

Inside a Wave of Terrorism: The Dynamic Relation Between Terrorism and the Factors Leading to Terrorism¹

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That terrorism is not evenly distributed across space and time, but rather occurs in waves is a well known and generally overlooked piece in the puzzle of understanding why terrorism happens. This article proposes that terrorism, rather than being the extremist version of an ideology, is the contingent result of the availability of a number of factors. The reason why terrorism occurs in waves is that a number of these factors are reproduced by terrorist activities.² Terrorism, thus, becomes a system where a terrorist act, through positive feedback mechanisms, reproduces terrorism. In this article I attempt to untangle how the availability of some factors contribute to terrorism and how the positive and negative feedback mechanisms (in some situations) bring about the emergence of waves of terrorism (and in some situations does not). On the basis of these feedback mechanisms, I construct a dynamic model of the system of terrorism.

KEYWORDS

Global Terrorism, Islamic Militancy, Counterterrorism, Complexity

BIOGRAPHICAL STATEMENT

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² I define a wave in accordance with Tarrow's definition of a protest cycle "a phase of heightened conflict and contention across the social system" Sidney Tarrow, *Power in Movement: Social Movements, Collective Action and Politics* (Cambridge: Cambridge University Press, 1994). I use the term "wave" over "cycle" in accordance with the tradition in terrorism research and in order not to suggest a systematically recurring phenomenon. See Ruud Koopmans, "Protest in Time and Space: The Evolution of Waves of Contention," in *The Blackwell Companion to Social Movements* ed. David A. Snow, Sarah A. Soule, and Hanspeter Kreiesi (Malden: Blackwell, 2004), David C. Rapoport, "The Four Waves of Modern Terrorism" in *Attacking Terrorism: Elements of a Grand Strategy*, ed. Audrey Kurth Cronin and J. Ludes (Washington, DC: Georgetown University Press, 2004).

Introduction

The homegrown terrorists we see in the West, the Bali bombers, and the perpetrators of September 11 attacks are all somehow connected to, and are part of, a broader phenomenon of global Islamist Militancy,³ which includes transnational terrorists, insurgents, and guerillas. Terrorism and political violence in general is not evenly distributed, in temporal or geographic terms; rather it occurs in waves of heightened activity inside parameters of space and time.⁴ In modern history we have seen three waves of terrorism: the Anarchist, Anti-colonial, and left-wing waves which were all parts of broader waves of contention. The onset of the fourth wave of Islamist terrorism is generally considered to have been set in motion in 1979 with the Iranian Revolution and Soviet Invasion of Afghanistan⁵.

Not only do we know that the current phenomenon of Islamist terrorism is a wave, or at least part of a wave, we also know that there have been previous waves of contention and waves of terrorism. It is therefore remarkable that most explanations of why and how individuals become terrorists do not take into consideration the dynamics that go on inside a wave of terrorism.⁶ The analysis that does take the wave phenomenon

³ Terrorism, which is the focus of this study, is a subcategory of "militant activities" and Islamist Terrorism is thus a sub category of Islamist militancy. The analytical categories of militancy are not necessarily operative for the militants and the systemic relation between for instance terrorist actions and guerrilla warfare may in some instances be equally strong as between different terrorist activities.

⁴ Koopmans, "Protest in Time and Space: The Evolution of Waves of Contention."

⁵ Fawaz A. Gerges, *The Far Enemy - Why Jihad Went Global* (Cambridge: Cambridge University Press, 2005), Gilles Kepel, *Jihad - the Trail of Political Islam* (London: I.B. Tauris, 2002), Rapoport, "The Four Waves of Modern Terrorism".

⁶ Most attempts to explain why and how individuals become terrorists have either a context independent focus on the personal development from ordinary person to terrorist. See for instance Michael P. Arena and Bruce A Arrigo, "Social Psychology, Terrorism, and Identity: A Preliminary Re-Examination of Theory, Culture, Self, and Society," *Behavioral Sciences and the Law* 23 (2005), John L. Esposito and Dalia Mogahed, "Battle for Muslim Hearts and Minds,"

Middle East Policy XIV, no. 1 (2007), Catherine Schmidt, George Joffe', and Elisha Davar, "The Psychology of Political Extremism," *Cambridge Review of International Affairs* 18, no. 1 (2005), Marieke Sloopman and Jean Tillie, "Processes of Radicalisation - Why Some Amsterdam Muslims Become Radicals," (Amsterdam: Institute for Migration and Ethnic Studies, Universiteit van Amsterdam, 2006). Or a focus on background variables that are treated as independent. Tore Bjørgo, ed., *Root Causes of Terrorism* (Oxon: Routledge, 2005), Jefferey B. Cozzens, "Identifying Entry Points of Action in Counter Radicalization: Countering Salafi-Jihadi Ideology through Development Initiatives - Strategic Openings," in *Countering Radicalization Through Development Assistance* (Copenhagen: Danish Institute for International Studies, 2006).. There is also a vast literature available that recounts the development of the Islamist Militant movement. This literature is historical in the sense that it recounts what led to what from 1979 onwards, it is very insightful but also untheoretical and therefore not useful as a theoretical frame of current situations. See for instance: Jason Burke, *Al-Qaeda - the True Story of Radical Islam* (London: Penguin Books, 2004), Kepel, *Jihad - the Trail of Political Islam*, Olivier Roy, *Globalized Islam - the Search for a New Ummah*, The Ceri Series in Comparative Politics and International Studies (New York:

into consideration tends to treat waves as an almost mystic phenomenon, using metaphors like energy, for example, “*similar activities [which] occur in several countries, driven by a common energy that shapes the participating groups.*”⁷ In this article I will examine the wave phenomenon by looking at the dynamic relation between terrorism and the factors that cause terrorism.

When analyzing a phenomenon with significantly heightened activities in distinct periods, one would expect to find either an independent variable with large variation, like rain in the desert causing widespread blooming, or a self reinforcing process, similar to individuals going to a café because it is popular, thereby making it even more popular. Extensive quantitative research has been done into the root causes of terrorism and other forms of political violence. The independent variables: poverty, repression, youth bulges, etc, have, however, only been able to explain a very small part of the variation on the dependent variable⁸⁹. The occurrence of waves and absence of strong independent variables suggests that we should look for self reinforcing dynamics to explain what goes on inside a wave of terrorism.

It is argued that terrorism is the contingent result of a number of factors combined, and that some of these factors reproduce themselves in connection with terrorist attacks. Thus, wave of terrorism is the emergent result of terrorism which in turn catalyses more terrorism. In order to examine this complex relationship I will first adopt a bottom-up perspective on terrorist incidents and examine what components are needed to conduct a terrorist attack. Second, I will look at the origins of these factors with a focus on possible reproduction by terrorism. I will construct a dynamic model of how a system of terrorism functions, theorizing how waves of terrorism can occur.

Factors Leading to Terrorism

Terrorism does not depend on one single variable but on a number of variables that in some instances can be substituted for one another, but generally all need to be present. The factors shown in figure 1 (page 4) are pieced together by the incomplete material available from the terrorist attacks and plots in the west since 1989¹⁰.

Columbia University Press, 2004).

⁷ Rapoport, "The Four Waves of Modern Terrorism ", 47.

⁸ Bjørge, ed., *Root Causes of Terrorism*, Henrik Urdal, "A Clash of Generations? Youth Bulges and Political Violence," *International Studies Quarterly* 50, no. 3 (2006).

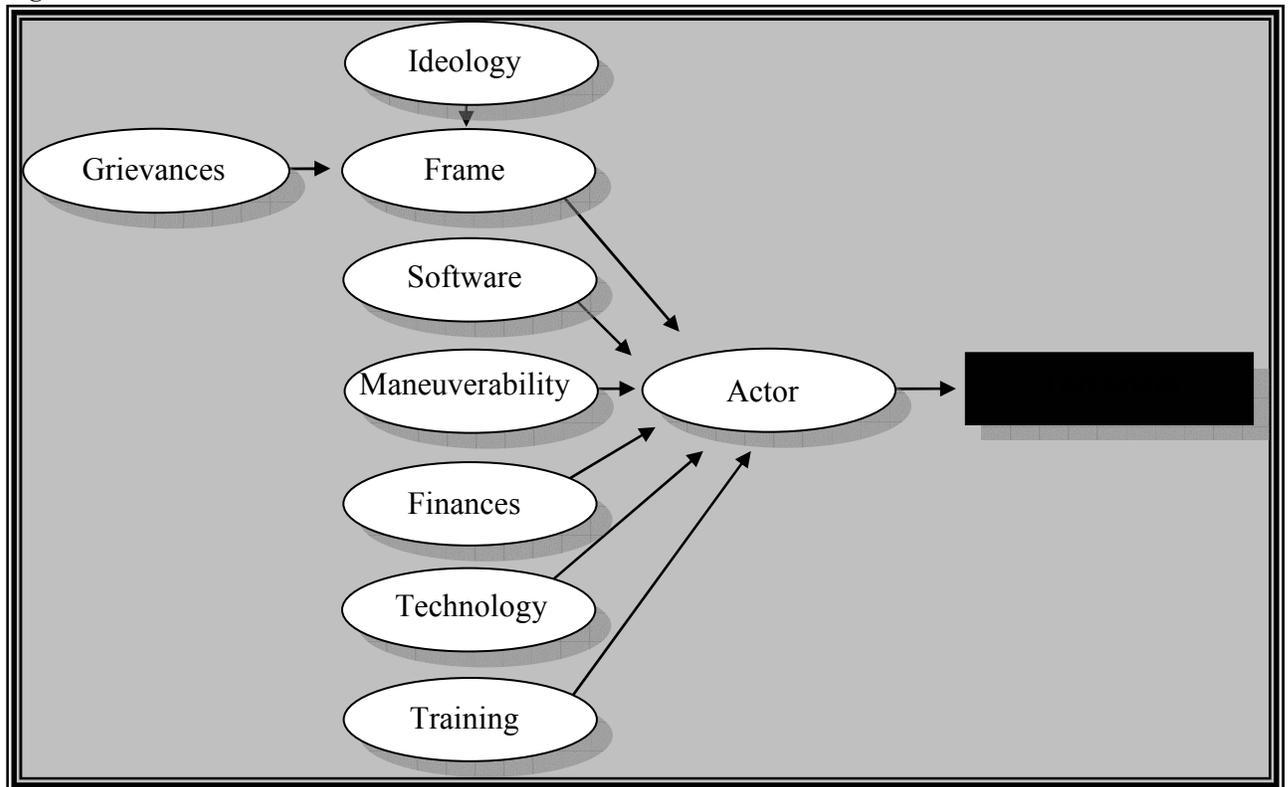
⁹ These findings are also consistent with research conducted by Charles Tilly on historical periods of heightened contention, finding only little connection between objective grievances and contention. Instead, contention has been the result of and a corrective to an imbalance in power, which goes on until the imbalance has been replaced by a new temporarily stabile state. Charles Tilly, *The Politics of Collective Violence* (Cambridge: Cambridge University Press, 2003), Charles Tilly, *Social Movements, 1768 - 2004* (Boulder: Paradigm Publishers, 2004).

