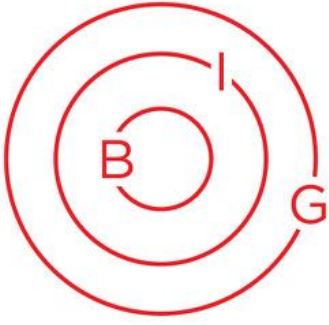




**BORDERS IN
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**Hezbollah's Global Tentacles: A relational
Approach to convergence with
transnational organized crime**

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Ryde-Collins**

Hezbollah's global tentacles: A relational approach to convergence with transnational organised crime

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ABSTRACT

That terrorists, criminals, and their facilitators exploit the global marketplace is well known. While the global movement of illicit goods is well documented, robust empirical evidence linking terrorism and organized crime remains elusive. This article posits Network Science as a means of making these links more apparent. As a critical case study, Hezbollah is quite possibly the most mature globalized terrorist organization, although it thinks of itself as the "Party of God." However, the means seem to justify the ends: this article shows that Hezbollah's holy men have no qualms about resorting to pornography, contraband cigarettes, immigration fraud, and credit card fraud to raise funds. Beyond establishing links, Social Network Analysis reveals other important characteristics, such as the relative autonomy from Hezbollah headquarters that local fundraising networks enjoy. That finding implies a paradigm shift: Hezbollah is no less a terrorist organization than an organized crime syndicate. This is apparent in a network's structure. Transnational Organized Crime is typically about nodes being connected to many others in the network. Yet, Hezbollah fundraising networks allow such connectivity because of the group's typically high levels of mutual trust and familial relationships. This creates a vulnerability that can be exploited by law enforcement and intelligence organizations.

KEYWORDS

Hezbollah; terrorist financing; organized crime; Social Network Analysis

Introduction

Globalization has facilitated the emergence of transcontinental supply chains along with the expansion of illicit markets. Deviant globalization is the portion of the global economy that meets the demand for goods and services that are illegal or considered repugnant in one place by using a supply from elsewhere in the world where morals are different or law enforcement is less effective.¹ Transnational Organized Crime (TOC) has become a nefarious fixture of the global security environment. TOC thrives on weak governance, socioeconomic vulnerabilities, and corruption. It owes its preponderance partially to state institutions ill-suited to the challenges posed by economic and demographic inequalities, the rise of internecine violence, climate change, the volume of people moving across national boundaries as anything from tourists to refugees, and the growth of technology.²

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They threaten the four key missions of government: a) to guarantee the nation's security and sovereignty; b) to promote economic prosperity; c) to safeguard society and the rule of law; and d) to ensure government represents the will of the people. 40

Neither terrorist financing nor collusion among terrorism, crime, and corruption are a new problem *per se*.³ Yet, an emerging literature posits a global convergence between TOC and terrorism: terrorists are resorting to organized criminal operations to facilitate their activities, and organized crime is resorting to terrorist measures to support theirs.⁴ In an age of globalization, the magnitude and velocity of terrorism and crime, driven by interconnected economies and advances in communication and technology, have resulted in unprecedented profits and violence.⁵ The White House's 2011 *Strategy to Combat Transnational Organized Crime* (SCTOC) concludes that "criminal networks are not only expanding their operations, but they are also diversifying their activities. The result is a convergence of threats that have evolved to become more complex, volatile, and destabilizing."⁶ Convergence—defined as "the process of coming together and having a common interest, purpose, or goal"—has also improved groups' ability to evade official countermeasures, overcome logistical challenges, identify and exploit weaknesses and opportunities in the state system, and attack that system.⁷ 45

Under the aegis of its External Security Organization and with the active or coerced support of the Lebanese Shiite diaspora in Europe, Africa, the Americas, and Australia, the "Party of God" (*Hizbu'llāh*) has been implicated in criminal activities on a global scale.⁸ Hezbollah's business logic—in a pattern that is now pervasive among terrorist organizations throughout the Middle East⁹—has evolved from relying on Iran, to diversification into drug and arms trafficking, human trafficking, cigarette smuggling, trading diamonds, counterfeiting goods and medications, laundering money, financial, credit card, and passport fraud, sham marriages, and intellectual property crime.¹⁰ A portion of the illicit profits derived from these business activities is remitted to Hezbollah in Lebanon, where they serve to finance social, religious, and educational services, military resistance, and political activity among its power base in Southern Lebanon's Shiite community. 50 55 60 65

Terror networks such as Hezbollah's are difficult to detect, and even more difficult to study accurately and comprehensively. Much of the information on individuals and their activities is either classified or unknown. Nonetheless, tracking how terrorists raise, move, store, and use money is fundamental to deter, detect, dismantle, and discourage terrorist networks. Policy makers and security practitioners strive to know what is driving network creation, how networks operate, and how networks change over time. This article focuses on the structure of two Hezbollah fundraising groups in the United States, with important trans-border links to Canada and the Levant. The two networks—known as the Charlotte and Dearborn Networks—are the only cases for which sufficient open-source intelligence is available to allow for systematic quantitative network analysis of longitudinal patterns of exchange between nodes, known as Social Network Analysis (SNA). 70 75

Network structure may arise by design as, for example, when a business constructs an organizational chart to manage coordination and governance. However, many real-world networks are constructed because of the accumulation of pairwise connections, each of which is made locally by the two individuals concerned and sometimes with an element of serendipity. The properties of such a network are emergent, but the resulting structure is also constrained by purpose and so can be revealing of "what works." If the network does 80

not contain the required actors, or if they cannot communicate as required, then the network is unlikely to be effective. 85

The article has three objectives. The first objective is to ascertain a network's structure which matters because it dictates the flow of resources and information. To this end, the article maps the two Hezbollah fundraising networks and studies whether their structure is centralized or decentralized. Whereas centralized social networks are more efficient at disseminating and controlling resources and information, decentralized networks are more resilient to threats because actors determine their own path rather than depending on a single central authority. The second objective is to examine the structural roles of the most prominent actors involved in the Hezbollah networks and whether their function (criminal fundraising) informs structure. Whether key individuals serve as hubs or as brokers is of particular interest. Hubs—or subgroup leaders—are surrounded by many friends and associates, while brokers bridge actors that otherwise would be disconnected without necessarily being richly connected themselves. Building on analysis of the overall structure of the networks and of the structural roles of the actors, the third objective is to examine how best to disrupt Hezbollah fundraising networks. 90 95

