in turn, provide an explanation as to why individuals who cling to a legalistic rule system cannot help but stray from it: they lack the capacity to inhibit responses to day-to-day situations, even if these situations challenge their new moral guidance[7]. It might also contribute to the explanation as to why newly-radicalised persons or people in the process of radicalising seem to systematically cut ties with friends and family who (may) disapprove of their new value system: those individuals may be trying to protect themselves from further stress on their neurocognitive resources (an experience generally accompanied by negative affect, and therefore to be avoided) by ensuring they will not be exposed to competing moral rule-guidance that might challenge their newly-acquired morality and force them to reconcile contradictions and make choices.

Lifestyle changes (brought on, for example, by life events such as migration, incarceration or going to university) create opportunities for individuals to be confronted with new and challenging situations, which require effortful control, flexibility and adaption. Not all people may be equally able to handle such circumstances, especially if social support (attachments to relatives, networks of friends, supportive social institutions)[8] has been lost. For individuals whose early socialisation did not equip them ideally for the demands of life away from home and community of origin – as may be the case of second generation immigrants caught between parental values and the diverging expectations of the host society – growing up and gaining independence may bring on its own plethora of taxing situations. Those less able to handle cognitive demands, or facing circumstances that unrelentingly drain their mental reserves (situations which generate intense and sustained anxiety, negative affect, and so on) may find relief in categorical rule-guidance[9], which alleviates the burden of decision-making.

A stable religious upbringing or a prior commitment to a non-violent value system is reportedly a protective factor in young people: this ties in well with the notion that commitment to context-relevant rules of conduct entails less reliance on costly decision-making processes, therefore less energy depletion, with its attendant negative effects of stress and exhaustion (Baumeister et al., 2004; see also Mick et al., 2004).

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[7] Such as prescriptions about what to eat, drink, wear, do or not do, and so on.

[8] In other words, personal (cognitive) capital must be expended to compensate for the loss of social capital and systemic support. For a discussion of 'systemic supportiveness,' see Haidt & Rodin (1999).

[9] For a discussion of Islamic fundamentalism as a system of rule-governance, see Taylor & Horgan (2001).

While much work remains to be done to establish the specific (lower-level) mechanisms and processes responsible for individual differences in cognitive susceptibility to radicalisation (see, however, Kruglanski et al, 2014, for valuable work in this domain), the ever-growing literature in cultural neuroscience (see, e.g., Kitayama & Park, 2010's model of brain-culture influence), social cognitive neuroscience (see, e.g., McGregor et al, 2015, for an application of goal regulation theory to violent religious radicalisation) and molecular genetics (see, e.g., Bakermans-Kranenburg & van Ijzendoorn, 2011, for a discussion of differential susceptibility to rearing environments) suggests fruitful avenues. This literature, and research in other problem domains, also suggests that susceptibility to moral change is a general feature of human populations (which doesn't invalidate variation within and between individuals) and is not radicalisation-specific (Bouhana & Wikström, 2011).

Susceptibility to selection

Another kind of susceptibility is implied in the SAT framework, which bridges the individual (person), situational (setting) and social ecological (environment) levels of analysis*.*

Cognitive susceptibility alone cannot account for vulnerability to radicalisation, in the sense that, while an individual may be more or less susceptible to the influence of radicalising teachings, it does not fully make sense to say that they are vulnerable to radicalisation if nothing puts them at risk of ever being exposed to such teachings. To the extent that radicalising practices are found in particular settings at particular times, people will vary in the level to which they possess characteristics which make it more likely that they will find themselves in these settings.

Research findings point to a number of personal characteristics which could be linked to susceptibility to selection, notably social selection. Place of residence is one: people who have undergone radicalisation live in communities where radicalising moral contexts are found. Age is another. Most people undergo radicalisation as young adults or teenagers, a time associated with lifestyle changes. Monitoring from parents and teachers decreases. Personal agency increases. More time is spent outside the house, in a greater variety of places. More control is gained over whom to spend time with. In short, the activity field of young people changes and expands, bringing with it opportunities for exposure to new settings, some of which may have radicalising moral contexts. Youth, then, may be an (admittedly general) factor of selection. Other factors may play a similar role. Some of the older men implicated in home-grown radicalisation, like the expatriates discussed by Sageman (2004), are immigrants. Migration is an instance of a life event, which will drastically impact an individual's activity field, not unlike moving out of the family home to attend a distant university. Many events have the potential to bring about changes in the types of environments

people experience, which is why the discrete nature of life events matters less to the explanation of radicalisation than the process they trigger: a lasting change in a person's activity field, and, consequently, in her exposure to certain kinds of moral contexts.

Beyond its impact on activity fields, life experience may also be implicated in *preference formation* (acquisition of personal likes and dislikes). Over the course of their lives, people acquire preferences for particular kinds of setting – settings where they believe they will be able to fulfil their desires (pubs, dance clubs, libraries, malls, and so on). In the context of home-grown radicalisation, these preferences impact susceptibility to selection if they result in people being exposed to radicalising environments. For instance, repeated experiences of ethnic discrimination and associated negative feelings may, quite reasonably, lead individuals to develop a preference for settings where discrimination is less likely to occur, such as ethnically-homogeneous settings. Experiences of victimisation in prison might result in a preference for settings that offer physical protection. The experience of 'moral shock' said to accompany the viewing of disturbing videos may spur a need to share one's reaction or to seek advice on how to cope with disruptive moral emotions[10].

In the first case, the person who feels discriminated against begins to spend more time in places frequented only by members of her own ethnic group. In doing so, she exposes herself to opportunities for contact with radicalising agents who belong to the same group. In the second, the inmate in search of protection starts to hang out with members of a prison gang, some of whom may hold radical views. In the third, the young man morally outraged by images of suffering searches for a sympathetic ear and ends up in an internet forum, where users happen to hold both conventional and radicalising views. Through these examples, one can see how personal characteristics and experiences – through their impact on activity fields and the formation of personal preferences – can interact with ecological features to lead to the exposure of certain individuals to radicalising moral contexts.

5.1.2 Exposure

Radicalising settings

Building upon the SAT concept of criminogenic settings, radicalising settings can be understood as places whose features support the acquisition of personal morals supportive of terrorism. They enable terrorism-promoting socialisation – the internalisation of terrorism-supportive moral rules of conduct, values and emotions. All radicalising settings share key features:

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[10] On the social aspect of moral emotions, see Haidt (2001).

- These settings host radicalising moral norms, which are either transmitted person-to-person or through media. They convey terrorism-supportive ideas and associated emotions, which promote the legitimate use of terrorism and may be delivered through 'narrative' devices. Anecdotal evidence suggests that effective radicalising teachings tend to be couched in a narrative form, which is communicated by perceived sources of moral authority and is characterised as transcendental (about 'meaning-of-life stuff'), categorical (good/evil) and prescriptive (action-oriented), in a way that appeals particularly to the young, given their cognitive needs (Bouhana & Wikström, 2011). Settings differ in the extent to which these teachings co-exist with others.