¹⁰ List available on author's webpage.

Ideology

Terrorism does not exist in isolation. Throughout all four modern waves of terrorism, terrorism has been a part of an ideologically driven social movement. Generally, terrorists are only one of several militant components of the whole movement, such as the Russian Social Revolutionaries at the beginning of the twentieth century who helped spark the Russian Revolution. These actors were eventually executed by the more broadly based and better organized Bolsheviks. In some local settings, like the contemporary Western world, where strong government control of territory makes guerilla activities nearly impossible, terrorism may be the only militant part of a movement.¹¹ Terrorists, in order to radicalize, need to justify to themselves why it is reasonable to commit violent acts. The terrorists need to break the socialization not to commit violence.¹²

Figure 1: Factors Needed for Terrorism: Individual Level



Individuals involved in terrorism are action oriented, and often not the strongest ideologists; be it nationalist, communist or militant Islamic ideology. Ideology is important since it provides a necessary justification for action, creates a basis for recruitment among the less radical followers of the same ideology. In many cases, it,

¹¹ Gérard Chaliand and Arnaud Blin, eds., *The History of Terrorism - from Antiquity to Al-Qaida* (Berkeley: University of California Press, 2007), 40.

¹² Philip Zimbardo, *The Lucifer Effect - How Good People Turn Evil* (London: Rider Books, 2007).

functions as a marker enabling actors who could potentially cooperate to identify one another.

The role of the ideology as justification is particularly pronounced in the extremely literal Islamist Militancy, where the need to obtain *Fatwa* both on the legality of campaigns, but also on quite small tactical details has given an important role to clergy with sufficient religious credentials, who offer the desired rulings.¹³ Ideology also functions as a form of self presentation to potential future partners; such as violence capable recruits, financiers or others. In the case of the Hamburg cell, the ideology in form of clothing and long beards of the members attracted the attention of a co-passenger on a train while the group still planned to go to Chechnya. The co-passenger brought the young people into contact with individuals who would eventually take them to Afghanistan to meet Usama Bin Laden and later make them the most important part of the September 11 attacks.¹⁴

Oliver Roy¹⁵ has argued, Islamist ideology does not lead to violence directly; there is no “theology of violence”. Ulema, from the same school of thought, may take divergent positions on the use of violence. When Ulema takes a position in favor of violence, it is a political choice formulated in religious terms, usually after the decision to undertake a violent activity has been made. Ideology therefore is only a factor contributing to terrorism once it has actively been framed as such.

Grievances and Frame

It is inherently contested whether grievances lead to violence. Attempts to quantitatively explain terrorism and political violence causally by poverty, oppression, perceived injustices, etc. can generally only explain a very small part of the variation. In order to mobilize resources and individuals, terrorism depends on the perception of injustice. I have placed a “frame” as an intermediate variable between the grievances and the individual. Frames are the interpretive schemata that provides framework for comprehending the surrounding environment. Frames offer a language and cognitive tools for making sense of events and experiences, interpreting causation, and guide appropriate action.¹⁶

¹³ Chechnya is an example, where the unwillingness to provide a *Fatwa* allowing Chechnyan separatists to operate in Dagestan meant that the militants chose another cleric and hence altered ideology. See Julie Wilhelmsen, *When Separatists Become Islamists: The Case of Chechnya* (Kjeller: Forsvarets Forskningsinstitut, 2004), 36.. Even Usama Bin Laden needed the *Fatwa* of Abu Qutada, a renowned Islamic Scholar with the religious credentials Usama Bin Laden lacked when he was attacked by the Takfir Wal Hijra for being too conformist. See Burke, *Al-Qaeda - the True Story of Radical Islam*, 184.