A relational approach 100

The illicit activities pursued by terrorist organizations such as Hezbollah necessitate secretive conduct on their part that imposes limitations on the collection of data. The usual methods employed in qualitative SNA studies are inapplicable when the individuals in a network are inaccessible for interviews, and the publically available sources are thin. This study is limited to data from open sources such as court records, newspaper articles, case documents, secondary source material, and the Internet.¹¹ Interactions were defined as meetings, personal relationships, or the exchange of goods. The resulting nodes yielded sufficient information to map two illicit networks based in the United States and linked with Hezbollah in Lebanon. Connections among nodes in these networks have been established based on interactions and relationships outlined in the sources. Only the links that could be reliably verified through triangulation among several sources have been included. Consequently, some vague but possibly significant links have been omitted and the networks as depicted may not be comprehensive. Nonetheless, some reasonably distinct patterns emerge. 105 110

Scope conditions for inclusion of networks in this study included: provision of financial and/or material support to Hezbollah, basing in North America but with links to the Middle East, and involvement in criminal activities for which some or all of the members of the network have been arraigned or convicted. Caveats include the relatively small size of the sample (in the first case $n = 26$ and the second $n = 17$), arising from the difficulty of obtaining reliable evidence on the interactions between some nodes. For this reason, small n studies such as those featured in this research are more appropriate for generating hypotheses about terror networks than for testing existing hypotheses. Nonetheless, the findings can be compared to see the extent to which they reflect earlier findings on the relationship between function and structure of terrorist networks. Notwithstanding limitations in the sample size, this study does generate robust insights about the growth and membership of dark networks, interactions between nodes and their connections to 115 120 125

activities, and the methods by which they can be deterred, detected, dismantled, and discouraged, insights that lend themselves to scrutiny through future research.

Networks and terror

Networks are the most important unit of analysis in understanding the formation and dynamics of terrorist organizations today. There has been a move away from understanding terrorism only through the lens of individual or organizational analysis to an attempt to study the social dynamics of networks as a whole.¹² Social networks make it possible for terrorist groups to overcome the inherent problems of mobilization and communication between large numbers of people over distances. As Thorelli states, “Organizations exist due to economies of scale and specialization, and the ability to reduce transaction costs.”¹³ Social Network Analysis (SNA), therefore, is the study of the individual members, represented by the nodes of the network, and the relationships between these members represented by the links. The pattern of exchanges between nodes over time is the bedrock of network analysis.¹⁴

As a relational approach to social interactions, SNA has emerged in the literature as an important method of analysing and disrupting terrorist networks.¹⁵ This has not always been the case; traditionally, terrorist networks were believed to be hierarchical and centralized and operate like hierarchical corporations.¹⁶ This view has remained popular even in the more recent “War on Terror” in the USA, which initially focussed on the formal organization of Al Qaeda, its various levels of command, and official positions.¹⁷ Hezbollah is still widely described as a hierarchical organization due to its territorial divisions that reproduce Lebanon’s governorates and three-tier formal structure in charge of religious, military, and political and social affairs.¹⁸ By mapping out the ties between the various nodes in the group as they were, rather than how they ought to be or are expected to be, Social Network Analysis Theory calls this view into question.¹⁹ Applied to various groups across different parts of the world,²⁰ this approach makes it possible to determine the structure and function of both the network as a whole, and the role of each person in the group in relation to others.²¹

Network structure and centrality

One of the most salient aspects of terror networks that can be illustrated through the use of SNA is their structure. Many different types of networks—chain, hub (star), multi-player, all-channel (clique)—have been identified in the literature on SNA and terror. However, for the two networks that are the subject of this article, only the hub structure applies. Hub networks contain nodes, or a small cluster of nodes, that sit at the centre of three or more other nodes which themselves have very few or no links. These centralized nodes are commonly referred to as hubs, and they occupy a position of influence and power because of their roles in information or materiel flow. The star network, in which a single node acts as a conduit to transmit resources and information to many other nodes, is perhaps the best-known example of a hub network. The other important structural position an actor can have in a social network is the one of broker. Brokers do not necessarily have to be connected to many others, as their importance derives from the fact that they bridge disconnected sub-parts of the network. The advantageous position of

brokers in a network primarily derives from their access to diverse, non-redundant information.²² As Burt states, “people whose networks bridge the structural holes between groups have earlier access to a broader diversity of information and have experience in translating information across groups. This is the social capital of brokerage.”²³ 170

Network Science uses two key concepts to distinguish quantity from quality of nodes and identify hubs and brokers: degree centrality and betweenness centrality. These two concepts, and their utility in determining prominent actors within a criminal network, were outlined by Morselli.²⁴ Degree centrality is the simple measurement of the volume of contacts each node possessed within a network. It is a measure of the number of an actor’s immediate neighbours. Betweenness centrality is a measure of an actor’s position within a network. Actors with a high betweenness measure frequently sit on the shortest path between two other actors.²⁵ This measure captures the extent to which certain nodes connect parts of the network that would otherwise have poorer contact, perhaps even no contact. These important individuals are brokers insofar as they control and mediate the flow of information and resources between unrelated parts of a network.²⁶ Specific characteristics of an individual’s role in a network are associated with specific centrality measures, as depicted in the matrix in Table 1. 175 180 185

An individual with both high degree centrality and high betweenness centrality has the advantages of being able to control the flow of information between different sub-networks, and also to be able to reach a large number of individuals quickly. In social networks, the degree achievable by such a subgroup leader is limited by cognitive and span of control issues—and, in criminal and illicit networks, the individuals in these positions are aware of the vulnerability their high degree creates for disruption by their arrest or removal. Thus there are pressures to limit the degree of any one individual. On the other hand, for criminal and illicit social networks, lack of trust creates a countervailing pressure towards increased degree for network leaders to reduce the threats of surprise leadership challenges or group splintering. In such an organization, therefore, an individual with both high degree centrality and high degree is likely to be the leader, at least of a major subgroup. 190 195

However, Morselli’s study of the Hell’s Angels biker gang in the province of Quebec, Canada, discovered that the most advantageous position in a network is that of the “ideal broker,” an individual who has a low degree centrality but a high betweenness centrality measure. Such a broker is able to take strategic actions within the network, and to provide access to information and resources that others cannot reach, but does not necessarily have high volumes of communication or management to deal with. Also, such individuals’ lower degrees make them less visible.²⁷ 200