- These settings are further characterised by ineffective supervision. The level of formal and/or informal behavioural monitoring in these settings is ineffective or in some other way inadequate. Generally, crime-promoting settings are those where people spend time with likeminded peers and where they can express or enact rule violations without interference from formal or informal authorities (Wikström and Sampson, 2003).

  The research synthesis suggests that, like other crime-promoting settings, radicalising settings suffer from *ineffective monitoring*. Terrorism-promoting socialisation activity is allowed to take place and go on without effective challenge. Lack of trust can mean that people with responsibility over the setting are reluctant to involve outside authorities in sanctioning and deterring unconventional activity. Generational and cultural divides can lead to spaces where young people associate unsupervised and isolated from counter-influence (so-called 'enclaves'). Surveillance may displace activity to more private spaces. In sum, lack of awareness, willingness, and/or resources to intervene create spaces where radicalising practices go on unchallenged.

- Finally, these settings provide opportunities for individuals to form *attachments* to radicalising agents. Socialisation is an interpersonal process. For the majority of people, the agents of socialisation with the greatest influence over their lives are their parents or guardians. Within families, the main mechanisms of socialisation are the teaching of rules of conduct and the supervision of behaviour (i.e. moral education). How effective family socialisation practices turn out to be depends in large part on the strength of the child's attachment to his guardians. That attachment, in turn, is a function of the caring (care-giving) relationship between child and guardians. Humans tend to get attached to the people who provide for their physical and emotional well-being (Wikström, 2005). Eventually, people form attachments beyond the circle of family – with friends, teachers and spouses, who care for them and come to have their own influence (e.g. in terms of moral education) over them. Attachment, as a mechanism, is closely associated with criminality and delinquency (e.g. Yuksek & Solakoglu, 2016).

The research on radicalisation previously reviewed supports the notion that, like any other instance of socialisation, effective radicalisation entails attachment to the sources of radicalising teachings. Radicalising settings are those which facilitate, promote or otherwise support the conditions necessary for radicalising agents (kin, peers, activists, so-called 'spiritual sanctioners') to form lasting attachments to (susceptible) others[11] – notably through caring or care-giving. This requires that the setting allows for genuine and lasting association between individuals. When radicalising agents approach individuals in positions of susceptibility, such as recent migrants or prison inmates facing a new and unknown moral context, and offer food, shelter, and spiritual comfort, they are trying to encourage a relation of *attachment* between themselves and the individual; in some sense, they may be said to emulate the parent-offspring relationship, which is the basis of human socialisation. Once attachment is created, the process of socialisation (propensity change) can proceed apace. Of course, a single setting is unlikely to offer opportunity for lasting exposure; instead, the constellation of settings in the individual's activity field may allow for repeated association.

Selection

As stated in the discussion of SAT, selection processes are the main social ecological processes which explain why individuals with particular characteristics (e.g. cognitive susceptibility) are more likely to find themselves in certain places at particular times and engaged in particular activities.

The operation of *self-selection* in the radicalisation process is illustrated, for example, by Olsen (2009), who recounts how a preference for political engagement led one young individual to take part in a demonstration, where he was given to observe a group of young rioters. The youth thought that this "was really exciting… this group, they were all my age, I could identify with them and they made something of themselves" (p.14). He later approached them. The example shows how the non-radicalising features of a setting can act as a personal draw, incidentally exposing people to terrorism-promoting influences. Self-selection being an on-going process, preferences acquired during the earlier stages of radicalisation can result in more intense and sustained exposure, such that some individuals may eventually graduate from sporting grounds in Birmingham and internet cafes in London to training camps in Afghanistan.

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[11] Research on the role of delinquent peer influence on crime suggests that strength of attachment is likely to be a factor of the 'frequency, duration and intensity' of the association between the radicalising agents and the individual. See Sampson & Laub (2003).

When supporters of terrorist movements upload videos purporting to depict scenes of Western soldiers harming civilians in Muslim lands, they may also lead people to expose themselves to radicalising settings though self-selection. Viewing such videos may spark anger and eventually crystallise into grievance. These emotions, in turn, may give rise for a preference for settings where negative feelings can be aired and alleviated by sharing the experience with like-minded individuals.

More positive preferences may also lead to self-selection. For example, an article published in *Foreign Affairs* entitled "The World of Holy Warcraft" (Brachman and Levine, 2011) discusses how the 'gamified' features of some online forums entice young people to involve (i.e. expose) themselves to these forums, some of which have radicalising features, with ever greater intensity as they develop a (personal) taste for competition. Hence self-selection can take someone from YouTube, Facebook and discussion forums to, eventually, Syria.

Social selection sets the stage for *self-selection*, by constraining the kinds of settings people are likely to find themselves in. Observations have suggested, for example, that individuals who belong to certain groups – young people, residents in Muslim communities, students, immigrants, people with a criminal history – are over-represented among home-grown terrorists (for a full review, see Bouhana & Wikström 2011). Nor are radicalising settings distributed randomly: they appear more likely to be found in some kinds of environments, which in turn are more likely to be frequented by members of particular groups. Social selection means that group membership is likely to affect the chance of exposure to radicalising contexts, something echoed by the research on social movements and radical milieus already reviewed. For instance, individuals from an Islamic ethno-religious background are significantly more likely to find themselves in a setting where Muslims routinely congregate (mosque, Islamic study group, halal restaurant) compared with individuals from a non-Muslim background. Students are more likely to have the opportunity to spend several hours a day surfing the Internet than most working adults. Unemployed individuals are more likely to have the freedom to spend time in cafes during working hours than most office workers. People with a criminal history are more likely than non-offenders to be exposed to a prison environment, and asylum seekers are more likely to spend time in immigration centres – two examples of so-called 'hotbeds' associated with radicalisation. Given the organisation of social life and the location of radicalising settings, some categories of people are more likely to be exposed compared to the rest of the population, as a result of social selection (Wikström & Bouhana, in press).

In sum, selection means that *who* ends up being radicalised is influenced as much by the characteristics of the settings in which radicalisation takes place, as it is by the

characteristics of the individuals who undergo the process. Social selection is likely to be the key process which explains why members of particular terrorist cells, groups or particular campaigns may share some socio-demographic characteristics – they met in places which draw people with these characteristics –, yet the search for general terrorist 'profiles' remains futile: radicalising settings are found in new environments over time – if only as a result of counterterrorist activity –, therefore, the kinds of people socially selected for exposure changes.