¹⁴ National Commission on Terrorist Attacks Upon the United States, *The September 11 Commission Report* (New York: National Commission on Terrorist Attacks Upon the United States, 2004), 165-69.

¹⁵ Roy, *Globalized Islam - the Search for a New Ummah*, 257.

¹⁶ David A. Snow et al., "Frame Alignment Processes, Micromobilization, and Movement Participation," *American Sociological Review* 51, no. 4 (1986): 464.

In 2006 when young Islamists in Germany perceived the cartoons of the Prophet Mohammed in the Danish newspaper *Jyllandsposten* as an attack on Islam and decided it was an appropriate response to blow up trains in Germany it was, arguably, a matter of the cartoons fitting into an already existing frame of perceived injustices against Muslims and a struggle between the West and Islam.¹⁷

Software

Most terrorist attacks, particularly the case of those conducted by so-called “self starter” or “grassroots” groups in Europe, are not a novelty. They are versions of already seen attacks. The attacks are conducted by individuals with limited knowledge of the use of weapons and with little experience in setting up cells, operating clandestinely, target selection, recruiting, etc. The possibility to copy existing terrorists therefore not only adds to the sophistication of the operation but is often a necessary prerequisite for terrorist activities. Self-started groups often consist of very young individuals with limited intellectual resources who transform from ordinary teenagers into operational jihadists in as little as a few months. I use Brian Arthur’s software concept to describe this phenomenon.¹⁸

Software consists of complex elements of information that can be copied and recombined in different ways. The elements have a set of rules determining how they may be combined and used. When these rules have been learned, the software allows someone to take advantage of the complexity of the software without having to develop it, nor necessarily understand or appreciate how it works. A group may for example adopt an ideological line which appeals to potential recruits and donors, thus making them more successful and available for others to copy. The group need not be aware of this connection; they only need to recognize that adopting this ideological line binds them to follow certain rules. The Islamic brigade of the Bosnian Army, which was financially supported by mainstream Muslim communities, had rules of engagement which forbade attacks on monks and civilians and mistreatment of prisoners.¹⁹ These rules would have been incompatible with the behavior of the insurgents in Iraq, who in turn need to follow rules associated with their software, for instance enforcing pious life in the local population.

Software differs from training in the sense that it does not bring the individual terrorist skills. Rather, it provides a format for how individuals in comparable situations have been able to organize, plan, and carry out terrorist activities. Software can be imported only when circumstances are relatively alike, but distance does not appear to be an obstacle. There has been substantial exchange of software between Afghanistan and

¹⁷ Joseph Panossian, "Prophet Drawings Motivated by Suspects Behind Failed German Train Bombings, Investigator Says " *International Herald Tribune*, September 2 2006.

¹⁸ W. Brian Arthur, "On the Evolution of Complexity," in *Complexity - Metaphors, Models and Reality*, ed. G Cowan, D Pines, and D Meltzer (New York: Perseus Books, 1994), 73-76.

¹⁹ Roy, *Globalized Islam - the Search for a New Ummah*, 255.

Iraq, i.e. roadside bombs, suicide attacks etc., whereas attacks against transportation targets have spread across Europe. In his classic study, Robert Holden demonstrated how aircraft hijackings in the US were contagious, only when they were successful, and only in an American context.²⁰ The latter can possibly be explained by the particularity of the North American air traffic situation of the 1970s, meaning that software developed there was not directly applicable elsewhere.

The use of software explains why terrorists, also with no direct connection, keep repeating suboptimal solutions like the production of the highly unstable explosive, such as triacetone triperoxide (TATP), instead of stealing commercial explosives from demolition companies, farms or mines. Seen from an outside perspective, these commercial explosives would be practicable and more prudent for sensitive actions.²¹

Maneuverability

Terrorism depends on the absence of rigid government control and repression. In a strong authoritarian state, it is very difficult to plan and conduct terrorism. This is particularly true in cases if one is not a well connected terrorist to begin with, since the logistics of operations would be difficult. When planning terrorist acts, one needs to acquire explosives and weapons, conduct training, possibly purchase chemicals or other items that might draw attention, train in the use of these weapons, communicate with other militants etc. These are all difficult in the authoritarian state since there is a lack of easy maneuverability within society. Maneuverability in a society can either be found because the state is weak or, as it is the case with most democracies, not very repressive.

Maneuverability has degrees. The counterterrorism legislation, imposed by western countries since 2001, has decreased the maneuverability of Islamist militants. The decreased maneuverability today means that the behavior and activities of for instance the Hamburg cell would probably not have gone unnoticed today.²²

Materiel, Finances, Technology, and Training

Materiel are often downplayed in the contemporary literature on terrorism, since most terrorist attacks are inexpensive in a contemporary western context,²³ and because one can find instructions on the Internet for making bombs, toxins, chemical agents using

²⁰ Robert T. Holden, "The Contagiousness of Aircraft Hijacking," *The American Journal of Sociology* 91, no. 4 (1986).

²¹ An exemption to this general rule is the 2004 Madrid bombings where the explosives used were in fact stolen from a mine.