Leuprecht and Hall have shown that the nature and score on centrality measures is related to a terrorist network’s function—the structure of terrorist networks reflects the function that it serves. Comparing al-Shabaab networks, they found that the fundraising networks exhibited a hub-type structure, whereas recruitment networks were of an all-channel type where most nodes are connected to most other nodes. Moreover, fundraising 205

Table 1. Centrality matrix.⁶¹

| | |
|--|--|
| High degree centrality and low betweenness centrality <i>Well-informed member of a subgroup</i> | High degree centrality and high betweenness centrality <i>Subgroup leader</i> |
| Low in both degree and betweenness centrality <i>Foot soldier</i> | Low degree centrality and high betweenness centrality <i>Ideal broker</i> |

networks were transcontinental, that is, they crossed international borders. The authors concluded that fundraising networks are not impeded by the physical proximity of individuals in the network to one another but rely heavily on the actions of brokers.²⁸ The primary objective of the two networks studied in this article was to generate funds to remit to Lebanon to support Hezbollah. We might thus expect them to display the characteristics associated with fundraising networks: hub structure, brokers with high betweenness centrality and low degree centrality, international linkages, no intent to commit domestic attacks, and remittances to the home country.

Observations: Two fundraising networks

Charlotte Network (Operation Smokescreen)

From March 1996 to July 2000, a network based in Charlotte, North Carolina, ran a highly lucrative cigarette smuggling ring. Hereafter referred to as the Charlotte Network, it was a complex and highly active criminal enterprise that involved cigarette smuggling, marriage and immigration fraud, procurement of dual-use technology to advance terrorist ends, credit card fraud, and material support of a terrorist organization.

Initially, the network emerged with a small group of men connected by kinship who came to the United States in the early 1990s and settled in Charlotte. Mohammad Youssef Hammoud arrived in New York in 1992 along with two cousins, Mohamad Atef Darwiche and Ali Darwiche, and petitioned for asylum. Once released, they settled in Charlotte along with two of Mohammad Hammoud's brothers, Bassam Hammoud and Chawki Youssef Hammoud, who were already living in the area. To remain in the United States long term, however, the men required green cards, which they obtained through fraudulent marriages to U.S. citizens. In many cases, repeated attempts at such marriages of convenience were required before finding one that would pass muster with the U.S. Immigration authorities. Mohammad Hammoud, in particular, was unsuccessful until his third marriage in 1998, when he married his manager at the Domino's Pizza where he was employed.²⁹ Angie Tsioumas, Hammoud's manager-turned-wife, became heavily involved in the smuggling activities of her new husband and his family, and would indeed come to be seen as "the brains of the operation" by investigators.³⁰

This network operated a ~~very successful~~ cigarette smuggling operation driven by differential tax rates on cigarettes between states. As a major tobacco producer, North Carolina charged a mere \$0.50 per carton. In Michigan, by contrast, the tax rates at the time had ~~been raised~~ to \$7.50 per carton.³¹ Cigarette diversion rings take advantage of ~~this disparity in~~ tax rates by purchasing cigarettes in low-tax jurisdictions, then shipping them across state lines and reselling them to unscrupulous retailers in high-tax states. Members of the Charlotte Network would purchase cigarettes in bulk from wholesalers such as JR Tobacco Wholesale in North Carolina, often using pseudonyms and fraudulent credit cards. The quantity of cigarettes purchased always fell just below the threshold above which they would have to provide proof of license as a wholesaler or distributor. The cigarettes were then loaded into rental vans or trucks and driven to a safe location (which mitigated the risk of forfeiture in case of seizure), such as the home of one of the conspirators or a rented storage space, where they would be stored before being reloaded and driven to Michigan. The scheme was as simple as it was lucrative: the Charlotte

Network was earning an average of \$13,000 per vanload of cigarettes smuggled out of North Carolina.³² In total, the members of the network purchased 497,149 cartons of cigarettes, worth a total of \$7,549,239.³³

The network was also involved in a slew of other criminal activities. Many of these were run through the second major player in the Charlotte Network, Said Harb. In addition to the cigarette diversion ring, Harb was involved in organizing multiple illegitimate marriages in order to obtain citizenship. Harb, who was connected to the group through a childhood friendship with Hammoud, is known to have arranged at least three sham marriages to bring members of his own family to the United States, as well as running an Internet pornography business and credit card fraud schemes in support of the cigarette smuggling.³⁴

Harb also contributed the final dimension of this network: a scheme to procure dual-use technology. Harb assisted another childhood friend, Mohamad Hassan Dbouk, to come to Canada from Lebanon. Dbouk, whom Harb would later testify had received extensive military training before coming to Canada, ran the Canadian arm of Hezbollah's dual-use item procurement efforts. Dbouk and his brother-in-law, Ali Adham Amhaz, were working under the direction of Haj Hassan Hilu Laqis, who was at that time the chief military procurement officer for Hezbollah in Lebanon. Items destined for Hezbollah included GPS and surveying equipment, camera and video devices, computer equipment, night vision goggles, and mine and metal detectors. Dbouk was deemed a pivotal Hezbollah operative; his application to become a martyr for the organization had been rejected on multiple occasions.³⁵

As is shown in Figure 1, the Charlotte Network operated in three distinct spheres. The cigarette smuggling scheme was mostly run by Mohamad Youssef Hammoud and