To explain why some (susceptible) individuals rather than others radicalise (*the problem of specificity*) is to explain why some people rather than others are exposed to the radicalising settings in their environment through processes of selection*.*

5.1.3 Emergence

As discussed above, observations suggest that settings that promote terrorism are not equally distributed in space and time. Some streets, neighbourhoods, communities, prisons, societies, even some countries have more of these kinds of settings compared to others at any given time. Processes of emergence link systemic factors (community-level factors and up) with social ecological processes of exposure, such as selection. At the systemic level are those factors and mechanisms, which explain why radicalising settings appear and remain in some environments rather than others. To explain *why radicalisation occurs in particular places at particular times* is to explain why radicalising settings emerge where and when they do and are sustained.

A given systemic factor is likely to matter to the extent that they facilitate (or constrain) the emergence and maintenance of 1) ineffectively monitored settings, in which 2) susceptible individuals come into lasting or repeated contact with radicalising agents, who 3) promote terrorism-supportive moral norms. Hence, in any given context, those systemic factors relevant to radicalisation are likely to be those which allow for radicalising moral norms to spread, for certain places to experience low levels of formal and informal social control, for radicalising agents to move around freely among the rest of the population, and for susceptible individuals to be selected for exposure into particular settings.

Hence, at the systemic level, many factors are likely to matter, yet not just any factor. When confronted with analytical or statistical claims about the impact of meso- or macro-level characteristics on radicalisation, one way to assess their (potential) relevance is to ask how they might be implicated in a causal chain which ends in the emergence of radicalising environments or the exposure of susceptible individuals.

Scholarship on systemic factors and crime would suggest that levels of residential segregation and social disorganisation, the collective efficacy of communities, schools and families, and formal mechanisms of social control will affect the emergence of

radicalising settings, inasmuch as these factors impact the organisation of daily routines, the establishment of cohesive rules of conduct, and the availability of resources (the willingness and the means) to enforce these rules. One can also conceive of how macro-level political processes such as civil war could, given their ultimate effect on community rules and resources, affect emergence. Historical and political processes involved in the formation of groups like Al Qaeda, processes of norms promotion which contribute to the formation of competing moral contexts at the international level, factors which affect the movement of persons – all can be reasonably linked to radicalisation in this way. Media outlets and the rules that govern them are also plausible contributors, inasmuch as they facilitate contact between radicalising agents, allow their activity to escape surveillance, and are a vector for the introduction of terrorism-supportive norms in activity fields.

Research on radicalisation at the systemic level of analysis is the least developed to date, which is understandable, as investigating causes of causes (or in this case, causes of causes of causes) is much more challenging that investigating proximate conditions, especially when studying low-incidence phenomena.

Coda (1) The emergence of radicalising environments online

As was just stated, empirical research on the topic of emergence is underdeveloped in radicalisation and terrorism studies, all the more so regarding the emergence of virtual radicalising settings, a relatively recent phenomenon. Nevertheless, to illustrate the analytical uses of the RAF, some factors are discussed and their role in the emergence of radicalising settings online hypothesised:

- ***The diffusion of internet access and mobile communication technologies.*** The obvious first: without the internet and associated technologies, there would be no online radicalising spaces. The diffusion of these technologies beyond public (e.g. universities and libraries) towards private and semi-private spaces (e.g. private accommodations and personal mobile devices) is one of those systemic trends which has affected internet use, reshaped people's routines and activity fields to include increasingly more virtual environments, and, therefore, created new opportunities for exposure to a variety of moral contexts. The democratisation of broadband access and peer-to-peer technology has made the sharing of large files possible, enabling, for example, the transmission of videos with radicalising content (Edwards & Gribbons, 2013). Any future technological development, which would impact cyber access and content diffusion, has the potential to play a part in online radicalisation as a systemic factor.

- ***The diffusion of 'dark technologies'.*** Likewise, the democratisation of technologies which provide access to the so-called 'Dark Internet', such as Tor,

and the availability of encryption software are likely to impact the emergence of unsupervised and unmonitored settings, some of which may host radicalising activity.

- ***The diffusion of social networking platforms.*** Social networking platforms are reported to play a number of roles in online radicalisation. Notably, they are a vector of selection, in the sense that they put individuals in (witting or unwitting) contact with radicalising agents by creating connections between networks; they create a mechanism through which moral narratives can be propagated and amplified, and; because some of them enable anonymous and/or restricted interaction (e.g. friends-only spaces), they interfere with social monitoring of socialising activity.

- ***The regulatory environment.*** Governments, international agencies, Internet Service Providers, platform owners: all are subject to rules and regulations which limit or enable their ability to regulate internet content (Neumann, 2013), and therefore monitor and interfere with activity taking place in online settings, or stem the propagation of radicalising messages. The regulatory environment may be one of the single most important factors impacting the emergence of online radicalising settings.

- ***The deficit of digital media literacy.*** Several factors come under this heading: notably, an inter-generational gap, which means that parents are not always equipped with an understanding of the technology sufficient to be able to monitor the online behaviour of their children, and that agents of law enforcement and other authorities may not always be *au fait* of the latest developments in terms of cyber-technology, and risk being always one step behind. Literacy also refers to the skills, or lack thereof, one can call upon to interpret, evaluate and interact with media content in a mature way. Though the concern about a lack of literacy is often aimed at children and young people, adults, too, may experience psychological distortions when interacting in the new media environment. All of these factors will have an impact of the level of formal and informal supervision of various online settings.

- ***The collective efficacy (or lack thereof) of online communities.*** Collective efficacy is defined as "social cohesion among neighbors combined with their willingness to intervene on behalf of the common good" (Sampson, 1997) and is consistently associated with lower crime and violence in neighbourhoods. Likewise, the capacity and willingness (or unwillingness) of online communities to intervene to counter radicalising activity (e.g. by challenging radicalising moral norms) which occurs within their corner of cyberspace is likely to have a major influence on the moral context of online settings, and, therefore, on their effectiveness as radicalisation-supportive environments. Witness grass-roots initiatives to lobby Facebook or Twitter to take down various kinds of offensive

content. Neumann (2013), however, observes that there appears to be an 'enthusiasm gap' between online extremists and other internet citizens, with the former hogging some fora while the majority, who undoubtedly disagrees with much of their discourse, remains silent.

- ***The availability of radicalising and other moral narratives.*** Radicalising, and counter-radicalising, moral norms are often effectively conveyed in the form of narratives. The availability of such narratives (and counter-narratives), which can be readily transmitted by socialising agents, is also likely to be a factor influence the emergence (or the suppression, in the case of counter-narratives) of radicalising settings.

Coda (2) Analytical models as guide for action

Although the main role of the IVEE model in general and the RAF in particular is to guide PRIME's research activities, such analytical frameworks may also have value as cross-contextual guides for action. Whether one is faced with a resurgence of ethno-nationalist terrorism in a foreign country or with sporadic cases of home-grown radicalisation, the first set of questions to ask, before intervention can be designed, are the same. Chiefly:

- Where is the radicalising activity taking place?