²² National Commission on Terrorist Attacks Upon the United States, *The September 11 Commission Report*, 160-73.

²³ The total cost of the September 11 attacks has been estimated to between 400.000 and 500.000\$ and the 7/7 London bombings have been estimated to have cost as little as a few hundred pounds. See Michael Buchanan, "London Bombs Cost Just Hundreds," *BBC News* 2006, National Commission on Terrorist Attacks Upon the United States, *The September 11 Commission Report*.

commercial products.²⁴ It does, however, appear that at least one in two terrorist attacks fail fully or partially because of technical malfunctions or bad execution. Therefore, one can make a case that the materiel side is not irrelevant.

Terrorist attacks are relatively inexpensive at the grassroots level. However, for the larger organizations it costs money to run camps, to pay for travel expenses, to buy false passports and to maintain a media structure, etc. These activities are often run and financed by actors who are not directly involved in the operational activities of a terrorist network.²⁵ Finances are used as a selection mechanism: Who is given the opportunity to travel? Who is invited to training camps in Pakistan? What is taught in these camps? Prior to September 11, al-Qaeda worked to a large extent as a venture capitalist: supporting attacks and organization buildings around the world on the basis of proposals from adherents.²⁶

The lack of training and technology and technological understanding has caused several terrorist plots to fail since September 11. The July 21, 2005 attacks in London,²⁷ the shoe bomber, Richard Reid, the 2006 German railway bombers, and the Glasgow bombers of 2007 all failed because the explosives did not go off as intended. Similarly, the (successful) attack on the USS Cole in 2000 was preceded by an attempted attack in the same year on the destroyer, the USS the Sullivan's, which failed because the terrorists' boat, overloaded with explosives, sank!²⁸

Substitution of Factors

It is obviously doubtful whether all the above factors are always needed. Terrorist attacks are not equally demanding, and individuals can adapt the tactic to the situation. If one has access to technology and seasoned terrorist operators, either because of foreign state sponsorship or a spill-over effect from a conflict in a neighbouring country, the need for manoeuvrability is less pronounced. Similarly, if one has sufficient manoeuvrability, the need for technology and training is limited as one can proceed by trial and error.

²⁴ Gabriel Weimann, *Terror on the Internet* (Washington D.C.: United States Institute of Peace, 2006).

²⁵ Evan F. Kohlmann, "The Role of Islamic Charities in International Terrorist Recruitment and Financing," in *Countering Radicalization Through Development Assistance* (Copenhagen: Danish Institute for International Studies, 2006), Loretta Napoleoni, *Modern Jihad - Tracing the Dollars Behind the Terror Networks* (London: Pluto Press, 2003), National Commission on Terrorist Attacks Upon the United States, "Monograph on Terrorist Financing," (Washington: 2004), Angel Rabasa et al., *Beyond Al-Qaeda Part 2: The Outer Rings of the Terrorist Universe*, 2 vols., vol. 2, Project Air Force (Santa Monica: RAND Corporation, 2006).

²⁶ Burke, *Al-Qaeda - the True Story of Radical Islam*.

²⁷ An attempt to replicate the 7/7 bombings two weeks later.

²⁸ Richard A. Clarke, *Against All Enemies: Inside America's War on Terror* (New York: Free Press, 2004), 222-27.

A Dynamic Model of a System of Terrorism and How a Wave Works

In the previous section, I have used the individual terrorist as a point of departure to identify the factors needed for terrorism; nothing however suggests that properties of the individual reveal anything in relation to terrorism.²⁹ The model in the following will therefore not include the actor, but focus on how the factors contributing to terrorism are reproduced or limited by terrorist incidents. I propose that, since it has not been possible to identify personal characteristics of the terrorists, terrorism is the contingent choice of actors, when the relevant factors are present.

