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## **How jihadist networks operate: a grounded understanding of changing organizational structures, activities, and involvement mechanisms of jihadist networks in the Netherlands**

Bie, J.L. de

### **Citation**

Bie, J. L. de. (2016, April 14). *How jihadist networks operate: a grounded understanding of changing organizational structures, activities, and involvement mechanisms of jihadist networks in the Netherlands*. Retrieved from <https://hdl.handle.net/1887/38841>

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**Note:** To cite this publication please use the final published version (if applicable).

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**Author:** Bie, Jasper L. de

**Title:** How jihadist networks operate : a grounded understanding of changing organizational structures, activities, and involvement mechanisms of jihadist networks in the Netherlands.

**Issue Date:** 2016-04-14

## Chapter 3:

# Changing Organizational Structures of Jihadist Networks: A Social Network Analysis

3

### Abstract

This paper uses social network analysis to study and compare the organizational structures and division of roles of three jihadist networks in the Netherlands. It uses unique longitudinal Dutch police data covering the 2000-2013 period. This study demonstrates how the organizational structures transform from a hierarchical cell-structure with a clear division of labor to a horizontal and dense networks with less clear orientation on tasks. The core member types in the jihadist networks transform from international jihad veterans with clear leadership skills to home-grown radicals with less status and often a lack of expertise. Furthermore, several jihadists evolve over time, when they used to be supporters, but become core members in posterior networks.

A slightly different version of this chapter was submitted as a separate manuscript:

*De Bie, J.L., De Poot, C.J., Freilich, J.D., & Chermak, S. (2016). Changing Organizational Structures of Jihadist Networks in the Netherlands: A Social Network Analysis. Under review.*

### 3.1 Introduction

In this chapter we aim to provide a more thorough understanding of the jihadist movement in the Netherlands by analyzing unique longitudinal Dutch police data. By using *social network analysis* (SNA) we try to capture changes in the organizational features of Dutch jihadist networks and their members' roles during the 2000-2013 period. SNA is known as a suitable method to uncover the structure, social dynamics, and members' position in a group, also with regard to illicit networks (Ressler, 2006). Over the last decade several studies have used SNA to illuminate organizational structures of terrorist groups (e.g., Carley et al., 2001; Van der Hulst, 2009a; Stollenwerk, 2015). It has been used to visually map structures (e.g., Koschade, 2006; Harris-Hogan, 2012), identify key players (Belli, Freilich, & Chermak, 2015; Pedahzur & Perliger, 2006; Van der Hulst, 2009a; Wu, Carleton, & Davis, 2014), and uncover organizational developments over time (Jordan, 2014; Magouirk, Atran, & Sageman, 2008; Rodriguez, 2005; Saxena, Santanam, & Basu, 2004). These studies have deepened our understanding of terrorist groups, and jihadist networks in particular. Furthermore, also for operational purposes SNA has been increasingly used by law enforcement and intelligence agencies (Van der Hulst, 2009b). The current study builds on prior SNA research by combining their objectives, but also by critically reflecting on several concepts and approaches.

The first points of discussion are the often referred concepts in the academic and policy domain about criminal and terrorist networks' features. One specific feature of illicit networks is that their organizational structures are highly affected by the outcome of an *efficiency-security trade-off*. Efficiency refers to the shortest possible way of communication, which is necessary to execute tasks effectively. The most suitable network structure in that regard would be a *dense* and decentralized network, because that entails many direct communication lines between members. In contrast to that, secrecy refers to minimal communication between members, because it may lead to exposure of the network. A suitable network structure would therefore be a centralized and less dense network with mainly strong ties, minimizing the level of direct information transfers and maximizing trust between members (e.g., Krebs, 2002, Koschade, 2006; Malm, Kinney, & Pollard, 2008; Rodriguez, 2005). In essence, the trade-off means that illicit networks need to balance between the need to take collective action, and the need to assure trust and secrecy within collaborative settings in order to be effective but withstand law enforcement interventions at the same time (Morselli, Giguere, & Petit, 2007, p. 144). Allegedly, most terrorist networks choose security over efficiency because they often aim for a one-time action only. They prefer not to rush their plans to use the one shot they have, and therefore rather avoid frequent communication to keep a low profile (Belli et al., 2015; Krebs, 2002; Morselli et al., 2007). Yet, in order to achieve the desired aim, efficiency cannot be dismissed entirely. The necessary balance between efficiency and security therefore seems to be found in the *compartmentalization* of networks, which is based on Granovetter's (1973)

*weak-and-strong-ties*. It states that by compartmentalizing the network in different cohesive sub-cells with strong redundant social ties, that only have weak non-redundant social ties with other sub-cells and/or a network's core, not the entire network will be exposed once a member or sub-cell is removed by law enforcement interventions. Compartmentalization thus increases efficiency within the sub-cells, but maintains the security of the network as a whole (Aylin, 2009; Baker & Faulkner, 1993; Duijn, 2014; McGloin, 2005; Pedahzur & Perliger, 2006; Perliger, 2014, Williams, 2001). Helfstein & Wright (2011b) however, argue that this network type should not be undisputedly assumed for all terrorist networks, basing their claim on research in which the analyzed terrorist attack networks were not centralized or compartmentalized at all. This warning against hasty assumptions can be endorsed via the notion that SNA is relatively difficult to apply to illicit networks due their covertness and fuzzy boundaries (Buchan & Whelan, 2015; Malm, Nash, & Moghaddam, 2015; Sparrow, 1991). Covertness makes it difficult to determine who belongs to a network, resulting in fuzzy boundaries that complicate the assessment that a network is complete. These difficulties facilitate the possibilities of missing data and incorrect relations, which can affect the quantitative SNA measures that are highly sensitive for minor adjustments (Krebs, 2002).

Another point of discussion concerns the role and position of a network's key player. It is often claimed that high actor level centrality scores classify individuals' roles. For instance, a subject is considered a *leader* when he has many direct contacts (high *degree centrality*), due to his centralized position (e.g., Qin, Xu, Hu, Sageman, & Chen, 2005; Stollenwerk, 2015; Wu et al., 2014). Also, a subject is considered a *broker* when he is on the path of two unrelated subjects (high *betweenness centrality*). In other words, when he connects isolated or distanced compartments within the network (e.g., Van der Hulst, 2009a; Perliger & Pedahzur, 2011; Morselli & Roy, 2008; Saxena et al., 2004). Identifying such key players is often assumed to have potential regarding disruption strategies (Koschade, 2006; McGloin, 2005; Morselli & Roy, 2008; Van der Hulst, 2009b), although arguments against it have been expressed as well. A first argument is that the removal of centralized actors only has a temporary effect, often caused by the network's resilience which enables it to find an immediate replacement (Duijn et al., 2014; Mullins, 2013). A second argument is that the most centralized actors are not always the most important actors (Carley et al., 2001; Mullins, 2013), but rather the most visible ones (Peterson, 1994). The reason for this is the distinction between social and human capital. Whereas the former merely reflects the number of a person's connections, the latter displays personal qualities, such as skills and expertise (Duijn et al., 2014). These qualities are difficult to determine with mere centrality metrics. Targeted removal of central actors is therefore not necessarily the silver bullet to counter-terrorism strategies (Helfstein & Wright, 2011b, p. 792). Rather a combination of the social and human capital of an actor needs to be assessed, by conducting both centrality metrics and a qualitative analysis, to determine the centralized position of an actor and his or her qualities and assets (Duijn et al., 2014, p. 3; Mullins, 2013; Van der Hulst, 2009a, p. 24).