- On what basis (socio-demographic characteristics and personal preferences) are individuals selected for exposure to settings where this activity is taking place?

- What are the factors which have allowed (or failed to supress) the emergence of these settings in this particular environment?

  o What stands in the way of these settings being effectively supervised, either by state authorities or by community members?

  o What makes it possible for radicalising agents to gain access to these settings?

  o What makes it possible for radicalising moral norms to be introduced into these settings and what forms do these norms take?

- Why are some of the individuals who are exposed to these settings susceptible to moral change?

5.2 Analysing terrorist action

The point has already been made that it is analytically crucial to distinguish the process of development of propensities for action (e.g. radicalisation) from processes of action (e.g. terrorist act), if only because a person can engage in an action without having acquired the propensity to do so. Like radicalisation, the situational model of terrorist action articulates how processes at different levels of analysis interact in the explanation of terrorist action.

5.2.1 Individual propensity

A terrorist propensity results from the internalisation of terrorism-supportive personal morals (terrorism-supportive moral beliefs, values and commitments to terrorism-promoting rules of conduct, and associated moral emotions), as well as the level of capacity to exercise self-control. As expounded above, terrorist propensity is the outcome of the process commonly called radicalisation.

However, as previously stated, a terrorist propensity is not necessary for someone commit an act of terrorism: sufficient external pressures (e.g. peer pressure; a setting where terrorism is enforced as a social norm; acute stress or emotion; presence of drugs or alcohol) can override personal morals and internal controls in the face of the motivation to offend (e.g. being blackmailed into taking part in a terrorist plot). While such a configuration may be unlikely to arise in cases of LAEs, it should nevertheless be mentioned.

5.2.2 Exposure

Selection

The same mechanisms of social and self-selection which place (or not) particular people in radicalising settings operate to place them (or not) in particular criminogenic settings. Place of residence, group membership, personal preferences and routines – here again these factors will play a part in explaining how a person came to be exposed to a setting, in which she eventually committed an act of terrorism (or from which she acquired the capability to do so).

Criminological research has shown that people with a high criminal propensity will select themselves into settings which present opportunities for offending, while individuals with a low criminal propensity will not spend time in criminogenic environments (Wikström et al, 2012). Though the same kind of longitudinal data is not available, there is every reason to believe that the relationship holds for terrorism. This means that radicalised individuals are more likely to place themselves in situations which present opportunities for involvement in terrorism than the non-radicalised.

Setting

The *situation* in which the terrorist action takes place arises from the interaction between the person and her propensity, and a setting with particular characteristics, which encourage and enable acts of terrorism (or not, as the case may be).[12] The notion of setting overlaps with that of place, in the sense that the setting is the part of a place that the actor can perceive through his or her senses at any given time. A number of characteristics of settings, recapitulated below, are hypothesised to play a pivotal role in the terrorist action process.

Temptation, provocations, opportunities and affordances

Criminogenic settings are characterised by the presence of features that can be perceived by actors as temptations, provocations or frictions, which may result in the emergence of the motivation to act. When a jihadist group uploads videos depicting scenes of Western soldiers harming civilians in Muslim lands, they are trying to expose people, some of whom may already have a propensity for terrorism, to situational frictions and provocations, from which the motivation to act can emerge. In other words, they are trying to get terrorism-prone individuals, most of whom would not feel inclined to move, *'off the couch'*.

Closely associated with the motivational features of a setting are opportunities and affordances (Pease, 2006), which are understood as more or less immediate properties of situations which enable the commission of crime (without compelling it). The concept of opportunity is discussed at length in the situational crime prevention literature (for an in-depth discussion in the context of terrorism, see Clarke & Newman, 2006; Roach et al., 2005). In short, settings afford opportunities for the planning and commissioning of terrorist acts to the extent that they present attractive targets, allow access to convenient and effective weapons, or make available other tools that support the commissioning of terrorist acts (e.g. finances).

Motivation and perception of capability

As per Wikström (2006), *motivation* is defined as "goal-directed attention." It is a situational process; in other words, *it is not a stable individual characteristic*, but the outcome of the interaction between the person and her environment. Motivation triggers the action process. It is necessary to move people to action (colloquially again, to *'get them off the couch'*) and must be sustained through time for the action process

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[12] Although we speak of *a* setting and *a* situation, this is for analytical clarity only; it is evident that an action can be an extended process that carries across a series of settings.

to carry on. It can direct (motivations tend to entail a set of actions), but does not *determine* the type of action which will be taken in response to the motivation (the same motivation can be served by many kinds of actions).

Because motivation is a situational process, any change in the environment can lead to a change in the situation perceived by the actor, and therefore a change in their motivation to carry out a particular act. This is a fact that terrorist groups are well aware of. When a handler accompanies a suicide bomber to the scene of the attack, they are arguably trying to ensure the continuity of a situation that may have started long before the attack process was under way and are therefore trying to maintain the bomber's *motivation* up until the last moment. Any change in the action-relevant features of the situation (e.g. a child or pregnant woman spotted in the crowd; unexpected security measures) has the potential to disrupt the motivation to act.

This underlines again an important point of difference between propensity and motivation – their respective 'lastingness'. On the one hand, propensity is the outcome of a developmental process, which, as previously noted, results in "a lasting change in the way a person perceives and deals with her environment" (Bronfenbrenner, 1979:3). On the other hand, motivation is the outcome of a situational process, which results in a short-term change of behaviour. In sum, propensity change is slow but lasting, while the kind of behavioural change which is brought about by a change in situation (and therefore motivation) is fast, but may only last as long as the source of motivation (the situation) remains. This has clear implications for prevention, as those interventions which target propensity and those which target motivation are likely to require very different kinds of efforts and will have effects of different longevity.

The RAF includes the hypothesis that one the main conditional elements which affects the maintenance (or not) of motivation is the *perception of capability*. For motivation to be sustained beyond the initial perception of a temptation or provocation, a person has to perceive (a subjective process) that they have the capability to carry out the action successfully. Without some sense that something is *doable*, most people will not 'stay off the couch', assuming they stood up in the first place.

During the attack process, the situation faced by the assailant may change and a chosen course of action will appear to outstrip their capability; as suggested above, motivation will then wane and is likely to fade. Capability explains why the majority of predisposed individuals who consider involvement in terrorism end up doing nothing, while a good number of those who do something end up getting caught. When an article like "Make a bomb in the kitchen of your mom" is published in *Inspire Magazine* (Lemieux et al, 2014), the author's intent is likely to shore up the *perception of capability* of individuals who are already terrorism-prone and already moved to act,

but whose motivation may flag in the face of the challenges that have to be overcome before they can carry out a terrorist attack.