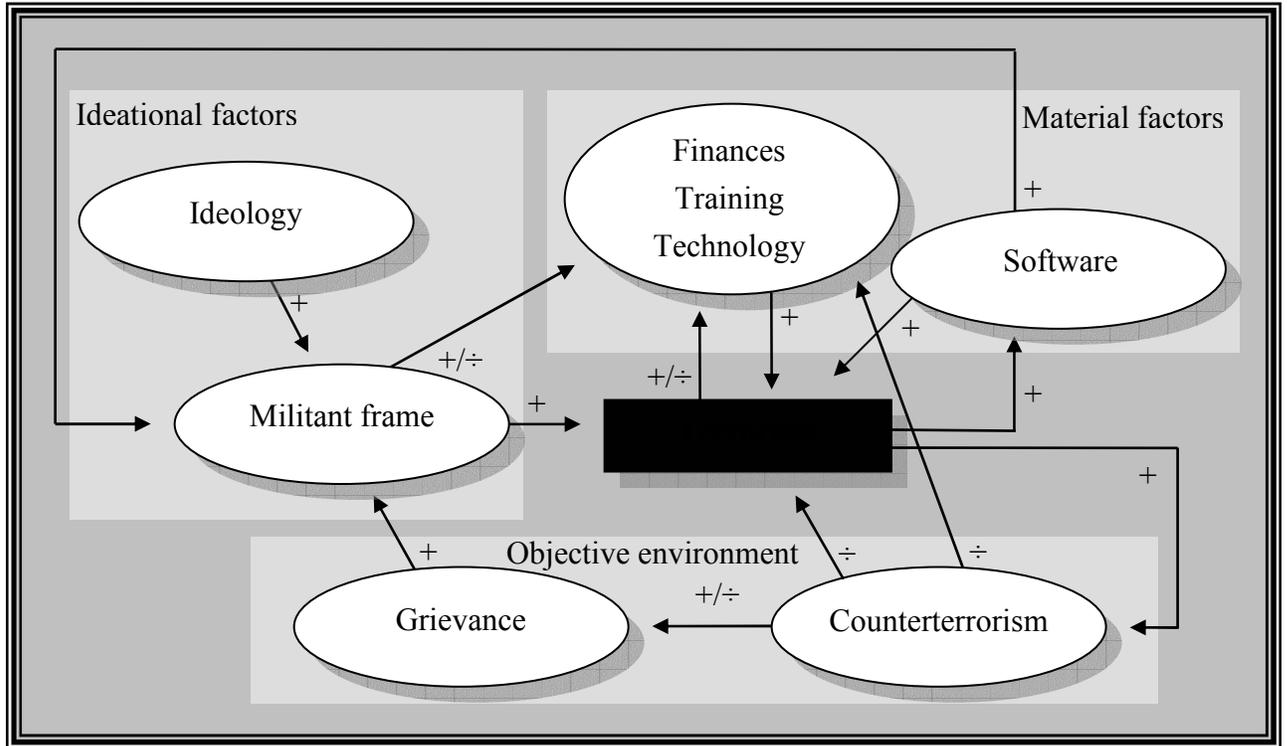
A system is understood to be a set of units which are interconnected so that changes in one element produce changes in others, and that the entire system exhibits emergent properties³⁰. By this definition, the systems we are looking at are typically transnational and involve more than terrorism. This article, however, maintains the focus on terrorism for purposes of clarity.

Objective Environmental Factors

The most easily observable dynamic effect of terrorism is counterterrorism measures taken by authorities reacting to terrorist attacks. These usually create an environment with less manoeuvrability for terrorists. By increased surveillance, more government control of communication, increased access by police to search operation, control of money flow, possible roadblocks etc., which makes it more difficult to operate. The counterterrorism measures may accordingly prevent a terrorist attack directly or make it more difficult to mobilize and channel material factors needed for terrorism into the militant environment.

²⁹ Marc Sageman, *Understanding Terror Networks* (Philadelphia: University of Pennsylvania Press, 2004).

³⁰ Robert Jervis, *System Effects - Complexity in Political and Social Life* (Princeton: Princeton University Press, 1997), 5.

Figure 2: Dynamic effects of Terrorism, Systemic Level

The other side of counterterrorism measures is that they may add to the grievances of the constituency of the terrorists, thus possibly adding to the support of the terrorists and easing recruitment. For Carlos Marighella³¹, the terrorist / guerrilla tactician, the provoking of repressive measures of the government, was a conscious element of the tactic in order to win the sympathy of the populace. Counterterrorism measures may also include positive incentives to limit recruitment. Since 2001, different kinds of community outreach programmes have been tried both in Europe and the Middle East. During the nationalist wave of terrorism UK and Spain allowed extensive autonomy for the Basque Provinces and Northern Ireland respectively, as a means of appeasement.

The dynamic effects operating through changes in the objective environment are most likely small. As mentioned above, is it only possible to explain a small part of the variation in terrorism by objective grievance criteria. It is not likely that objective grievances should hold greater explanatory power because they are caused by counterterrorism measures like racial profiling, than grievances unrelated to counterterrorism, like ideological racism or economic inequality.

Grievances caused by counterterrorism tend to covariate with terrorist incidents, which creates software and contributes to more terrorism. It is therefore difficult empirically to distinguish between the dynamic effects operating through

³¹Carlos Marighella, "Mini-Manual of the Urban Guerilla," <http://www.geocities.com/phosphor2013/UrbanGuerrilla.pdf>.

counterterrorism measures and through the creation of software. The two effects may even work as replicators for each other.

Material Factors

Some forms of militant activity function as training for jihad in other places, in the sense that skills acquired in action in one place can be seen as training for activities in other places. This has been the case with the fight against the Soviets in Afghanistan³², but also with the Chechnyan, Bosnian, and Algerian campaigns³³. Similarly, technologies can be invented and spread through militant activities. The use of dual-tone multi-frequency (DTMF) signalling technology, components from wireless phones as triggers in remote controlled bombs, was perfected in Afghanistan, but spread to Iraq when the campaign started there after the 2003 US invasion. Terrorist attacks and terrorist campaigns can also drain scarce resources making material resources less accessible to other potential terrorists. The latter has been claimed to be the case with the Iraq campaign by the Bush administration, that the Iraq campaign draws resources from terrorist attacks elsewhere. This claim has, however, not been substantiated.