A final point of discussion is that, with the exception of a small number of researches, many SNA studies portray a rather static picture of clandestine networks (Mullins, 2009a). These SNA studies highlight how one particular network operates at one specific moment in time, without enabling a comparison with networks from different episodes. Focusing on a single time period, while useful, could overlook organizational changes or the transformation of group members' roles, positions, and activities (Mullins, 2013). Moreover, there is only limited attention paid to whether changing organizational features and roles affect each other over time. Identifying dynamic changes would add to the understanding and could also aid policy makers in devising counter terrorism measures.

Based on the foregoing discussions we can conclude that findings about illicit network structures and roles based on SNA are interesting, but have to be interpreted with care and caution. In other words, conclusions derived from previous studies should not be instantly assumed to be applicable when dealing with illicit networks in other settings. In this chapter we therefore apply SNA to examine to what extent particular network features apply to the case of jihadist networks in the Netherlands. Although several studies have already applied SNA to Dutch case studies (e.g., Duijn et al., 2014; Van der Hulst, 2009a, 2009b), they did not focus on the possible change of network features, and hardly used any qualitative analysis. The central research question of this chapter therefore is: *To what extent do the organizational structures of the studied jihadist networks differ over time and what kind of roles do the studied subjects adopt in these networks?* To answer this question, we analyzed the temporal development of the jihadist movement of the Netherlands between 2000 and 2013, by comparing different jihadist networks from different points in time. This way, we try to identify differences and similarities in these networks' *organizational structures* and *subjects' roles*. Through mapping and visualizing the networks via SNA, a mental picture of complex linkages is provided (Saxena et al., 2004) which enabled us to discover patterns of behavior (Koschade, 2006; Mullins, 2009a). We use a mixed-method of qualitative and quantitative analysis, which adds a layer of precision in connecting social ties and their influence on behavior (Malm et al., 2015). In addition, instead of focusing on global jihadist movements or international terrorist organizations, our focus is on local jihadist networks in a Western European country. This will add to our understanding and may aid policy makers in their attempt to counter terrorism, as the many Western European Muslims traveling to ISIS controlled conflict areas to participate in the Jihad is currently a pressing issue (see also Chapter 4). It is important to empirically uncover the local networks behind foreign fighters and see how these networks have changed over the years.

The following paragraph will describe the data and methods that have been used to achieve this goal. After that we will outline the quantitative results of our analysis, which will be followed by a combination of the quantitative and qualitative findings. Finally, we reflect on our findings in the conclusion and discuss the implications and value of SNA in that regard.

## 3.2 Data and Methods

### 3.2.1 Data

The data used for this chapter are police investigations that focused on jihadist networks. The information from the police files was analyzed both quantitative and qualitative. This mixed method is important to deepen our understanding of the phenomenon and reduce the aforementioned risk of misinterpretation (Van der Hulst, 2009a). We were granted access to 28 voluminous confidential police investigations into jihadist terrorism between 2000 and 2013, focusing on different jihadist networks and involving hundreds of individuals. Based on these police files, this study created a sample for further analyses that contained 209 unique individuals. These 209 individuals were not all terrorists or violent extremists and not all of them were convicted or indicted with criminal charges. Our inclusion criteria for the 209 subjects were that: (1) a subject expressed extremist jihadist sympathies or that he/she explicitly facilitated such a sympathizer; (2) we were able to gather information on the subject beyond his/her personal details; (3) the subject lived or regularly resided in the Netherlands, or played an indispensable role in the network from abroad.

The police investigations yielded rich data based on various sources such as original wire taps of telephone and internet communication, recordings of in-house communication, transcripts of suspect interrogations, and witness statements, observation reports, forensic reports, house searches, and expert-witness reports, and importantly, complete and verbatim court transcripts and lawyers' statements. Court data is often considered to be the most reliable data source in terrorism research (Freilich, Chermak, Belli, et al., 2014; Sageman, 2004). We used a data collection sheet to systematically gather information from the police files, which contained several items concerning group structure, individual biographies, activities, ideology, recruitment process etc. In addition, we also conducted 28 semi-structured interviews with leading police investigators, public prosecutors and criminal defense lawyers who were involved in the 28 police investigations. The interviews, which were all recorded and transcribed *verbatim*, enabled us to place the documentation into context and provided valuable insights due to collaboration with practitioners. Finally, we attended over 10 court sessions of the criminal cases that were still under judicial review, which resulted in a large volume of valuable field notes.

For the purposes of the current chapter, the information from the police files, interviews, and field notes was transformed into a data-set suitable for both quantitative and qualitative analysis, which will be discussed below. The use of police files, or at least archival data and court documents, is often praised by SNA scholars (Baker & Faulkner, 1993; Krebs, 2002) when applying SNA to clandestine networks, and again it has been labeled by some as the "gold standard" (Belli, Freilich, & Chermak, 2015). The reason for this is that this source contains a large amount of relational data, documented over an extended period of time, which makes it highly suitable to uncover social interaction (Koschade, 2006, p. 562).

### 3.2.2 Network conceptualization

In the remainder of this chapter we merely refer to the term (*jihadist*) *network* as our unit of analysis. The studied networks are a selection of individuals from the aforementioned 209 subjects. We categorized individuals as belonging to one *jihadist network* when these subjects interacted with each other during a particular episode, while conducting activities together that were aimed at particular objectives, in which the Jihadi-Salafist ideology played a central role. Hence, the network boundaries are primarily formed by the subjects' interactions, activities, and shared violent jihadist ideology, rather than actual terrorist or violent acts.

To illuminate jihadist network structures in different time periods in the Netherlands, we selected 3 networks from the overall data-set that were similar in terms of core activities, but differed regarding the time period during which they were active. On the one hand, all 3 networks primarily aimed at the *activities* as outlined in the introduction (Chapter 1). The core business of all 3 networks was the facilitation of foreign fighting journeys to conflict areas, the dissemination and consolidation of the Jihadi-Salafist doctrine, and conducting criminal activities. At the same time, each network represented a particular episode; together they cover the larger time-frame 2000-2013. Regarding the number of subjects of each selected network, we applied an additional inclusion criteria apart from the ones mentioned before. If we had no information on the network positioning of a subject, we removed that subject from the analysis, which was actually only in a minority of cases. Network 1<sup>20</sup> operated between 2001 and 2003 and contained 34 individuals. The average age of this network's subjects is 28.7 years and most subjects were born outside the Netherlands. It operated during a time when jihadist networks did not receive significant attention by the police, the media, or the public. Because not many jihadist networks operated in the Netherlands before, network 1 can be considered one of the pioneering networks. We identified this network by merging 3 criminal cases, containing 4 police investigations. Next, network 2 operated between 2005 and 2006 and contained 25 individuals. The average age is 22.2 years and many subjects are second generation migrants who were born in the Netherlands. Network 2<sup>21</sup> operated immediately after the first spike of societal attention for jihadism. Whereas these subjects had specific predecessors they could use as an example, the police were much more aware of their existence at the same time. We identified network 2 by using a single criminal case, containing 2 police investigations. Finally, network 3<sup>22</sup> operated between 2008 and 2013. The average age is 23.7 years and most subjects are second generation migrants who were born in the Netherlands. The third network has a much longer life span than the first two networks. The reason for this is that the third network is based on a variety of police evidence, from 4 different