While capability entails physical, material, but also neuropsychological (cognitive) and spiritual resources, people can, of course, misjudge their abilities and *perceive* that they own capabilities which they have not, in fact, acquired (e.g. the ability to remain calm and determined under pressure; a sufficient knowledge of explosives; a reliable group of co-conspirators), which is why a distinction must be made between subjective and objective capability (resources). Banding together with co-conspirators is arguably another way to shore up one's perception of capability and address the potential problem of flagging motivation, as well as pull together material resources. This may offer a hypothesis to explain the relatively low incidence of lone compared to group actor terrorism.

Moral context

Among the features most relevant to the criminogeneity of a setting are the moral norms which are in force in the setting and how strongly (or weakly) these norms are enforced, formally (e.g. by police) or informally (e.g. by passers-by) – what is traditionally called *deterrence*. Some settings may enable the preparation and commission of terrorist acts, because the norms which are socially promoted and enforced encourage terrorism and other acts of crime (e.g. neighbourhoods controlled by terrorist organisations and their sympathisers).

When the ideologues of a terrorist movement formulate lengthy moral and legal arguments which promote the view that terrorists are soldiers in a time of war, and therefore that the usual rules of conduct prohibiting killing do not apply, they are aiming to change the moral context to influence individuals' perception of action alternatives in favour of terrorism. In this sense, much of the same observations made about radicalising settings apply to some of the settings where acts of terrorism are planned and prepared.

Arguably, terrorism occupies a special place in most societies' legal and moral discourses specifically because, unlike most other crimes, the offenders do not limit themselves to breaking moral norms. The declared aim of their criminal activity is to usher in new rules of conduct altogether, which threatens the social order. This would entail that their (public) efforts to influence the moral context are more likely to be deterred (trigger a stronger reaction from authorities and citizens) than would the promotion of milder, less system-threatening forms of deviance.

Perception of action alternative and choice

Someone who perceives terrorism as a possible action alternative in a particular situation still has to choose to carry it out. Importantly, that choice does not have to be rational (e.g. weighing different options); it can be habitual. Habits tend to arise when people are exposed to the same settings again and again, where they perform the same actions. It may seem counter-intuitive to think that habit could play any part in terrorism acts, but one may think of the training that soldiers undergo: the purpose of some of these exercises (e.g. endless repetition of bodily gestures) is to ensure that when faced with the decision to kill the enemy, the soldier does not stop to think about it, but proceeds from automatism. The same kind of process may be implicated in the commission of terrorist acts; in fact, they may be part and parcel of the planning and preparation phase and address what a would-be attacker perceives as a weakness in their capability to act.

When not acting out of habit, people have to make the choice whether or not to get involved in terrorist action and, most likely, renew that choice each time they encounter new situations, which each time creates an opportunity for other agents to influence their decision-making. Agents can interfere in the deliberation process by making the actor perceive an action alternative he or she was not aware of. This works both ways, in that this applies to supporters and preventers alike. An agent can make the actor see terrorism as an alternative (as a co-conspirator), or they can provide them with an *alternative to terrorism*, which would still allow them to act upon their motivation. External agents can also interfere in the deliberation process by weakening the person's self-control (e.g. applying stressful social pressure; supplying drink or drugs), but also by strengthening it (e.g. sobering them up).

5.2.3 Emergence

Much as was the case with the analysis of radicalisation, social ecological and systemic factors are relevant to the analysis of acts of terrorism and their preparation to the extent that they support or suppress the emergence of any of the situational features involved in exposure. Taken together, these features can be thought of as the 'opportunity structure', which enables (or suppresses) the terrorist activity of LAEs. Examples of such factors are what Clarke and Newman (2006) term "facilitating conditions", such as the general availability of access to firearms in a given jurisdiction, the proliferation of anonymous communication technologies, the resources granted intelligence services, or any factors that affect the level of trust between authorities and communities, whose members are natural guardians and potentials witnesses to an LAE's preparatory behaviours.

5.3 Risk Analysis Matrix

To represent events in such a way as to identify concrete points of intervention, the RAF set out here can be usefully translated into scripts (graphical representations), that represent processes through their associated markers and symptoms (observable indicators).

To serve as a clear guide to the RAPA scripting teams, who are charged with collecting the data from which the scripts will be built, the RAF is synthesised in a matrix (Figure 1). Each column of the matrix represents an analytical phase of the LAEE (radicalisation, attack preparation, attack), each row represents a level of analysis (individual, situational, social ecological, systemic), and each cell is populated with the key categories of causal factors and mechanisms involved. Theoretically, disrupting any causal factor or mechanism should prevent, interdict or mitigate the LAEE process; therefore, logically, information about these factors and mechanisms should form the basis of the LAEE scripts.

As with any representation of multi-level processes and events, analytical distinctions are to some extent arbitrary and conventional. For example, as explained above, to the extent that motivation is a property emerging out of the interaction of the characteristics of individual (actor) and situational (setting) entities, it does not belong *strictly* to any one analytical level. Furthermore, the RAF draws from SAT in theorising individual susceptibilities and propensies, and relevant features of situational settings, as direct influences upon the development of LAEs (i.e. radicalisation) and their behaviour (i.e. attack preparation and attack), while ecological and systemic factors and processes are theorised as indirect influences (i.e. "causes of causes") of propensity development or behaviour.

This has implications for data collection, as relevant information is much more likely to be recorded and accessible regarding direct influences, rather than indirect ones. Therefore, data needed to populate some rows of the matrix is more likely to be available to the scripting teams, compared to data relative to other rows (the fourth row in particular). Likewise, given the extended processes likely to be involved in radicalisation and, to a lesser extent, attack preparation, comprehensive data is more likely to be recorded and accessible to some columns (some cells in particular), which are may refer to events more easily circumscribed in time and space.

Hence, the cells of the matrix are differently shaded. The darker the shading of the cell, the more likely it is estimated that it will be possible to capture data relevant to the factors and processes it contains. The lighter the shading, the less likely.

Like all theoretical frameworks, the RAF represents an 'ideal-type', and as such is needed to inform, but cannot compel, the project's research activities, which must contend with the common slew of practical obstacles.

The categories contained in the matrix, organised by level, can be described as follows:

Individual level

- *Susceptibility to moral change*. Evidence of cognitive susceptibility to moral change (or lack thereof) and of the historical factors involved in the personal emergence of this susceptibility (or lack thereof).

- *Susceptibility to social selection.* Evidence of factors of social selection that dispose the LAE to exposure to radicalising settings in their environment (or lack thereof).

- *Susceptibility to self-selection.* Evidence of factors of self-selection (personal preferences) that dispose the LAE to exposure to radicalising settings in their environment (or lack thereof).

- *Social, physical and cognitive resources.* Evidence of resources relevant to the commission of the terrorist act (e.g. skills, intelligence, money, military experience; i.e. objective capability; see Ekblom & Tilley 2001) present at the outset of the action process.