Software components are generated by successful militant activities and feed by the example directly back into militant activities. Beside manuals on how to set up cells, carry out attacks etc., the Internet contains hundreds of chat forums in which discussions of jihadists. These discussions span topics from analyzing traditional jihad venues like Iraq, Chechnya, and Pakistan to what was good and what was bad about successful and failed attacks in the West. Richard Reid, Mohammad Atta and the other members of the Hamburg cell are all idolized in these forums. If the militant activities are not domestic terrorism, but rather going to a foreign Jihad venue, then that will be the software created, which will guide the actions of potential militants, and shape the frame influencing militant activities as well as the mobilization of resources.

Ideational Factors

Possibly the most important effect of software is its influence on the militant frame. Successful militant actions change the way individuals understand the world, themselves and their own possibilities and obligations to change the world. Fawaz Gerges has described how the global Jihadist Ideology is the direct result of a series of military experiences, primarily the withdrawal of the Soviets from Afghanistan.³⁴ Similarly, militant actions taken, more or less independently, by ordinary Muslim first, second, or third generation immigrants in the West, have changed the way young Islamists think about their own situation and their own responsibilities. The same individuals who would

³² Gilles Kepel, *The Roots of Radical Islam* (London: SAQI, 2005).

³³ Evan F. Kohlmann, *Al-Qaida's Jihad in Europe* (Oxford: Berg, 2004).

³⁴ Gerges, *The Far Enemy - Why Jihad Went Global*.

potentially engage themselves in a self-starter group would previously have gone to fight in Chechnya or Bosnia.³⁵ Thus, the availability of software affects terrorism directly by guiding future terrorists on how to conduct a terrorist attack. It also affects the frame and thereby the mindset of potential terrorists by offering the view to a potential jihadist that an attack in the West is both a realistic possibility and an appropriate response under certain circumstances.

A militant frame has a mobilizing effect on one's ability to gather material resources, and an effect on individuals who are only indirectly involved in terrorism. When the militant frame is strengthened, as a result of a successful operation, this adds to the available software, and mobilizes a number of material resources as follows. First, a successful attack creates attention to the cause. Terrorism has also been called propaganda by the deed.³⁶ Second, preferential attachment is one of the strongest mechanisms when actors delegate their support.³⁷ That means that they are more inclined to support a project they perceive to be successful than a project they perceive to be disadvantaged from the get-go.

Different attacks depend to very different degrees on the mobilization of material resources from outside the immediate core of the terrorist group. It is clear today that some of the attacks and plots that have been carried out and attempted, have (like the assassination of Theo Van Gogh by the Hofstad group) been almost without outside involvement, in the phase of the actual action. It is also obvious that some of the more sophisticated operations, the Madrid bombings, and notably the September 11 bombings, were very dependent on a cadre of more or less involved helpers to handle recruitment, courier service, acquisition of explosives or components for explosives, getting money, housing etc.

Emergent Properties

There are both positive and negative feedback dynamics associated with terrorist activities. The positive feedback dynamics work either through counterterrorism creating more grievances which create more sympathy for the terrorists, or through the creation of software that can be copied by other potential terrorists thereby adding to the militant frame. This directly adds to the level of terrorism, and helps mobilize resources. The negative feedback cycle functions through the counter-terrorism measures that often involve killing and jailing of activists. Further measures aim to exhaust a terrorist network's resources. These include those targeting travel, fundraising, training, and other logistical requirements for an operations success. Additionally, appeasement efforts may limit the possibility to recruit and get support from the population. A wave is thus the result when the positive feedback dynamics outweigh the negative feedback dynamics at

³⁵ Sloodman and Tillie, "Processes of Radicalisation - Why Some Amsterdam Muslims Become Radicals."

³⁶ Chaliand and Blin, eds., *The History of Terrorism - from Antiquity to Al-Qaida*, 96-97.

³⁷ Birgitte Freiesleben de Blasio, Åke Svensson, and Fredrik Liljeros, "Preferential Attachment in Sexual Networks," *PNAS* 104, no. 26 (2007).

a large enough scale for terrorism to reproduce terrorism without depending on individual actors or groups.

A wave of terrorism displays emergent properties. That means the wave is qualitatively different from its components: the individual terrorists, terrorist groups and incidents. A wave of terrorism has an independent causal status. It affects its environment but it also strongly affects its components in a process referred to as downward causation³⁸. Grievances that would otherwise have been endured are now interpreted through a militant frame; material and ideational resources are made available, and a terrorist attack is the contingent outcome. Conflicts, which without the influence of the wave would have found a different expression, are “swallowed up” by the wave, like it has notably happened with insurgencies in, for instance, Chechnya and the Philippines.³⁹ Waves have a much longer lifespan than their components, and they rely on the temporality of the components to keep the wave dynamic. The negative feedback with arrests and killings is part of the dynamic relation that also allows the wave to exist.