<sup>20</sup> This is network 2 in Table 2.1 (Chapter 2)

<sup>21</sup> This is network 7 in Table 2.1 (Chapter 2)

<sup>22</sup> This is network 10 in Table 2.1 (Chapter 2)

police investigations, that did not yet lead to one coherent criminal trial. As a result, these investigations did not yet lead to the collapse of the network, as was the case with the first two networks. Moreover, the network could continue to exist and was still active when the police information was analyzed for this research. This means that we focus on a particular (but long) operational episode of network 3 and a complete and conclusive picture of network 3 cannot be guaranteed. Nonetheless, the independent investigations could still provide valuable information to conduct SNA.

### 3.2.3 Quantitative analysis

Interactions between subjects were quantified to apply SNA. An observed interaction between two subjects was labeled an undirected tie. Such interactions include face to face meetings, or internet and telephone communication. Hence, unlike many other studies, the dyads in our study mean that the nodes actually knew each other. Moreover, we also measured the frequency or intensity of the interaction; in other words, the strength of the tie. We registered all observed ties in a value matrix, in which the rows and columns are defined by the subjects (i.e., nodes) and the cell values indicate the strength of the relationship between two nodes. The strength of the relationship measured as one of three values: a "1" indicating a "weak" relationship (i.e., at least one interaction between two subjects, although more interactions are likely), "3" indicating a "moderate" relationship (i.e., multiple interactions between two subjects during the investigation), or "5" indicating a "strong" relationship (i.e., multiple interactions between subjects, primarily on a daily or weekly basis).

We next processed the valued matrices in SNA software packages "Pajek" and "Gephi", which enabled us to apply the aforementioned network metrics *density*, *degree*, *betweenness* and *closeness centrality*. *Density* refers to the proportion between the number of observed ties and the maximum number of all possible ties in a network (Belli et al., 2015). A density score ranges from 0 (no ties) to 1 (everyone is connected to each other). *Degree centrality* refers to the number of direct contacts a node has, which according to the literature implies a subject with power or leadership. Standardized scores range from 0 to 1; a high score indicates that a subject is directly connected to many others in the network, whereas a low score indicates direct connections to only a few subjects. In a similar vein, *weighted degree centrality* also incorporates the strength of a relation. A high score indicates that a subject has a strong relation with many others in the network, whereas a low score indicates weak connections to only a few subjects. *Betweenness centrality* refers to the extent to which a particular node is on the shortest path between pairs of nodes in the network and therefore has a potential for control of communication (Freeman, 1979), which implies a subject's broker position. Standardized scores range from 0 to 1; a high score means that many shortest paths go through this node, whereas a low score indicates that no to a few shortest paths go through this node. *Closeness centrality* refers to the ability of subjects to access other subjects and measures the number of steps it takes for a subject to get to another.

Unlike degree centrality, closeness centrality scores reflect the indirect contacts of a subject. A high score means that a subject has relatively short paths to other subjects in the network and is thus able to access others easily, whereas a low score means his paths are relatively long, which makes other nodes less accessible (Freeman, 1979). Together, these metrics indicate a subject's centrality and power in the network.

Finally, in order to measure the extent of compartmentalization, we attempted to identify communities of nodes within the network that have a higher density compared to other communities in the network. This study therefore used the *modularity* measure, which identifies meaningful communities and incorporates the weight or strength of the relations. Modularity looks for communities of nodes that are more densely and stronger connected to each other than would be expected if they were connected by chance. It is a measure that is used to look for how "good" a clustering actually is (Good, De Montjoye, & Clauset, 2010; Sah, Sing, Clauset, & Bansal, 2014). Networks with a high modularity score have a strong community structure. The nodes within the communities have dense and strong connections, but sparse or weak connections with nodes from other communities (Newman, 2006). A modularity score of 0 means that the measured communities are purely random, whereas values above 0.3 are considered good and meaningful divisions (Newman & Girvan, 2004).

### 3.2.4 Qualitative analysis

The information from the police files, interviews, and field notes was also coded to conduct a qualitative analysis. The coding process was inspired by ground theory principles and conducted with the help of software program MAXQDA. It started with an *open or initial coding* procedure, which in this study was the *incident-by-incident coding*. While comparing different incidents, relevant codes regarding the subjects' social relationships and roles emerged. Subsequently, *focused coding* was applied to evaluate the initial codes. Through this procedure, the codes developed into useful concepts about the activities, network structures, and division of roles (see Charmaz, 2006, p. 53-57). By constantly comparing data with data, codes and qualitative concepts, the qualitative findings were specified and elaborated.<sup>23</sup>

### 3.2.5 Limitations

The use of police files as data source for grounded theory methods and SNA comes with particular limitations. The most important one is the "boundary specification problem", meaning that we may be analyzing an incomplete network. The police cannot monitor all potential jihadist sympathizers, or measure all interactions between them, which may lead to missing data. This in turn can lead to validity and reliability issues, especially with regard to the centrality metrics (Borgatti, 2006). In the same vein, because the subjects do not seem to have an explicit policy about who to include in their network,

<sup>23</sup> For a more extensive outline of the used GT methods, see Chapter 2.

Table 3.1: Network level descriptives and metrics.

	Network 1	Network 2	Network 3
<b>Years of operation</b>	2001-2003	2005-2006	2008-2013
<b>Size</b>	34 subjects	25 subjects	25 subjects
<b>Density</b>	0.210	0.380	0.393
<b>Average node</b>	6.94	9.12	9.44
<b>Average path length</b>	2.266	1.687	1.637
<b>Modularity</b>	0.471 (4 communities)	0.305 (3 communities)	0.232 (3 communities)
<b>Degree CD(ni)</b>	0.388	0.466	0.435
<b>Betweenness CB(ni)</b>	0.464	0.185	0.158
<b>Closeness CC(ni)</b>	0.524	0.466	0.435

and they probably do not have a solid idea themselves about what constitutes their network, the boundaries of a network should be considered unclear or fuzzy (Sparrow, 1991). Nonetheless, as explained in 2.5.1, police data have significant advantages compared to other data due to the much further reach into the lives and operations of alleged terrorists and criminals. This way the data enable you to thoroughly scrutinize the tie strengths.

Also, it is important to stress that our findings may be partially biased. The observed network structures may be the outcome of a particular police investigation strategy, and the differences between networks over time may have been caused by adjustments in police investigation strategies. In other words, the police may have identified particular network structures in the past, but prioritized one over the other at different stages. This creates the possibility that we may find a difference in network structures over time, while this may actually be a selection effect. On the other hand, we merged particular police investigations in order to identify our own types. This is a great advantage of the current study, because it enables us to have a broader view than the predetermined organizational structures.