Situational level

- *Exposure to radicalising settings.* Characteristics of the settings (real or virtual) in which exposure to radicalising teachings took place and factors that explain the presence of the actor in the setting (e.g. type of personal preference).

- *Radicalising agents.* Characteristics of the actor(s) (including virtually present) who transmit the radicalising teachings and evidence of relationship between the LAE and the actor(s) (or lack thereof).

- *Radicalising teachings.* Content and format of radicalising teachings present in the setting (e.g. specific narrative).

- *Social monitoring context.* Evidence of willingness and capacity of formal and informal guardians to monitor and control the socialising activities taking place in the setting (or lack thereof).

- *Opportunity structure.* Characteristics of opportunities and affordances for preparation and commission of a terrorist act afforded by the environment (or lack thereof).

- *Moral context.* Characteristics of agents and measures of formal (e.g. police) and informal (e.g. neighbours) deterrence against the preparation of a terrorist

act present in the environment (or lack thereof); characteristics of moral norms enforced in the environment (e.g. terrorism-supportive community values).

- *Perception of action alternative.* Characteristics of the situation in which the LAE came to perceive terrorism (as opposed to another course of action) as a viable action alternative.

- *Perception of capability (risk).* Evidence of LAE's self-assessment of their own capability to carry out preparation and attack (i.e. subjective capability).

- *Emergence of motivation.* Characteristics of the situation in which the LAE acquired the motivation to engage in an act of terrorism and evidence of the nature and maintenance of this motivation (or lack thereof).

- *Maintenance of motivation*. Evidence that the motivation to engage in an act of terrorism was affected by changes in perception of capability at any point of the preparation and attack process (or not) (e.g. downgrades ambitious attack as a result of perception that capability is insufficient; evades site of attack when faced with police).

Social ecological level

- *Emergence and maintenance of radicalising settings.* Proximate factors which influence the emergence and maintenance (or lack thereof) of radicalising settings in the LAE's environment, and which influence selection processes into these settings (e.g. neighbourhood segregation).

- *Emergence and maintenance of opportunity structure.* Proximate factors which influence the emergence and maintenance (or lack thereof) of opportunities for terrorist attacks in the LAE's environment (e.g. immediate facilitating conditions; see Clarke and Newman, 2006).

Systemic level

- *Emergence and maintenance of radicalisation-supportive social ecologies.* Distal factors which influenced the emergence and maintenance (or lack thereof) of environments that produce radicalising settings, and which influence selection processes into these settings (e.g. foreign policy).

- *Emergence and maintenance of opportunity-supportive social ecologies.* Distal factors which influenced the emergence and maintenance (or lack thereof) of opportunities for terrorist attacks in the LAE's environment (e.g. gun laws).

- *Emergence of social selection processes.* Distal factors which influence social selection in society (e.g. residential segregation between social groups).

Figure 1 Risk Analysis Matrix

<table>
<thead>
<tr>
<th rowspan="2"></th>
<th rowspan="2"></th>
<th colspan="3">Phase of Event</th>
</tr>
<tr>
<th>Radicalisation</th>
<th>Attack Preparation</th>
<th>Attack</th>
</tr>
</thead>
<tbody>
<tr>
<td rowspan="4">Level of Analysis</td>
<td>Individual</td>
<td>Susceptibility to moral change

Susceptibility to social selection

Susceptibility to self-selection</td>
<td>Social, physical and cognitive resources

Susceptibility to social and self-selection</td>
<td>Social, physical and cognitive resources</td>
</tr>
<tr>
<td>Situational</td>
<td>Exposure to radicalising settings

Radicalising agents

Radicalising teachings

Social monitoring context</td>
<td>Opportunity structure

Moral context

Perception of action alternative

Perception of capability (risk)

Emergence of motivation</td>
<td>Opportunity structure

Moral context

Perception of action alternative

Perception of capability (risk)

Maintenance of motivation</td>
</tr>
<tr>
<td>Social Ecological</td>
<td>Emergence and maintenance of radicalising settings</td>
<td>Emergence and maintenance of opportunity structure</td>
<td>Emergence and maintenance of opportunity structure</td>
</tr>
<tr>
<td>Systemic</td>
<td>Emergence and maintenance of radicalisation-supportive social ecologies

Emergence of social selection processes</td>
<td>Emergence and maintenance of opportunity-supportive social ecologies

Emergence of social selection processes</td>
<td>Emergence and maintenance of opportunity-supportive social ecologies</td>
</tr>
</tbody>
</table>

6. Terminology

To conclude the introduction of the RAF, this last section addresses the issue of terminology. While it is traditional to open a report of this kind with an overview of definitional issues, rather than close it, the following discussion is informed by the analytical discussion conducted up to this point.

6.1 The problem

It is a rare academic review of the terrorism literature, regardless of the specific topic, which does not lament the lack of universal agreement regarding the definition of terrorism. While some have diagnosed the problem as insoluble and elected to set it aside (Smelser & Mitchell, 2002) or adopted a would-be pragmatic "I know it when I see it" attitude (Laqueur, 1977), others have recognised that a science of terrorism will be held back if the term cannot be transformed into "a useful analytical term", as opposed to "a polemical tool" (Crenshaw, 1995, p. 7).

Indeed, the definition of terrorism has become a topic of study of its own. In a seminal paper, Schmid and Jongman (1988) report a survey of prominent scholars, which ambitioned to produce a consensual definition of terrorism, aggregating over seventy elements identified from the analysis of questionnaires. A similar effort by Weinberg, Pedahzur and Hirsch-Hoefler (2004) yielded a list of eight recurrent definitional elements (violence, political, fear, threat, victim, tactic, civilians, movement), the ranking of which seemed to vary over the decades – susceptible, it seems, to the fashion of the time. At last count, the revised academic consensus definition of terrorism ran to twelve paragraphs (one per 'definitional element') and 565 words (Schmid, 2011). Arguably, operationalizing such a definition may present some challenges. The relatively more recent concepts of extremism and radicalisation are just as contested and resistant to definitional agreement as is terrorism, if not more so (Horgan, 2008; Richards, 2010; Schmid, 2004, 2013). The lexical proximity of the terms *radicalisation* and *radicalism* has done much to muddy these particular conceptual waters, with the result that not only are neither terrorism nor radicalisation well-defined, their *relationship* to each other remains poorly articulated.

We agree with Horgan (2005) that a lack of clarity as to what scholars are setting out to explain is the main impediment to theoretical progress and justifies continued scepticism that a "common pattern of causation" (Crenshaw, 1981) may be found, which could encompass a seemingly heterogeneous set of contexts, motives and behaviours.