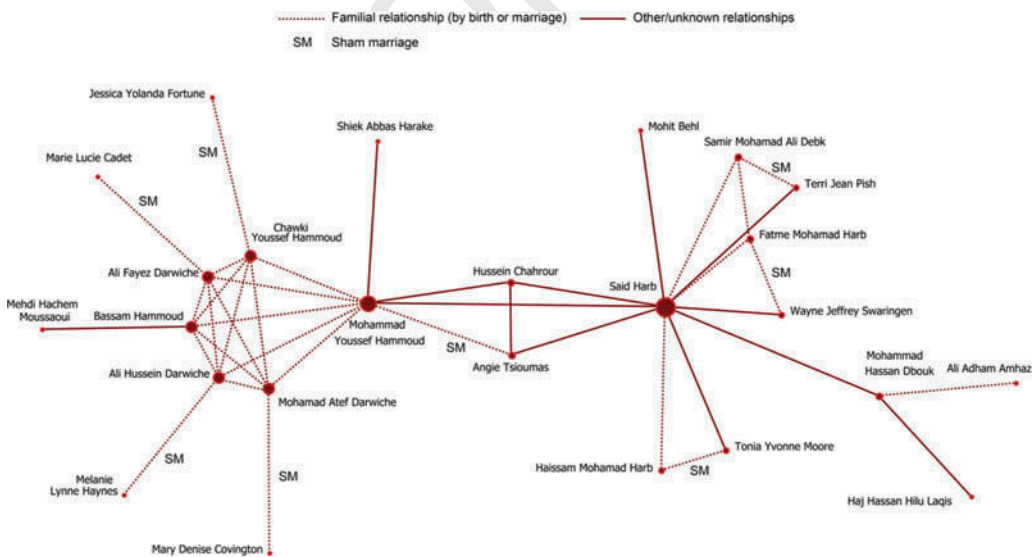


Figure 1. Charlotte Network (Operation Smokescreen).

Source: Authors using ORA (Kathleen Carley, 2014. *ORA-NetScenes 3.0.9.9.19. Pittsburgh: CASOS Center, Carnegie Mellon University). Note: the size of the nodes is proportional to degree centrality. The more ties actors have, the bigger they appear on the sociogram.

his close family. Said Harb was involved in the cigarette smuggling and sham marriage schemes. Mohamad Hassan Dbouk and Ali Adham Amhaz in Canada operated the dual-use procurement efforts. Said Harb and Mohamad Youssef Hammoud connected these three spheres and controlled the flow of information and resources throughout the network. By contrast, women (and one man) are confined to the edges of the graph. 280 With the notable exception of Angie Tsioumas, whose role is analysed later, women were largely instrumentalized for the purpose of sham marriages with the main conspirators.

Dearborn Network (Operation Bathwater)

While the Charlotte Network was running its profitable cigarette smuggling scheme out of 285 North Carolina, Elias Mohamad Akhdar and members of his family were operating a similar and connected cigarette diversion scheme from ~~their~~ bases in Dearborn, Michigan and New York State, hereafter known as the Dearborn Network. Beginning in 1996, the Dearborn Network began purchasing low-tax cigarettes and reselling them in the state of 290 Michigan at a substantial profit. The Charlotte Network was a major supplier of these low-tax cigarettes for the Dearborn Network. Interactions between Mohammad Hammoud and the Charlotte Network included over \$500,000 in cash transactions to Hammoud and at least 138 telephone calls.³⁶ However, the Dearborn Network also obtained cigarettes from another supplier, Haissam Nashar, and from the Cattaraugus Indian Reservation in 295 New York State. In New York, Native American shops could buy a carton of cigarettes wholesale for a mere \$28, as compared to regular New York retailers who paid \$61.77, a sum that includes the fees and taxes charged by the state.³⁷ Akhdar's common-law wife, Brandy Jo Bowman, an American Indian of the Seneca tribe, and her grandmother Carole Gordon headed the network's New York operations and facilitated Akhdar's access to 300 untaxed cigarettes from the Cattaraugus reserve.³⁸

To combat the loss of revenue due to cigarette diversion rings, from May 1, 1999, the state of Michigan began requiring tax stamps on packs of cigarettes. To counter this measure, the Dearborn Network had Hassan Makki obtain and produce counterfeit tax stamps to be applied to their smuggled goods. Members of the Dearborn Network also 305 took "fraud field trips" within the state of Michigan and to New York and North Carolina, where they used counterfeit credit cards to defraud merchants, often purchasing cigarettes for resale through the smuggling network. The money raised through the Dearborn scheme was laundered by purchasing more cigarettes to feed into the scheme, obtaining fraudulent credit cards, settling debts incurred through the network's activities, and purchasing businesses. Finally, Elias Akhdar was accused of burning down his common-law 310 wife's smoke shop on the Cattaraugus Reserve to claim the insurance on the building.³⁹

As was the case with Mohammad Hammoud, before arriving in the United States, Elias Akhdar had received military training with Amal, a Shiite militia group, and had been involved in armed incursions linked to Hezbollah. As part of the Charlotte Network, 315 Akhdar contributed a portion of the proceeds of criminal activities to Hezbollah.⁴⁰

The Dearborn Network fell apart in 2003 when, upon learning of the indictment of Mohammad Hammoud and his co-conspirators, Elias Akhdar attempted to go into hiding on the Cattaraugus Reserve. He was arrested, however, and, along with ten other members

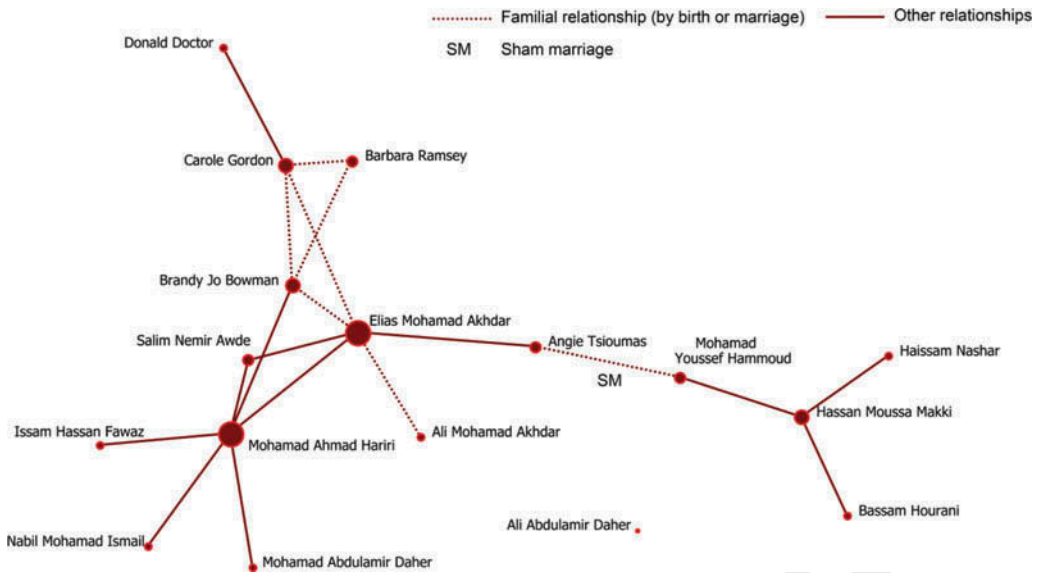


Figure 2. Dearborn Network (Operation Bathwater).