## 3.3 Quantitative Results

To compare the 3 networks, we have conducted basic quantitative analyses of which the results are captured in Table 3.1. Several metrics in Table 3.1 show how well the nodes or subjects in the networks are connected. Network 1 has a notably lower *density* of 0.210, meaning that only 21% of all possible connections exists, whereas the other networks score considerably higher density values of respectively 38% and 39.2%. This means that over time, the studied Dutch jihadist networks have become denser and the subjects have become more connected to other jihadists. Although all density scores seem low at first sight, they are relatively high compared to other terrorist groups (e.g.,



Belli et al., 2015; Krebs, 2001; Stollenwerk et al., 2015) and organized crime networks (e.g., McGloin, 2005; Morselli, 2009) which often portray density scores between 10-20% or lower. The fact that network 1 is less dense is also a notable finding: although it is a considerably larger network, its subjects have on average less connections and need a longer route to get to other nodes than the subjects in other networks. Based on this finding, we may conclude that over the years, it became easier for the subjects in the studied networks to find access to others. This is further accentuated by the modularity scores, which indicate how well subjects cluster in larger communities. Networks 1 and 2 have stronger community structures than network 3 and the modularity score of network 3 is slightly under the threshold of 0.3. This means the clustering structure of network 3 is less meaningful, which could be the effect of a dense network.

In addition, the network level centrality scores (degree, betweenness, and closeness) show the extent of variety in actor level scores. All 3 networks indicate a moderately centralized structure due to their similar *degree* scores of around 0.4. However, network 2 and 3 score higher, implying that these later networks are somewhat more centralized around a few prominent people. However, it must be stressed that the centrality score of network 1 is heavily affected by the network size, which is considerably larger than the other networks. This may impede its degree centralization. With regard to betweenness, network 1 scores considerably higher than the other networks, implying that there are a few prominent subjects in network 1 who connect isolated parts of the network. This is less the case in the other networks which were active in later stages of the studied time-frame. The higher closeness score of network 1 in comparison to the other networks indicates more variety among the subjects in the degree to which they have access to indirect contacts in this network.

To see whether the three centrality measures significantly differ between the 3 networks studied, we measured the actor level degree, betweenness, and closeness scores (see Tables 3.3, 3.4, and 3.5 for the actor level scores within each separate network) and then compared the network means by conducting a Kruskal-Wallis test (a Levene test showed unequal variances between networks, hence a Kruskal-Wallis instead of an ANOVA). We found a significant difference between the networks with respect to degree ( $\chi^2 = 19.690$   $df = 2$ ,  $p = 0.000$ ) and closeness centrality ( $\chi^2 = 44.338$   $df = 2$ ,  $p = 0.000$ ), but not for betweenness centrality ( $\chi^2 = 0.603$   $df = 2$ ,  $p = 0.740$ ). This tells us that the degree and closeness centrality scores are not evenly distributed among the networks, but the distribution of betweenness scores appears to be similar. We then conducted a pair-wise Games-Howell post-hoc test and found that network 1 was significantly different from network 2 and 3. We found no significant difference between network 2 and 3 (see Table 3.2). Following the assumptions from the literature, this means that the division of roles is significantly different in network 1 compared to the other two networks.

**Table 3.2:** Post-hoc test for comparison of actor level degree and closeness centrality means.

			Mean Difference	Std. Error	Significance
<b>Degree</b>	Network 1	Network 2	-0.1796794*	0.0435568	<b>0.001</b>
	Network 1	Network 3	-0.1830074*	0.0439018	<b>0.001</b>
	Network 2	Network 3	-0.0033280	0.0557479	0.998
<b>Closeness</b>	Network 1	Network 2	-0.1568148*	0.0238577	<b>0.000</b>
	Network 1	Network 3	-0.1716588*	0.0225228	<b>0.000</b>
	Network 2	Network 3	-0.0148440	0.0276138	0.853

\* The mean difference is significant at the 0.01 level.

The foregoing centrality metrics give us an understanding of the structures and division of roles in the 3 networks studied. However, the numbers only give limited insight in these network, because they do not tell us much about *how* network 1 actually differs from the other networks and *how* the individuals perform their alleged role. Also, because the quantitative analysis has difficulties identifying false positives (Mullins, 2013), we are not sure whether the centrality metrics form a good indication of the subjects' roles. In order to deepen and contextualize our findings, to detect more subtle differences in the network structures and performed roles, and to obtain a more thorough understanding of how the analyzed networks differed over time, we combine our quantitative network analysis with a qualitative network analysis in the next paragraphs.

In the next paragraphs, we will discuss each network separately and illuminate the network's *organizational structure* and *subjects' roles*. Network structures will be visualized in so-called sociograms: the connections or ties between studied subjects are shown by the edges between nodes, while the edge thickness indicates the strength of their relation. Also, the nodes will be clustered in different communities, based on a modularity measure, which is demonstrated by the colors in the sociograms; nodes belonging to the same cluster have the same color. We will describe, interpret, and contextualize the quantitative clusters with qualitative analyses. Additionally, we will describe which subjects played a prominent role within the network. We therefore divided the subjects in two categories: *core members* and *supporters*. Core members are the precursors in the network, who incite others to embrace the ideology and to conduct particular activities. Sometimes they are "leaders", but foremost they form the backbone of the network. It is questionable whether these networks would survive without these core members. Supporters, however, are subjects who follow the core members and facilitate the network in different ways. They play a less dominant role, but form the majority of the network. We will mainly focus on the core members and illuminate only a minority of subjects in the next paragraphs.



## 3.4 Combining quantitative and qualitative results

### 3.4.1 Network 1

#### 3.4.1.1 Network structure

The first network prepared several foreign fighting attempts to primarily Afghanistan and Pakistan and recruited numerous new members between 2001 and 2003. It has a strong international foundation, which resulted from the connections with the GSPC in Algeria, and the fact that several members came to the Netherlands after they fought jihad in other countries to expand the jihadist movement. The qualitative analysis shows that network 1 was a relatively well-structured and organized network. It seemed to be compartmentalized in several sections for operational reasons, which partly explains the lower density score and longer path length. The visualization of this structure is captured in Figure 3.1. The network was centralized around 4 core members, who are indicated with diamonds in the sociogram (subjects 2, 14, 16, and 19). The core members were each in charge of a separate cell of recruits with whom they had a hierarchical relation. The core members and their cells seem to operate autonomously, although the core members communicated with each other on a regular basis. The other nodes in the sociogram are the *supporters*, illustrated with a circle, which are mainly recruits, followers, or operational facilitators.