As with most obdurate problems, it may be that the problem of the definition of terrorism and radicalisation appears intractable because it is ill-posed, and ill-posed

problems, by their nature, cannot be solved. While achieving consensus may be an appropriate, even a necessary, quality of any given legal, political or operational definition (more on this in the next section), consensus is not the yardstick by which scientific (analytical) definitions are measured, though it may be a desirable consequence. Rather, the essential qualities of a scientific definition are that it should be *reductive*, in that it should circumscribe with parsimony the phenomenon to be explained, and *nominalist* or *conventional*, in that it should state what a word (which may have a different meaning in the common language; e.g. *radicalisation*) is taken to mean for the scientist's particular purpose. When dealing with the definitional issue, the case can be made that there are no *good* or *bad* definitions *per se*; rather, there are definitions which are appropriate or inappropriate for their particular purpose (e.g. scientific, legal, etc.).

Empirical studies of terrorism and radicalisation have tended to bypass the definitional headache by adopting pragmatic, operational definitions. While this is certainly an effective strategy to adopt when concerned with data gathering, the proliferation of these operational definitions, which share varying degrees of overlap and may be informed by incompatible theoretical premises, does not address the concerns of scholars such as Horgan and Crenshaw, mentioned above.

One can go some way towards tackling this perennial problem by remembering to systematically distinguish between *analytical* and *operational* definitions. Analytical definitions set out the meaning of abstract concepts which have theoretical significance; they state *what the theory sets out to explain*. Operational definitions are, in whole or part, translations of an analytical definition into measurable, or at the very least observable, terms. The point can be put forward that the continuing intractability of the definitional problem in terrorism studies owes not only to a misunderstanding of the characteristics of scientific definitions, but also to the unsuspecting conflation of analytical and operational (or working) definitions of concepts such as terrorism and radicalisation.

6.2 Analytical definitions

6.2.1 Defining terrorism

In response to the call set out by the European Union under the Seventh Framework Programme, the PRIME Project stated that it would set out to model and understand lone actor extremist events. By focusing on events and processes, PRIME takes behaviour as its main object of study; more specifically, behaviour which manifests in actions that cause intentional harm to other individuals or to society at large. Intentional harmful actions perpetrated by actors whose moral beliefs are deemed 'extreme' relative to the socio-political norms of the society in which they act have fallen conventionally under the legal heading of terrorism. Hence, for the sake of

conceptual clarity, PRIME equates the extremist acts carried out (or attempted) by lone actors with terrorist acts.

Against the theoretical background set out above, an act of **terrorism** can be defined conceptually as the knowing breach (or attempted breach) of a rule of conduct which proscribes violent or coercive acts carried out in certain circumstances, with the perceived intent to achieve social or political ends. To explain terrorism, then, is to explain why an individual knowingly[13] breaks such a rule of conduct, rather than to explain why someone would indiscriminately shoot people or would blow themselves up or would join a terrorist organisation. Such a definition sets out what all acts of terrorism have in common across jurisdictions and time periods, making it general enough to use as a departure point in the search for a general risk analysis framework, but narrow enough to clearly circumscribe the object of scientific enquiry.

Such a definition also has the (analytical) advantage of avoiding reference to intra-psychic phenomena, such as motivation, which can only be ascertained with access to the mind of the offenders at the time of the offence or through reliance on their claims about the causes of their own actions. While the *law* (i.e. rule of conduct) which proscribes certain kinds of acts (e.g. the UK Terrorism Act 2000) may reference the (perceived) intent or motive behind the act, what the theory sets out to explain is the *breach of the rule*, not the perception of the intent behind it. Arguably, the problem of the lack of consensual definitions of terrorism is that definitions try to capture *perceptions* of the intent behind the act; these are by definition subjective and inimical ground for consensus.

This may seem a subtle, if not a hair-splitting, point, but it is worth making, because:

- Individuals may engage in acts of terrorism for any number of reasons aside from those traditionally stated in definitions of terrorism (e.g. "the promotion of diverse ideological, political, social, national or religious causes and objectives"; Schmid, 2011), much as people generally engage in the same act of crime as the result of many different motivations (e.g. financial gain, loyalty to a friend) and much as people engage in very different acts of crime for the same reason. Motivation, while directing attention to a particular goal and driving the individual to action, is essentially heterotypic and situational and may even be unfathomable to the actor once the situation that brought it about has changed.

- Secondly, motive or motivation, whatever it may be, is also often offered as part of the *explanation* for terrorist behaviour. This is problematic, because for the purpose of scientific explanation, it is important that the terms of the *explanandum* and *explanans* do not overlap to avoid tautology (i.e. a terrorist is

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[13] This rules out accidental law-breaking, but not action under coercion or any other forms of external influence.

an individual who engages in political violence for political motives), as well as to avoid the introduction of untested assumptions in the *explanandum* (e.g. that terrorism is caused by specific categories of motives, incentives or opportunities). Hence, an analytical definition of terrorism which sidesteps such assumptions is to be preferred.

6.2.2 Defining radicalisation

Given the above definition of terrorism, **radicalisation** can be defined as *the process of psychosocial development by which an individual acquires a terrorist propensity*, whereby **terrorist propensity** can itself be defined as *the lasting tendency to perceive terrorism as a viable action alternative*. To be radicalised is thus to acquire personal morals which support and encourage involvement in acts of terrorism. To explain radicalisation is to explain the developmental process by which this terrorism-supportive morality is acquired. As per the discussion above, radicalisation is understood as a *cause of the causes* of terrorism. Here again, the proposed definition is both general and narrow, setting radicalisation apart from fuzzier notions – such as radicalism and extremism – or from related but distinct problems, such as engagement in a terrorist group.

The point deserves to be made again that such a definition should not be taken to imply that *only* individuals who have radicalised (i.e. who perceive terrorism as a legitimate action alternative in some circumstances) may carry out acts of terrorism. The situational model of SAT described in a previous section explicitly sets how individuals who *do not* perceive terrorism as a possible alternative for action (who do not have a terrorist propensity) may yet become (knowingly) involved in an act of terrorism under situational pressures which overcome their self-restraint. *The relationship of radicalisation to terrorism is not, therefore, assumed to be a sufficient or necessary one.*

6.3 Operational definitions

6.3.1 A remark on science vs. engineering

While clear analytical definitions are necessary to the edification of theoretical foundations for any knowledge-base, applied research also requires operational (or working) definitions, especially when it ambitions to inform the design of social technologies (countermeasures).

Without delving into needless debates, developing causal explanations of a given phenomenon is a *scientific problem*, while designing interventions that seek to prevent or mitigate said phenomenon is an *engineering problem*. Science and engineering have

different epistemological outlooks. While science measures success by how close it has come to truth, engineering measures it by how satisfied users (and increasingly stakeholders) of the designed system are (Bunge, 2001). Some of the tension regarding the definition of terms like terrorism, especially between communities of academics and practitioners, likely owes, in large part, to diverging needs; while some are concerned with establishing the truth of their theories, others are concerned with designing practical or ethical solutions to problems. As stated earlier, good definitions are *good for a purpose*; hence, a scientific definition and an engineering or operational (practical) definition may be compatible (they should be, if the engineers and the practitioners want to draw from the scientific knowledge-base to design their solutions), but they are unlikely to be identical.