Source: Authors using ORA (Kathleen Carley, 2014. *ORA-NetScenes 3.0.9.9.19. Pittsburgh: CASOS Center, Carnegie Mellon University). Note: the size of the nodes is proportional to degree centrality. The more ties actors have, the bigger they appear on the sociogram.

of the network, charged with Racketeering Influenced and Corrupt Organizations Act (RICO) and other related offences.⁴¹

Shown in Figure 2, the Dearborn Network is smaller and less complex than the Charlotte Network. The activities of the network, primarily cigarette smuggling and credit card fraud, were mostly centered on Elias Mohamad Akhdar and his family. Of note, however, is the integral connection between Akhdar and his common-law wife's family. These key links gave the network access to untaxed cigarettes from the Cattaraugus reserve. Equally integral is the connection between Akhdar and Angie Tsioumas, which connected the Dearborn and Charlotte Networks.

Analysis

The key metrics presented in Table 2 confirm that the two networks are similar in structure. First, they have a very low density: with 26 nodes and 41 ties in the Charlotte Network and 17 nodes and 19 ties in the Dearborn Network, less than 15% of the potential ties are actually present. Actors in both networks also have a small average number of ties (1.58 and 1.12) and can be reached through a limited number of steps (2.64 and 3.03). These characteristics are typical of networks in which information and resources can theoretically spread rapidly. Organised around two major hubs—Said Harb and Mohammad Youssef Hammoud—the Charlotte Network has a much higher clustering coefficient (0.43) than the Dearborn Network (0.09), which approximates a random network, a structure with a low degree of clustering and short paths. The different centralization measures in the table indicate whether certain actors are exceptionally central.

Table 2. Key metrics.

| Measure | Charlotte Network (Operation Smokescreen) | Dearborn Network (Operation Bathwater) |
|----------------------------|--|---|
| Number of nodes | 26 | 17 |
| Number of ties | 41 | 19 |
| Density | 0.13 | 0.14 |
| Average number of ties | 1.58 | 1.12 |
| Characteristic path length | 2.64 | 3.03 |
| Clustering coefficient | 0.43 | 0.09 |
| Degree centralization | 0.34 | 0.27 |
| Betweenness centralization | 0.55 | 0.48 |
| Eigenvector centralization | 0.45 | 0.49 |

Source: Authors using ORA (Kathleen Carley, 2014. *ORA-NetScenes 3.0.9.9.19. Pittsburgh: CASOS Center, Carnegie Mellon University).

Varying from 0 (none of the actors are exceptionally central) to 1 (the centrality of one actor exceeds all nodes), the measures are particularly high for betweenness centrality and eigenvector centrality, a global measure of degree centrality that takes into account the centrality of those with whom actors are connected. High values of betweenness centrality (0.55 and 0.48) confirm the existence of important brokers in both networks while high eigenvector centrality values (0.45 and 0.49) confirm that actors with many ties are connected to other actors who are well connected themselves. 345

In both of the networks mapped above, social capital in the form of familial ties was the most important determinant of membership. Of the 26 individuals identified with the Charlotte Network, 11 were connected to at least one other individual through familial ties of birth or marriage. Though Mohamad Hammoud was initially dispatched to the United States by Sheik Abbas Harake, a more senior commander within Hezbollah, once he had established himself, his network grew mostly through pre-existing relationships. Hammoud did not have to recruit individuals upon arrival in the United States because the core of his fundraising network was effectively already in place. Individuals in the Charlotte Network with previous kinship ties were also the most heavily involved in the smuggling of cigarettes, and they form the densest cluster of the network. In the Dearborn Network ~~run out of Michigan and New York~~, of the 17 individuals identified, 5 are connected to at least one other node through familial ties. Indeed, it was only Elias Akhdar's family connection through marriage with the Seneca tribe on the Cattaraugus Reservation that allowed him to access a steady supply of untaxed cigarettes. 350 355 360

These networks grew through an organic process based on these pre-existing kinship ties rather than formal recruiting that targets strangers with, say, like-minded views on Hezbollah. Hezbollah dictated neither the membership within the networks in the United States nor their command and control structure. Rather, "the criminal enterprise was bound together by physical locality, common heritage, blood and marriage relations, a common language (Arabic) and a common purpose of generating large sums of cash illegally."⁴² Connections based on deep past relationships are deemed "strong ties." Strong ties are a hallmark of covert networks. Ties kept within a group bound by a common history and kinship minimize the need for newer "weak ties," which mitigates risk by limited exposure of the network. Strong ties were essential to the success of the 9/11 terror networks: "This dense under-layer of prior 365 370

trusted relationships made the hijacker network both stealthy and resilient.”⁴³ The insurgency coordinated by Saddam Hussein in Iraq following Operation Iraqi Freedom in 2003 was structured in a similar way: among the 23 actors with direct ties to the former Iraqi dictator, 17 immediate family relationships (half-brother, son, nephew, cousin, or wife) proved critical to the structure of the network.⁴⁴

The pattern by which individuals were brought into the Charlotte and Dearborn Networks reinforces the importance of ethnic ties, whose importance to collective action are well established.⁴⁵ Morselli et al. observe: “Trust reduces the uncertainty regarding the behavior of potential accomplices to a tolerable level and thereby stimulates the willingness to co-offend. This may be enhanced by kinship and ethnic ties . . . giving members of close knit communities a competitive advantage in the crime business.”⁴⁶ Organizations based on a common ethnic and religious heritage, such as Hezbollah, rely largely on homophilous links, that is, family and ethnic kin. Candidates for the network are drawn from a “rather closed circle of potential participants,” which makes the activities of the network easier to hide”⁴⁷ while raising the cost of defection. This distinguishes the fundraising networks outlined previously by Leuprecht and Hall⁴⁸ from the ones in this article. In the al-Shabaab networks, homophilous ties were associated with the recruitment rather than the fundraising networks. By contrast, in the case studies presented here, homophilous ties are more likely the result of ethnicity than ideology, and thus not directly related to the group’s function.