The fact that waves of terrorism are relatively rare suggests that there is a threshold beyond which the positive feedback mechanisms are stronger than the negative feedback mechanisms. Timothy McVeigh did not spark a wave of rightwing anti-government terrorism in the US following his 1995, Oklahoma City bombing.

Transnational Characteristics

The system in which the wave exists is not bound by international borders. This works to the advantage of the wave, as the different factors needed for terrorism can be obtained from different countries where the negative feedback dynamics are limited by national borders. The negative feedback, produced by increased counterterrorism measures, creates an environment with less maneuverability for future and existing terrorists and terrorist supporters. These measures are carried out by government authorities who are bound by national borders. Likewise, the exhaustion of limited resources is primarily tied to the national context.

Positive feedback is not bound to the national context. The repressive effects of a government's counterterrorism measures cause grievances among the people who are directly affected by it, as well as limiting their maneuverability and making it more difficult to mobilize resources. The individuals who are involved in terrorism are, however, generally not people who have personally suffered under the causes of their grievances.⁴⁰ Instead, individuals involved in terrorism claim real or imagined suffering

³⁸ Peter Bøgh Andersen et al., eds., *Downward Causation - Minds, Bodies and Matter* (Aarhus: Aarhus University Press, 2000), Donald T. Campbell, Mark H. Bickhard, and Peder Voetmann Christiansen, "Emergence and Downward Causation," in *IMUFA* (Roskilde: Roskilde Universitetscenter, 1999).

³⁹ Zachary Abuza, *Militant Islam in Southeast Asia* (London: Lynne Rienner Publishers, 2003), International Crisis Group, "Philippines Terrorism: The Role of Militant Islamic Converts," in *Asia Report N°110 – 19 December 2005* (International Crisis Group, 2005), Wilhelmssen, *When Separatists Become Islamists: The Case of Chechnya*.

⁴⁰ Sageman, *Understanding Terror Networks*.

by the actions of people they identify as being the cause of their militant activities. This is particularly the case with many Islamists in the West, who in the absence of a sense of belonging either with their country of origin (sometimes generations back) or their country of residence, identify with the Umma, encompassing all Muslims globally⁴¹.

There is also a transnational market for *Fatwa*, sanctioning different activities, where clerics with religious credentials are known for their religious and political stances and provide *Fatwa* to Islamists far from their country of residence and origin. The *Fatwa* needed for ethnic cleansing in Indonesia in 2000, by Lashkar Jihad, was for example obtained from Sheikh Moqbul al-Wadai'1 in Yemen.⁴²

The lack of maneuverability in one country can be outweighed by maneuverability in another country. The reason why the planning of the successive bombings of the East African US Embassies, the USS Cole and the September 11 attacks was possible was the maneuverability, partly in the liberal West, but more so in Afghanistan where the future terrorists could be invited, selected, recruited and trained.

The software of a terrorist attack is also made available across borders. Software generally only travel between similar environments, but it is not limited by borders or distance. Decapitations for instance travelled well between Iraq and Afghanistan, but not to Europe. Modern suicide bombings travelled from the Tamil Tigers in Sri Lanka to Hezbollah in Lebanon, from where it spread to a number of other Middle Eastern based organizations.

The material factors of a terrorist attack can largely be obtained from outside a country: money from Saudi sources, training in Pakistan, technology from Iraq, and the formulation of frame from London.

As the positive feedback mechanisms work better across borders than the negative feedback mechanisms, it appears that it is an advantage for a terrorist wave to be transnational. One can, however, speculate that the critical threshold, because of distance and noise from other factors are higher in an international context.

Conclusion

This article attempts to develop a model that can explain the dynamic effects of terrorism, and answer the questions of why a wave of terrorism sometimes emerges, but most often does not, and what goes on inside a wave of terrorism. The difference between this model of understanding terrorism and most radicalization research is that it takes the focus away from the individual terrorist, and to an extent also away from the most focused on individual factors, ideology and grievances, and instead focus on the relationship between all the factors needed for terrorism and how they under some circumstances are reproduced, by terrorism itself. The model also has implications for counterterrorism

⁴¹ Farhad Khosrokhavar, *Suicide Bombers - Allah's New Martyrs*, trans. David Macey (London: Pluto Press, 2005).

⁴² Burke, *Al-Qaeda - the True Story of Radical Islam*, 185.

measures. A recommendation based on this model is to focus on countering the reproductive dynamics of terrorism, concerning the ideational factors, the material factors, and the objective environment.

A wave of terrorism is a state where the positive feedbacks of terrorism create an emergent entity which facilitates the factors needed for terrorism. When the necessary factors are present; terrorism is the contingent choice of actors. Waves of terrorism are not bound by international borders. A terrorist attack in a country, committed by citizens of that country might therefore be the result of factors all originating abroad and possibly all being the products of other terrorist attacks. Scholars of terrorism may therefore do well to pay attention to the wave phenomenon and feedback mechanisms in terrorism.

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