In the case of PRIME, analytical definitions, as above, are needed to inform the design of the general risk analysis framework (the theoretical base of the project), while working or operational, i.e. practical and consensual, definitions are needed to inform the collection of the data that will feed into the RAPA scripts and the design of the countermeasure requirement portfolios.

6.3.2 Defining lone actor extremists

The operational definition of most concern to PRIME is that of a *lone actor extremist*. As an operational definition, it had to be informed at the outset by a number of pragmatic requirements, several of which, it was expected, may not become apparent until the project was under way.

These considerations emerged as follows:

- The operational definition should allow for the selection of cases based on observable open information (e.g. it should not *require* access to the offenders or to other kinds of privileged information, which may be available for some cases but was unlikely to be accessible for all cases, given the time and resources available);

- The definition should be compatible (though not necessarily identical) with the definition used to generate the pre-existing large-N lone actor database that the PRIME project aimed to update (see Gill et al., 2014), so as not to 'squander' a rich source of data.

- The definition should not be so wide as to lead to the inclusion of cases, which self-evidently fall outside of PRIME's remit and the particular interests of stakeholders, and would take the project away from the study of low-probability events;

- The definition should lead to the inclusion of types of cases that are of concern to the end-user community (e.g. cases where individuals with a short- or long-term association with a group or organisation 'fall off the radar' or are 'ejected' from the movement, and later go on carry out a lone attack).

These last two requirements were heavily informed by the project's engagement and data collection activities involving end-users and stakeholders (see D2.6; D7.1; D8.1). From an engineering perspective, it was important that the problem definition adopted by PRIME overlap with what the project's intended audience (and potential implementers) *perceived and reported* was the problem they have to deal with, given their professional experience. In other words, the operational definition had to be reasonably consensual and capture what end-users and stakeholders believe the problem to be.

In view of these requirements, **lone actor extremists** are defined as individuals who engaged in, or planned to engage in, an act of lone actor terrorism, whereby terrorism is understood as "the use or threat of action where the use or threat is designed to influence the government or to intimidate the public or a section of the public, and/or the use or threat is made for the purpose of advancing a political, religious, or ideological cause." (Gill et. al., pp.1-2).

Defining *loneness* was less straightforward. Early on in the project, it was proposed that 'lone actor' should be defined operationally with reference to the middle stage of the RAF, namely the *attack preparation* stage, which, as per the RAF above, is chiefly characterised by 1) the **emergence of the motivation to act**, as a result of the perception of situational temptations and provocations, and/or of opportunities to act upon existing moral commitments (the "getting off the couch" process); 2) the **perception of particular action alternatives**, which arises from the interaction between the individual's action propensity (notably, their personal morals) and the action-relevant features of the moral context (moral norms and their level of enforcement); and 3) the **perception and acquisition of the capability to act**, which includes the acquisition of psychological and material resources associated with attack preparation (the "staying off the couch" process).

A lone actor would therefore be an individual who had undergone these particular processes independent of the direct influence of a group, organisation or movement. In other words, they would be an individual who had not been specifically:

1) handed the motivation to act by a group or organisation;

2) suggested that terrorism is an appropriate form of action in response to that motivation by a group or organisation; and

3) provided with the capability to act (materially or psychologically) by a group or organisation.

This would mean, for example, that if the actor had radicalised (acquired their propensity for terrorism) fully or partly in a group setting, but proceeded alone from that point, they would qualify as a lone actor. However, if they had radicalised largely on their own, then been given the target and provided with the resources to carry out an attack by an organisation (e.g. they were 'recruited' *post* self-radicalisation), they would not be considered a lone actor.

The criteria included the qualifier *specifically* to make clear the distinction between cases of radicalisation and terrorism which have been spurred, enabled or facilitated by resources generated by terrorist groups or radical organisations *for a generic purpose* (e.g. online propaganda material; generic bomb-making instructions), and cases of radicalisation and terrorism which have been spurred, enabled or facilitated by resources generated by terrorist groups or radicalising organisations *for the use of a specific individual or group of actors*.

In the context of PRIME, lone actors would then be characterised as actors who *get off the couch* and *stay off the couch* predominantly under their own power.

While this operational definition captured the core population which PRIME set out to study, as well as captured those people whose activities end-users appeared most concerned with, as data collection activities got under way the value of introducing variation in the degree of command and control links experienced by lone actors became manifest, as it opened up more opportunities for comparison within our sample.

Hence, for comparative purposes, data was also collected on individuals with command and control links (i.e. who were trained and/or equipped by a group or organisation, and/or suggested their target by a group or organisation), but who went on to carry out their terrorist attacks alone.

7. Conclusions and next steps

Problems are local, but scientific models and theories are general. There are no general profiles of individuals involved in lone actor extremism, nor are there unique social or environmental factors which enable the emergence of radicalising

environments or of the conditions which facilitate the commission of lone actor terrorist acts. Characteristics of LAEs and the settings in which they operate vary with epoch and context. These phenomenological variations pose a challenge to researchers: seeking to explain given instances of lone extremism (for example, through a case study approach) produces deep explanations of the factors involved in the given case, but makes the task of generalisation difficult. By contrast, developing highly abstracted models which explain events by articulating general mechanisms may result in frameworks which account for most, if not all, instances of the phenomenon, but are of limited use to decision-makers, who are left to figure out how these general mechanisms manifest (i.e. *what they look like*) in the context of concern to them.

The PRIME project has set out to address this tension between specificity and generalizability by developing a general framework, which lays out the key mechanisms implicated in lone actor extremist events, with the aim of using this framework to guide the development of scripts of LAE radicalisation, attack preparation, and attack, balancing theoretical abstraction with empirical modelling (see D4.1 and D4.2 for more on the scripting approach).

The present document has presented a review of the relevant literature on radicalisation, terrorist attack preparation and planning, and the characteristics of terrorist acts, with an emphasis on these processes as they pertain to lone actor extremists. It acknowledges that this literature is still young and has drawn also, when relevant, from the literature in cognate problem domains.

The theory of crime causation, Situational Action Theory, which serves as the foundation of the PRIME Project's Risk Analysis Framework was introduced, before the RAF itself was outlined, in an effort to show how such a framework could organise the evidence reviewed in a coherent whole and serve as a theoretical guide for the research activities involved in the development of LAEE scripts. As planned, the RAF matrix set out in this document has been put to use to elicit and inventory the project's data needs (see D3.2, D5.1-3).

Next steps involve the completion of data collection activities and the development of the RAPA scripts (D5.4-6).

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