The organic process of bringing individuals into the activities of the network allows small cells, such as the ones outlined here, to maintain a low profile within a hostile environment and avoid alerting the authorities to the fact that their criminal activities are being carried out for terrorist ends. Indeed, as Diaz and Newman argued, it complements the tradition of *Taqiyya* that many Hezbollah operatives in the United States have adopted over the years: fitting in with the dominant culture to disguise one’s true beliefs and purposes.⁴⁹

These networks did not recruit formally, but admission was not random. Rather, the networks grew organically through pre-existing ties between members. The initial connections between Hezbollah members in Lebanon appear crucial to the development of the network but, as its members secure residence permits, engage in criminal activities, and develop marital ties, local initiative comes to predominate. The members of the networks may occasionally receive support and guidance from Lebanon, but it is the informal relationships, based on kin, and not the formal Hezbollah formal organization, that drive the global expansion of the network.

Individuals who joined these networks were often previously acquainted with one of the major hubs. A major characteristic of “small-world” network typology is boundaries that are inherently “fuzzy.” “On an individual level, membership in the jihad may be difficult to assess at the boundary.”⁵⁰ As access to the network is so informal and decentralized, there is little evidence to differentiate those individuals who are active in the network, and those who are acquaintances of members of the network but who cannot be proven to have engaged in any of the network activities. In the cases of the Charlotte and Dearborn Networks, so many individuals were involved that it is nearly impossible to disentangle those who were motivated by support for Hezbollah from utility maximizers who are motivated merely by the proceeds of crime, and from those who may have been supporting the activities of the network for other reasons, or even unwittingly.

Not only is the mechanism by which the two networks were able to grow illustrative, but so is the structure of the networks themselves. Both the Charlotte and Dearborn Networks presented in this article wanted to raise funds with a hub-type network. This conforms to the findings of Leuprecht and Hall⁵¹ for fundraising networks in support of al-Shabaab, in contrast to a recruitment network whose apparent hallmark is all-channel network structure. Table 3 summarizes the Charlotte and Dearborn Network structures and centrality measures. In the Charlotte Network, both Said Harb and Mohammad Youssef Hammoud had high degree and betweenness centrality measures; they look like the subgroup leaders that they actually were, rather than the “ideal broker” characteristics of low degree but high betweenness centrality measures. Five other actors of the network

Table 3. Hub network structures and centrality measures.

| Agent | Degree | Betweenness | Role |
|--------------------------|--------|-------------|--|
| Operation Smokescreen | | | |
| Said Harb | 0.44* | 0.59* | Subgroup leader |
| Mohammad Youssef Hammoud | 0.36* | 0.51* | Subgroup leader |
| Ali Fayez Darwiche | 0.24* | 0.08 | Well-informed member |
| Ali Hussein Darwiche | 0.24* | 0.08 | Well-informed member |
| Bassam Hammoud | 0.24* | 0.08 | Well-informed member |
| Chawki Youssef Hammoud | 0.24* | 0.08 | Well-informed member |
| Mohamad Atef Darwiche | 0.24* | 0.08 | Well-informed member |
| Mohammad Hassan Dbouk | 0.12 | 0.15 | Foot soldier: Procurement |
| Fatme Mohamad Harb | 0.12 | 0.00 | Foot soldier: Unknown |
| Samir Mohamad Ali Debk | 0.12 | 0.00 | Foot soldier: Unknown |
| Angie Tsioumas | 0.12 | 0.00 | Foot soldier: Cigarette smuggling |
| Hussein Chahrour | 0.12 | 0.00 | Foot soldier: Cigarette smuggling |
| Haissam Mohamad Harb | 0.08 | 0.00 | Foot soldier: Unknown |
| Terri Jean Pish | 0.08 | 0.00 | Foot soldier: Sham spouse |
| Tonia Yvonne Moore | 0.08 | 0.00 | Foot soldier: Sham spouse |
| Wayne Jeffrey Swaringen | 0.08 | 0.00 | Foot soldier: Sham spouse |
| Ali Adham Amhaz | 0.04 | 0.00 | Foot soldier: Procurement |
| Haj Hassan Hilu Laqis | 0.04 | 0.00 | Foot soldier: Dbouk's Lieutenant |
| Jessica Yolanda Fortune | 0.04 | 0.00 | Foot soldier: Sham spouse |
| Marie Lucie Cadet | 0.04 | 0.00 | Foot soldier: Sham spouse |
| Mary Denise Covington | 0.04 | 0.00 | Foot soldier: Sham spouse |
| Mehdi Hachem Moussaoui | 0.04 | 0.00 | Foot soldier: Cigarette smuggling |
| Melanie Lynne Haynes | 0.04 | 0.00 | Foot soldier: Sham spouse |
| Mohit Behl | 0.04 | 0.00 | Foot soldier: Internet Pornography |
| Shiek Abbas Harake | 0.04 | 0.00 | Foot soldier: Hammoud's Lieutenant |
| Operation Bathwater | | | |
| Elias Mohamad Akhdar | 0.38* | 0.57* | Subgroup leader |
| Mohamad Ahmad Hariri | 0.38* | 0.33* | Subgroup leader |
| Carole Gordon | 0.22 | 0.15 | Foot soldier: Tax-free cigarette provision |
| Brandy Jo Bowman | 0.22 | 0.09 | Foot soldier: Tax-free cigarette provision |
| Hassan Moussa Makki | 0.19 | 0.23 | Foot soldier: Counterfeit tax stamps |
| Angie Tsioumas | 0.13 | 0.37* | Broker: Contraband cigarette provision |
| Mohamad Youssef Hammoud | 0.13 | 0.30* | Broker: Contraband cigarette provision |
| Barbara Ramsey | 0.13 | 0.01 | Foot soldier: Tax-free cigarette provision |
| Salim Nemir Awde | 0.13 | 0.00 | Foot soldier: Cigarette smuggling |
| Ali Mohamad Akhdar | 0.06 | 0.00 | Foot soldier: Cigarette smuggling |
| Bassam Hourani | 0.06 | 0.00 | Foot soldier: Counterfeit tax stamps |
| Donald Doctor | 0.06 | 0.00 | Foot soldier: Tax-free cigarette provision |
| Haissam Nashar | 0.06 | 0.00 | Foot soldier: Contraband cigarette provision |
| Issam Hassan Fawaz | 0.06 | 0.00 | Foot soldier: Cigarette smuggling |
| Mohamad Abdulmir Daher | 0.06 | 0.00 | Foot soldier: Cigarette smuggling |
| Nabil Mohamad Ismail | 0.06 | 0.00 | Foot soldier: Cigarette smuggling |