To validate the compartmentalization, we applied a modularity measure and found that the communities resemble the cells to a certain extent. The blue community (density = 1)<sup>24</sup> consists of core member 14 and 3 followers with whom he regularly participates in sporting classes, allegedly for terrorist training purposes. The yellow cluster (density = 1) consists of core member 19 and 2 supporters. The red community (density = 0.54) forms the ideological core of the network, encapsulating 2 core members (2 and 16) and many other key facilitators. The inclusion of 2 core members in one compartment seems odd, and is probably a direct effect of excluding several recruits from the dataset due to a lack of information.<sup>25</sup> The network is in reality much larger than the 34 nodes, which explains why the modularity measure does not fully correspond to the qualitatively identified compartmentalization. Besides the clustering around core members, this network also contains a subgroup of subjects who merely conducted criminal activities, commissioned by core member 2, such as large scale passport forgery, shoplifting, burglaries, and drug transportations. These crimes were used to logistically or financially support the journeys to conflict areas (see also Chapters 4 and 6). This additional network partitioning is illustrated by the modularity measure, which clustered several subjects into one community (green community, density = 0.47) who were mainly undocumented. Many of them form the periphery of the network with

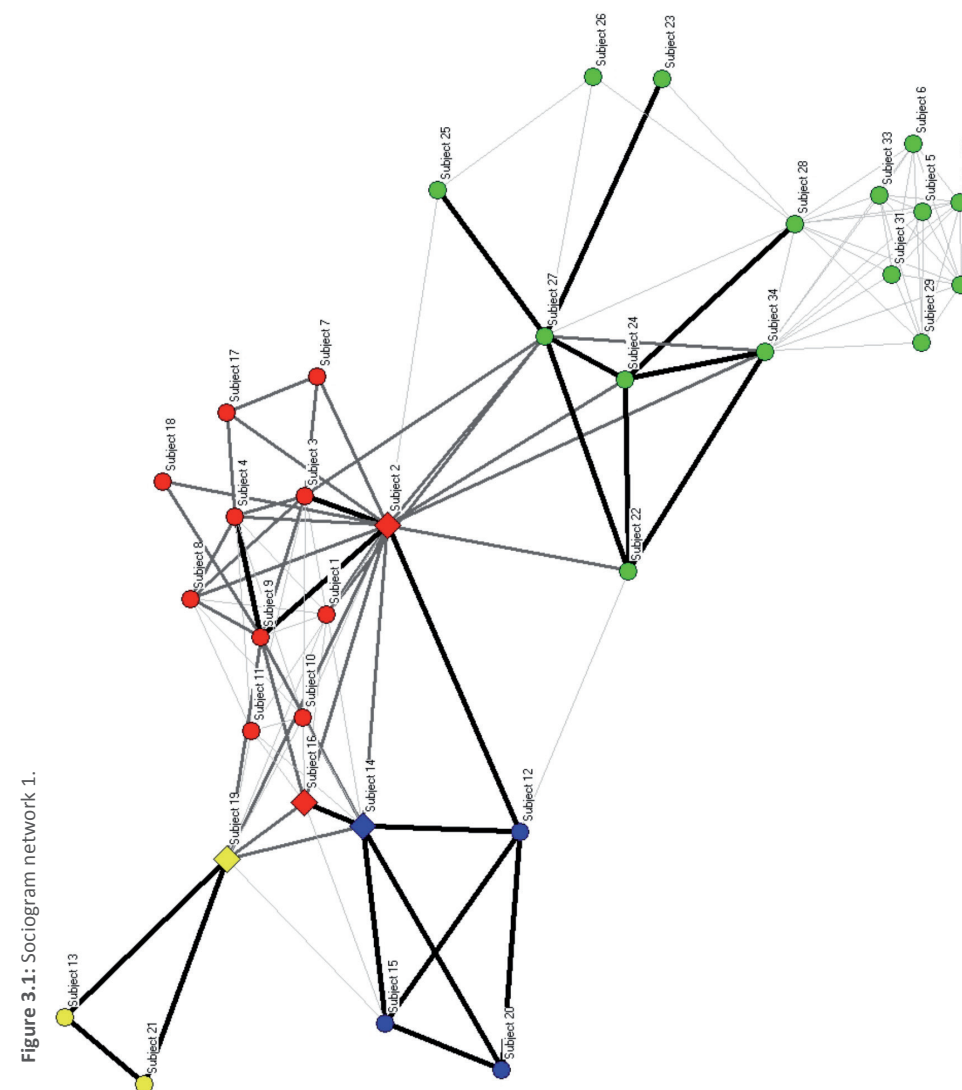


Figure 3.1: Sociogram network 1.

<sup>24</sup> Density is not weighted, just based on plain number of contacts.

<sup>25</sup> This means that the centrality scores are affected by this omission and qualitative data is therefore necessary to draw a more realistic picture.

weak connections throughout the network, although those subjects involved in many criminal activities were strongly connected to each other and only weakly connected to the ideological communities. Most subjects in the green community were less ideologically devoted to the Jihadi-Salafist doctrine or the goals of the core members, and the pragmatic value of the network seems to be the most appealing factor to them (see also Chapter 5).

Due to the network's compartmentalization, subjects were able to conduct large scale crimes on a structural basis by one community, while other communities successfully focused on the recruitment, training and ideological education of new members. As a result of this seemingly strict division of labor and connections the overall density was decreased, which lowered chances of exposure. At the same time this increased the density within the separate communities which increased the efficiency of communication.

#### 3.4.1.2 Roles

Taking a closer look at the individual subjects, we observe that the core members do not have an entirely equal relation. Subject 2 seems to be the *primus inter pares*. He is a charismatic ideologue who acquired a high social status due to his religious knowledge and numerous international contacts (in 119 countries according to his phone records). He is known by fellow subjects as the "President of the Room of Safety and Stability" where he ideologically educates other subjects. The police for instance found a so-called "Jihadi-library" in his home with thousands of radical tapes and documents. Besides being an ideological and operational leader, he is also a broker between the core group and the green cluster. He communicates primarily with the main criminal facilitators subjects 22, 24, 27, and 34, who at the same time predominantly communicate with subject 2. This narrowed communication flow explains the high network level betweenness and closeness scores. The central and broker positions of subject 2 are also illustrated by the centrality scores in Table 3.3, where he ranks first for all centrality scores with quite a lead towards the rest. However, the centrality scores in Table 3.3 only partly correspond to the qualitative categorization of the other core members (highlighted cells), because they are not structurally ranked as the most centralized subjects. We notice for instance that subject 16, who is a jihad veteran with extensive ideological knowledge, has a very low rank on all centrality scores, despite his status as a popular and admired theologian who builds close relationships with new recruits. On the one hand this is caused by the aforementioned exclusion of many recruits. On the other hand, the demotion of core members from the top centrality ranks is the result of the unexpected centralized position of the criminal facilitators, such as subject 27, 34 and 28 in particular. Subject 27 is probably the most important criminal facilitator due to his solid relation with subject 2, who commissions him to forge passports. During house searches, the police found many false passports and professional equipment that enabled him to forge the passports. In addition, subject 27 is also accused of helping subject 2 to escape from

Table 3.3: Actor level centrality scores for network 1.

Network 1				
CD(ni)	Weighted CD(ni)	Rank	CB(ni)	CC(ni)
0.5758 Subject 2	0.3455 Subject 2	1.	0.4897 Subject 2	0.7021 Subject 2
0.3636 Subject 28	0.2061 Subject 27	2.	0.2856 Subject 34	0.5690 Subject 34
0.3636 Subject 34	0.1939 Subject 14	3.	0.1305 Subject 19	0.5500 Subject 27
0.3030 Subject 14	0.1758 Subject 9	4.	0.1264 Subject 27	0.5238 Subject 22
0.3030 Subject 27	0.1576 Subject 19	5.	0.0602 Subject 28	0.5156 Subject 1
0.3030 Subject 19	0.1455 Subject 34	6.	0.0498 Subject 14	0.5077 Subject 24
0.2727 Subject 3	0.1394 Subject 3	7.	0.0368 Subject 12	0.5000 Subject 14
0.2727 Subject 1	0.1394 Subject 24	8.	0.0327 Subject 1	0.5000 Subject 19
0.2727 Subject 9	0.1273 Subject 12	9.	0.0239 Subject 22	0.4925 Subject 9
0.2424 Subject 31	0.1212 Subject 4	10.	0.0218 Subject 3	0.4853 Subject 3
0.2424 Subject 30	0.1152 Subject 22	11.	0.0177 Subject 9	0.4853 Subject 11
0.2424 Subject 29	0.1091 Subject 16	12.	0.0131 Subject 16	0.4853 Subject 10
0.2424 Subject 32	0.1030 Subject 15	13.	0.0112 Subject 25	0.4853 Subject 16
0.2424 Subject 11	0.0970 Subject 28	14.	0.0092 Subject 24	0.4583 Subject 4
0.2424 Subject 10	0.0910 Subject 20	15.	0.0077 Subject 11	0.4521 Subject 12
0.2424 Subject 33	0.0910 Subject 8	16.	0.0077 Subject 10	0.4521 Subject 8
0.2424 Subject 4	0.0788 Subject 1	17.	0.0064 Subject 4	0.4459 Subject 28
0.2424 Subject 16	0.0606 Subject 13	18.	0.0063 Subject 15	0.4459 Subject 25
0.2121 Subject 6	0.0606 Subject 21	19.	0.0043 Subject 26	0.4286 Subject 7
0.2121 Subject 5	0.0545 Subject 17	20.	0.0011 Subject 8	0.4286 Subject 17
0.2121 Subject 8	0.0545 Subject 7	21.	0.0006 Subject 7	0.4231 Subject 18
0.1515 Subject 24	0.0485 Subject 32	22.	0.0006 Subject 17	0.4074 Subject 31
0.1515 Subject 12	0.0485 Subject 29	23.	0.0003 Subject 31	0.4074 Subject 29
0.1515 Subject 22	0.0485 Subject 11	24.	0.0003 Subject 30	0.4074 Subject 30
0.1515 Subject 15	0.0485 Subject 33	25.	0.0003 Subject 32	0.4074 Subject 32
0.0909 Subject 25	0.0485 Subject 10	26.	0.0003 Subject 29	0.4074 Subject 33
0.0909 Subject 26	0.0485 Subject 31	27.	0.0003 Subject 33	0.4024 Subject 6
0.0909 Subject 17	0.0485 Subject 30	28.	0.0000 Subject 20	0.4024 Subject 5
0.0909 Subject 20	0.0424 Subject 6	29.	0.0000 Subject 6	0.3976 Subject 26
0.0909 Subject 7	0.0424 Subject 5	30.	0.0000 Subject 23	0.3929 Subject 23
0.0606 Subject 13	0.0424 Subject 25	31.	0.0000 Subject 21	0.3626 Subject 15
0.0606 Subject 23	0.0364 Subject 18	32.	0.0000 Subject 5	0.3474 Subject 20
0.0606 Subject 21	0.0364 Subject 23	33.	0.0000 Subject 18	0.3402 Subject 13
0.0606 Subject 18	0.0182 Subject 26	34.	0.0000 Subject 13	0.3402 Subject 21

prison in collaboration with subject 22, 24, and 34. Because subjects 28 and 34 have the most direct contacts with many relatively “isolated” undocumented immigrants in the network’s periphery (with whom they allegedly commit crimes), they score relatively high on betweenness centrality. This is an interesting finding, because the centrality scores thus direct us to the most important criminal facilitators of the network, but not to all core suspected terrorists. Hence, the qualitative analysis provides context that is necessary to interpret and validate key subjects identified by the SNA, based on their centrality scores. The same applies to several key subjects who were not identified as brokers based on their centrality scores. In the analyzed network these subjects have many international contacts, which they use to explore and utilize financial opportunities worldwide (subject 21), to coordinate jihad travels abroad (subject 17), or to collaborate with other jihadist networks overseas (subject 9). However, because their contacts are external and for obvious reasons not included in the network data, their betweenness scores and ranks are considerably low (see Table 3.3).

### 3.4.2 Network 2

#### 3.4.2.1 Network structure

Network 2 is a home-grown network that operated in 2005-2006. The network prepared 2 foreign fighting attempts, although for the most time it aimed to disseminate a radical doctrine. The underlying structure of network 2 was very different from the structure of network 1. Instead of a clear hierarchical cell structure with leading core members, subordinate recruits, and strong international connections, network 2 is a horizontal network with a weak leadership, no international foundation, and mainly consisting of so-called *home-grown jihadists* who grew up in the Netherlands. The home-grown jihadists are a mix of young foreign fighting potentials and jihadist sympathizers of whom many got involved with the jihadist movement through self-radicalization. Despite self-radicalization, the subjects looked for guidance and support from other jihadists. Several subjects in network 2 were able to provide this support, which demonstrates a form of demand and supply between subjects.

Due to the flat and decentralized structure of the network, the (potential) foreign fighters could not rely on large scale criminal activities that would logistically or financially support the journeys. Instead, they had minimal financial capital which they acquired from low paid jobs, and they were forced to make use of low profile training opportunities (see also Chapter 4). We observed that, like network 1, network 2 compartmentalized in a certain way to expedite these actions and to become operational. More precisely, several potential foreign fighters gathered in small groups or cliques and relied on the expertise of a single senior jihadist (subject 21, see 3.4.2.2 for more details). Two cliques were found; one aiming for Chechnya (subjects 64, 65, and 68), another for Iraq/Afghanistan (subjects 37, 59, 60, and 66). The latter clique explicitly requested the assistance of subject 21 because of his international contacts and ability to collect money. This senior jihadist was open to this request and eagerly tried to