Source: Authors using ORA (Carley, 2014). Notes: scores indicated with an asterisk (*) are greater than one standard deviation above the mean.

can be described as “well-informed members,” as they have relatively high degree centrality scores but low betweenness centrality. The rest of the network is composed of “foot soldiers” in charge of select activities related to smuggling, sham spouses, and second-tier lieutenants. 430

In the Dearborn Network, Elias Mohamad Akhdar displays by far the highest betweenness centrality measure of all the nodes in the group. As was the case in the Charlotte Network, however, he also had a very high degree centrality measure. 435 Akhdar conforms to the pattern of a subgroup leader, together with Mohamad Ahmad Hariri. In contrast to the Charlotte Network, two brokers—Angie Tsioumas and Mohamad Youssef Hammoud—anchor the Dearborn Network. From the perspective of the Charlotte Network, Angie Tsioumas appears to be a foot soldier, with low scores for both degree and betweenness centrality. This illustrates a practical weakness 440 of betweenness centrality: because it is a sum over shortest paths between pairs of nodes, it makes a difference which nodes are considered part of the network being analyzed. It also shows how the artificial boundaries introduced by the structure of law-enforcement investigations can conceal significant structures. The remaining actors are foot soldiers, responsible for daily activities related to cigarette smuggling and 445 counterfeit tax stamps.

The structure and composition of both networks largely correspond to what one would expect to find in a dark network: few leaders with lots of minions, strong and redundant ties based on kin and ethnicity, and small cells able to conduct independent operations. So, how does one best dismantle this type of network? Thus far, most of the disruption 450 strategies adopted by law enforcement and security organizations have aimed at three main objectives: reducing or stopping information flows between leaders and foot soldiers, disrupting how decisions are taken so that no consensus can be reached among network members, and affecting the overall structure of the network, so that it becomes less 455 effective and, ultimately, incapable of conducting terror operations.⁵²

In what follows, we study which actor(s) should hypothetically be removed from the network to optimize outcomes. By comparing three measures—Diffusion, Clustering Coefficient, and Fragmentation⁵³—before and after the removal of certain actors, we can identify which actor’s disappearance leads to significant disruption to the structure of the two Hezbollah networks: 460

- The *Diffusion* measure is based on the distance between actors and indicates whether the network can easily spread information and resources. Small values indicate that the actors are farther apart; large values mean that they are close to one another. With the exception of Angie Tsioumas, the hypothetical removal of all the actors listed in Table 4 negatively affects diffusion throughout both 465 Hezbollah networks, as actors tend to be farther apart and less able to communicate.
- The *Clustering Coefficient* measures the extent to which actors tend to form clusters and indicates how information spreads through groups of actors. Small clustering coefficients support global information diffusion and a centralized structure, while 470 high clustering coefficients are a sign of tightly knit groups organized in a decentralized way. In the Charlotte Network, the removal of Said Harb would particularly affect how network members share information among themselves (−47%) due to the

Table 4. Immediate impact of removal of selected nodes.

| | Charlotte Network | | |
|------------------------|-----------------------|-----------------------|-----------------------|
| | Said Harb | Mohammad Y. Hammoud | Angie Tsioumas |
| | <i>Percent change</i> | <i>Percent change</i> | <i>Percent change</i> |
| Diffusion | -63% | -54% | -1% |
| Clustering Coefficient | -47% | -3% | -5% |
| Path Length | -26% | -25% | 2% |
| Fragmentation | 762% | 667% | 4% |
| | Dearborn Network | | |
| | Elias M. Akhdar | Mohamad A. Hariri | Angie Tsioumas |
| | <i>Percent change</i> | <i>Percent change</i> | <i>Percent change</i> |
| Diffusion | -54% | -38% | -39% |
| Clustering Coefficient | -44% | -30% | 10% |
| Path Length | -30% | -3% | -32% |
| Fragmentation | 424% | 283% | 318% |

fact that, as a subgroup leader, Said Harb is widely connected to the group. The effect is also particularly pronounced for Elias M. Akhdar (-44%) and Mohamad A. Hariri (-30%) in the Dearborn Network. 475

- *Path Length* refers to the number of ties a network contains. The immediate removal of most selected nodes leads to a significant reduction of this measure.
- Finally, the *Fragmentation* measure indicates the proportion of actors who are disconnected. As expected, Said Harb is the actor of the Charlotte Network whose hypothetical disappearance would most fragment the structure. Table 4 confirms that, without him, the network would be much more fragmented (+762%). Similar values are found for Mohamad Youssef Hammoud, whose disappearance would significantly fragment the network (+667%). By contrast, the hypothetical removal of Angie Tsioumas would lead to significantly less disruption (4%), which can be explained by the fact that her structural position, between Hammoud and Harb, is made redundant by a direct connection between those actors and by another link that passes through Hussein Chahrour. The redundancy of ties is a normal feature of dark networks, which ensure the network's operational resilience in case it is partially destroyed. In the Dearborn Network, the disappearance of Elias Mohamad Akhdar, the subgroup leader, would strongly increase the proportion of actors that would be disconnected and, generally speaking, have a disruptive impact on the network (+424%). The disappearance of Angie Tsioumas (+318%) and of the other subgroup leader, Mohamad Ahmad Hariri (+283%), would prove equally disruptive. 480 485 490

Discussion

Several strategies based on Social Network Analysis analysis have been developed by states and international organizations to disrupt dark and criminal networks over recent decades.⁵⁴ When networks were perceived as hierarchical, such as Al Qaeda or Hezbollah, disruption strategies mainly aimed at removing the "senior management," i.e., actors with the highest degree centrality, in the hope that their disappearance would affect the overall functioning of the structure. Centralized networks are indeed particularly vulnerable to shifts in their senior command, as most resources and information 495 500

flow between a central authority and the periphery of the network.⁵⁵ Based on the assumption that the removal of senior leaders would render their subordinates ineffective, this strategy was pursued by the United States in the wake of 9/11. In network terms, the results are mixed: while the Al Qaeda senior leadership has been depleted as a result, the network has also become increasingly decentralized. Numerous affiliates, such as Al Qaeda in the Islamic Maghreb or Al Qaeda in the Arabian Peninsula, have prospered in different parts of the world, strengthening their position after the killing of Osama Bin Laden in 2011.⁵⁶