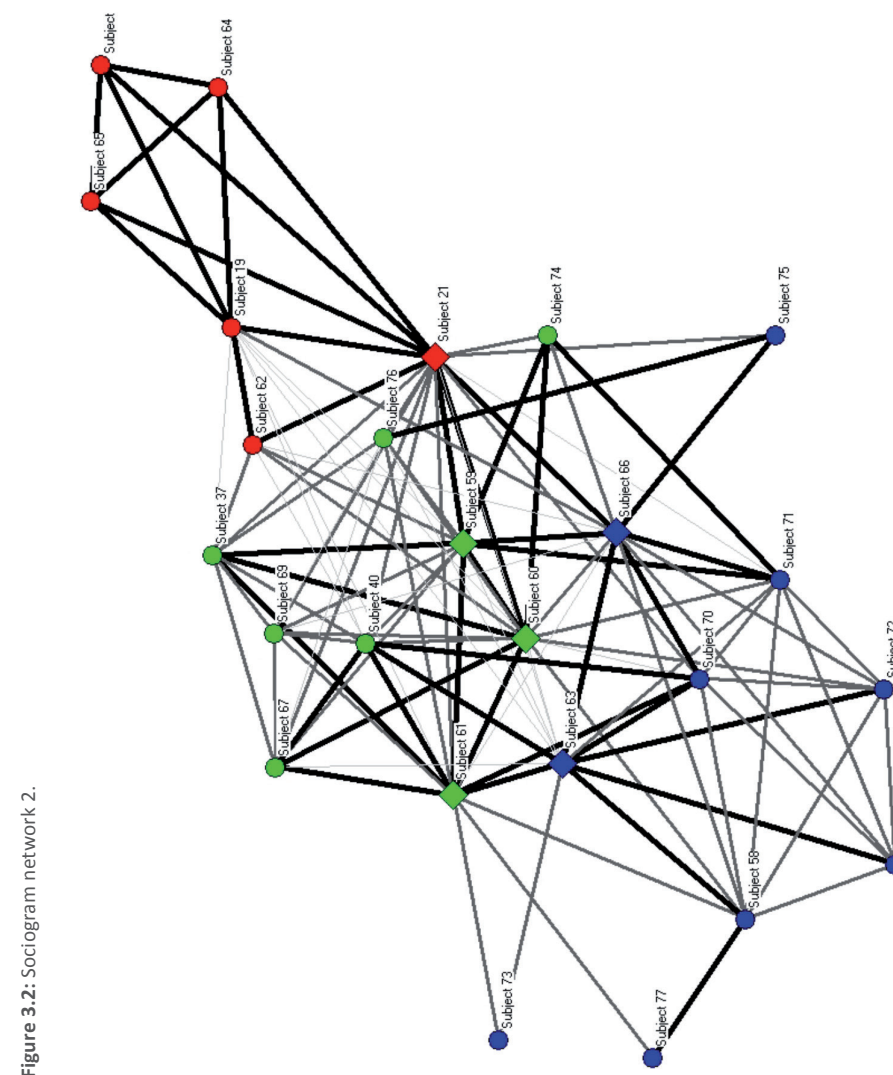


Figure 3.2: Sociogram network 2.

facilitate the logistical and financial side of the journey and guided them through the mental and physical preparations of the journey. Although the compartmentalization of 2 foreign fighting cliques was not as efficient due to double preparations, it did enhance security. Once the first clique got arrested in Azerbaijan, this did not lead to the immediate exposure of the second clique.

However, the compartmentalization is not absolute, but rather variable and depends upon the type of activity the members are conducting. For example, regarding the other core activity of disseminating and consolidating the Jihadi-Salafist doctrine, we found that the subjects did not cling to the foregoing delineated cliques. The reason for this is that unlike network 1 this activity was not guided by senior ideologues, but several young jihadists volunteered as missionaries of the Jihadi-Salafist doctrine and aimed to educate others through a horizontal rather than hierarchical form of communication. As a result, the subjects frequently interacted during (secret) ideological gatherings, where they would exchange and discuss ideological material (see also Chapter 6). The gatherings occurred in different settings that constantly altered in formation of attendees, leading to many different people meeting each other. Whereas the network's density and average connection increased due to this interactive nature, the average path length and the network level betweenness and closeness scores decreased in comparison to network 1, as shown in Table 3.1 and Figure 3.2. Moreover, it also intensified relational strength in comparison to network 1, as illustrated by the edges in Figure 3.2 and the relatively higher weighted degree centrality scores in Table 3.4. This increased social interaction was very efficient for the dissemination and consolidation of the ideology, although it did increase the risk of exposure as well.

The modularity measure captures both core activities in a meaningful and interesting network compartmentalization. The red community (density = 0.80) contains the first clique of foreign fighters (subjects 64, 65, and 68) – which is scarcely connected to the other two communities – and the operational guide (subject 21) of both foreign fighter cliques (see 3.4.2.2 for more details on this community).<sup>26</sup> Additionally, the green community (density = 0.81) is the core of the network in which most male jihadist sympathizers are located. This community is the most active in the network and several subjects are indicated as core members in Figure 3.2 (diamond nodes), because they are the forerunners on different levels. It contains the other clique of foreign fighters (subjects 37, 59, 60, and 66), complemented with subjects that are primarily active with educating the Jihadi-Salafist ideology to random *supporters* (circle nodes). This green community is highly connected to the blue community, but can be distinguished based on gender. The blue community (density = 0.53) merely contains female subjects (with the exception of peripheral subject 73), who communicated on a regular basis

<sup>26</sup> A disadvantage of using a modularity measure is that it is unable to indicate overlap of clusters. A subject can therefore only be part of one community, whereas in reality he might be part of more than one community (as is the case with subject 21).

and who often gathered separately from the men. Again, this compartmentalization is not absolute, because several female subjects are married to subjects from the green community and thus interact frequently as Figure 3.2 illustrates. Also, several female subjects (like subjects 63, 66, and 70) are sometimes present during male meetings, although they are seated in separate rooms or are separated by curtains. This indicates that the community boundaries are somewhat fuzzy, and the strictly delineated cliques only emerge for preparing the foreign fighting attempts. In comparison to network 1, the compartmentalization of network 2 therefore has a different nature.

Table 3.4: Actor level centrality scores for network 2.

Network 2				
CD(ni)	Weighted CD(ni)	Rank	CB(ni)	CC(ni)
0.7917 Subject 21	0.5750 Subject 21	1.	0.2079 Subject 21	0.8276 Subject 21
0.7083 Subject 60	0.4750 Subject 60	2.	0.1232 Subject 61	0.7742 Subject 60
0.6667 Subject 61	0.4667 Subject 61	3.	0.0860 Subject 63	0.7500 Subject 61
0.6250 Subject 63	0.4333 Subject 59	4.	0.0823 Subject 66	0.7273 Subject 63
0.6250 Subject 66	0.4250 Subject 66	5.	0.0693 Subject 19	0.7273 Subject 66
0.5833 Subject 59	0.3917 Subject 63	6.	0.0660 Subject 60	0.7059 Subject 59
0.5000 Subject 19	0.3000 Subject 70	7.	0.0261 Subject 59	0.6667 Subject 19
0.4167 Subject 70	0.3000 Subject 40	8.	0.0236 Subject 58	0.6316 Subject 70
0.4167 Subject 40	0.2833 Subject 19	9.	0.0177 Subject 71	0.6316 Subject 40
0.4167 Subject 37	0.2833 Subject 37	10.	0.0149 Subject 70	0.6316 Subject 71
0.4167 Subject 71	0.2833 Subject 71	11.	0.0128 Subject 76	0.6154 Subject 69
0.3750 Subject 69	0.2583 Subject 58	12.	0.0057 Subject 40	0.6154 Subject 67
0.3750 Subject 67	0.2417 Subject 67	13.	0.0047 Subject 37	0.6154 Subject 76
0.3750 Subject 76	0.1917 Subject 69	14.	0.0027 Subject 69	0.6154 Subject 37
0.3750 Subject 58	0.1917 Subject 76	15.	0.0015 Subject 67	0.5854 Subject 62
0.2917 Subject 62	0.1917 Subject 72	16.	0.0007 Subject 72	0.5714 Subject 58
0.2917 Subject 72	0.1750 Subject 62	17.	0.0007 Subject 62	0.5455 Subject 72
0.2500 Subject 54	0.1750 Subject 74	18.	0.0005 Subject 75	0.5333 Subject 74
0.2083 Subject 74	0.1667 Subject 68	19.	0.0000 Subject 74	0.5217 Subject 54
0.1667 Subject 65	0.1667 Subject 65	20.	0.0000 Subject 77	0.5106 Subject 75
0.1667 Subject 68	0.1667 Subject 64	21.	0.0000 Subject 64	0.4898 Subject 64
0.1667 Subject 64	0.1667 Subject 54	22.	0.0000 Subject 68	0.4898 Subject 65
0.1250 Subject 75	0.1083 Subject 75	23.	0.0000 Subject 73	0.4898 Subject 68
0.0833 Subject 73	0.0667 Subject 77	24.	0.0000 Subject 54	0.4706 Subject 73
0.0833 Subject 77	0.0500 Subject 73	25.	0.0000 Subject 65	0.4706 Subject 77