Once the leaders are removed, hub-type networks break down into isolates unable to communicate effectively in the pursuit of their ends. That is exactly what happened in the case of the Charlotte Network. Investigators targeted Said Harb, the pivotal subgroup leader. They were able to “turn” him to provide evidence against the other members of the network. Since Harb was so well connected, and provided the only link between individuals in Charlotte and Canada, the intelligence he provided was sufficient to shut down the entire network, in a way that random targeting of other individuals would not. For example, many of the drivers who smuggled contraband across state lines had been stopped and their cargoes confiscated, but such random arrests did little to shed light on the true extent and purpose of the scheme. One of the members of the Dearborn Network, Hassan Moussa Makki, who was sentenced in 2003 for providing material support to Hezbollah, had been arrested in 1996 with nearly 2400 cartons of contraband cigarettes in his truck.⁵⁷ Nonetheless, being arrested did not appear to be much of a deterrent and Makki would continue to smuggle cigarettes for years to come. A 2008 study of tobacco smuggling and terrorism in Michigan concluded: “This is probably not the only instance of smugglers making their way into and back out of the hands of law enforcement officials only to return to their previous line of work.”⁵⁸

It is not unexpected that fundraising networks have one or a few actors of high centrality, since they exist to collect and funnel money (and other resources) to an umbrella organization. Criminal networks, on the other hand, have to balance the need for command and control—to avoid palace coups or subgroup internecine warfare—implemented by having leaders with high centrality, against the vulnerability to arrest that such high centrality actors create. It is therefore interesting to see how these tradeoffs are handled in practice for a group that falls into both categories: fundraising and criminal.

The Hezbollah fundraising networks in this article compensate for their suboptimal degree centrality that exposes them to greater risk and uncertainty through trust established between family and ethnic kin. In other words, they choose a balance point with greater centrality than a more conventional criminal group might, both because of the fundraising purpose, and because of stronger interpersonal ties. The relationships among a small group of trusted actors allow more cohesion than structures that would have developed randomly or among actors that do not share similar attitudes, behaviors, and experiences.⁵⁹ The strong ethnic and family ties observed in the networks lead to triads, that is, subgraphs formed by three nodes with the potential to increase trust because there is always a third person observing. The strongest triad of the Charlotte Network is probably the one linking Angie Tsioumas, her husband Mohammad Youssef Hammoud, and his associate and childhood friend Said Harb. In a criminal network characterized by

a low density and operating in a foreign environment, such triads, building on ethnic and family ties, provide stability.

Conclusion

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Though Hezbollah fundraising networks in North America are small and difficult to detect, a small-*n* study can nonetheless yield useful hypotheses as to the nature and structure of such networks. First, the article concludes that, as earlier small-*n* studies of terrorist networks have shown, the function of the network informs its structure, and vice versa. In the article's two case studies the primary function of the network—raising funds for a terror organization overseas—conformed to the expected hub-type network structure, where a relatively small number of highly connected actors develop transnational linkages and funnel a portion of the illicit gains to their home country without engaging in domestic attacks. An important specificity of both networks is the relative absence of “ideal brokers,” i.e., individuals ~~that~~ would be extremely central from a betweenness perspective but without being connected to many other actors. Instead of “ideal brokers,” the bulk of the network is premised on a division of labour, composed of foot soldiers who are in charge of specific tasks, such as counterfeiting tax stamps, conveying cigarettes across states, or providing sham marriages. In both fundraising networks, actors are tightly bound by pre-existing kin and ethnic ties that form the basis for criminal activities and seem rather autonomous from Hezbollah HQ as far as recruitment is concerned. 555 560 565

A second important conclusion to be drawn from this study relates to the impact of disruption strategies on hub networks. Knowing that fundraising networks will conform to this structure gives policy makers and law enforcement important tools to deter, disrupt, and discourage their activities. Fundraising networks are vulnerable at the hub, but resilient against traditional counter-terror measures that target hierarchies. They tend to compensate for the relative vulnerability of their structure by relying on strong ties with pre-existing acquaintances but, as the dismantling of the Charlotte and Dearborn networks shows, a strategy of targeting the best connected actors (in terms of both degree and betweenness centrality) has been shown successful as a means of bringing the network to light and disrupting its activities. 570 575

A third conclusion is a more general observation on the nature of terror networks. Instead of operating as hierarchical organizations, in the manner of a corporation, with orders flowing from a figure at the head down through the network, this article reinforces the view that terror networks should be conceived for what they are and how they work and not solely according to their formal structure. As Stohl and Stohl concluded in their own study of terror networks, it is difficult to conceive networks as clear command structures ~~closely~~ modelled on the military ~~model~~: “Rather, a terrorist network is at the nexus of multiple groups and constituencies that are linked in significant but non-hierarchical ways and can only be understood in context.”⁶⁰ This is a particularly important observation to be drawn from a case study of Hezbollah, an organization that is commonly taken to be rigid and hierarchical. However, this assumption does not hold for Hezbollah's globalized criminal activities with which the two cases in this article are connected. While the main structure of Hezbollah, that is to say the political party and semi-governmental organization in Lebanon, may follow a more hierarchical 580 585 590

organizational structure, illicit networks supported by Hezbollah in North America are able to maintain their secretive and stealthy nature precisely by adopting a much more informal and flexible structure.

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59. Sean F. Everton and Dan Cunningham, “Detecting Significant Changes in Dark Networks,” *Behavioural Sciences of Terrorism and Political Aggression* 5, no. 2 (2013): 94–114; Klaus von Lampe and Peter O. Johansen, “Organised Crime and Trust: On the Conceptualization and Empirical Relevance of Trust in the Context of Criminal Networks,” *Global Crime* 6, no. 2 (2004): 159–84; Carlo Morselli, Cynthia Giguère, and Katia Petit, “The Efficiency/Security Trade-off in Criminal Networks,” *Social Networks* 29, no. 1 (2007): 143–53. 785
60. Stohl and Stohl (see note 16 above), 107.
61. This matrix of Morselli’s centrality measures first appeared in Christian Leuprecht and Kenneth Hall, “Networks as Strategic Repertoires: Functional Differences among Al-Shabaab Terror Cells” (see note 28 above). 790