### 3.4.2.2 Roles

When we focused on the individual subjects, we found that the quantitative analysis corresponds to our qualitative categorization of several *core members* (subjects 21, 59, 60, 61, 63, and 66; diamonds in Figure 3.2). These subjects indeed have the highest scores on the centrality metrics in Table 3.4 (highlighted cells). In comparison to network 1, however, we found that the core members differed in nature. The qualitative analysis demonstrates that instead of being an operational leader, they rather appear to be forerunners in the network. Instead of being an explicit jihad recruiter, they prefer to go on jihad themselves. They have a guiding instead of a leading role, and they motivate instead of recruiting others to internalize the ideology and become a valuable asset to the jihadist movement. They portray this role mainly during the many ideological gatherings they attend and often organize, which enabled them to frequently meet and communicate with most *supporters*.

The position of subject 21 is an interesting example in that respect. As mentioned, he is an operational guide who facilitates the foreign fighting journey to Chechnya (subjects 64, 65, 68) and Iraq/Afghanistan (subjects 37, 59, 60, 66). He acquired his aforementioned status through his work as a financial facilitator in network 1, for which he travelled the world. At that time he closely collaborated with subject 19, who he considers his ideological mentor. Subject 19 was one of the core members in network 1, but only plays a marginal role in network 2. The fact that subject 21 and 19 live together explains the number of contacts subject 19 still has in network 2, resulting in relatively high centrality scores. They are both grouped in the red community together with a clique of foreign fighters (subjects 64, 65, 68) who mainly prepared their journey from the house of subjects 21 and 19. Because these foreign fighters have no contact with other subjects in the network, subject 21's betweenness score increased. According to the qualitative analysis, subject 21's role in the green community is just as important, which makes his community position complex. For example, he assists the foreign fighters from the green community with the collection of money and he brings them in contact with a passport facilitator, subject 62 (red community). In order to meet subject 62, the telephone communication goes solely via subject 21, making him indispensable. Interestingly, while he operated with minimal influence in network 1, he became the most centralized subject in network 2. Although he ranks first on all centrality metrics, his guiding position is not unimpeachable. For instance, subject 21 fails to materialize the planned preparation and consequently the potential foreign fighters will never depart. His status eventually deteriorates once the other subjects ideologically outgrow him and because he beats his newlywed wife subject 66, which is core member 59's sister.

Whereas subject 21's position as a core member eroded, the positions of several other members developed. Core member 61 for instance acquired high social status due to extensive ideological knowledge and is a respected ideologue in the green community. He is much younger than the ideologues in network 1, but people look

up to him regardless. The fact that he speaks Arabic, unlike other home-grown jihadists, contributes to this. It grants him authority and access to many ideological sources. He spreads his knowledge via the ideological gatherings, which he organizes in collaboration with his wife, subject 63. They meet many other (potential) jihadists this way, which explains their high centrality scores. At the same time, subject 63 has a strong ideological position of her own. She is an ideological forerunner in the blue female community and she encourages the women how to behave.<sup>27</sup> Subject 63 also introduces several women to the male subjects in the green community. You could say that she connects the clusters and that subject 61 partly thanks his increased centrality scores to her. This broker-like position is further underlined due to her active distribution of ideological material through chat boxes and websites to external sympathizers. This is how she lures subject 73 into the movement, for example. Because we cannot include all her external contacts in the dataset, her broker position is not reflected as strong in the associated betweenness score as it could have been. Regardless, when it comes to consolidating and spreading the extremist Jihadi-Salafist doctrine, subjects 61 and 63 form a much bigger threat than subject 21, despite their lower centrality ranks.

Building on the assumption that core members with high centrality ranks have some sort of power, high ranked subject 60 merely indicates weak signs of power. Subject 59 on the other hand shows much more leadership potential, although he is the lowest ranked core member on three out of four centrality metrics. Subject 21 for instance uses him as his right hand and mainly communicates via him. Also, subject 61 allows subject 59 to lead some of the lectures after a while. Eventually, it is subject 59 who openly disapproves with subject 21's ideological knowledge, behavior, and position and arouses others to do the same. Hence, the roles seem to change.

### 3.4.3 Network 3

#### 3.4.3.1 Network structure

Network 3 operated between 2008 and 2013 and has a comparable network structure to network 2. It is a horizontal and fluid network without a formal centralized leadership. It mainly consists of home-grown jihadists of whom several were also present in network 1 and 2 (subjects 19, 21, 64, 65). Despite its resemblance, we also found that the social interaction within network 3 was more diffuse and dynamic than within the other networks. The extended time-frame of network 3 illustrates this dynamic nature. We found that over the years, the jihadist movement became one large pool of jihadist sympathizers who gathered in different formations at different locations to exchange ideological information and to consider the possibility of violent measures.

This pool of jihadists had an open character, meaning that the network boundaries are fuzzy, leading to high social mobility between network members as well as with external people. This manifested as follows. Within this large pool of jihadist sympathizers, we

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<sup>27</sup> Female core member 66 functions in a similar way, but to a lesser extent.

found that subjects adopted a more outward focus to exchange ideological information. Besides the traditional private lectures and gatherings, we noticed for instance that online communication became one of the most important means of mass communication to openly expose and spread the ideology. We also observed that so-called *street preachers* (subjects 21, 84, 85, 86) randomly and openly addressed strangers to inform them about the ideology. Likewise, they distributed flyers in the surroundings of Mosques and in public areas to promote upcoming ideological events. Such events were for instance ideological demonstrations, where a variety of likeminded people publically shared their (radical and provocative) thoughts and ideas. Hence, distribution of the ideology became more public and had an outward character, thus eroding the traditional secretive nature and enhancing exposure. This may have been caused by the political and judicial climate. Whereas the government explicitly targeted people who seemed to spread extremist narratives in the era of network 1 and 2 – forcing these subject to be secretive – the subjects in network 3 seemed to have learned from the fact that hardly anyone was convicted for merely doing so, allowing space for public representation. This increased the social mobility of subjects, as said, and intensified relations as the edges in Figure 3.3 and the relatively high weighted degree scores in Table 3.4 show. Moreover, this resulted in a slight increase in network density and average node contact, and a slight decrease in the average path length and the network level centrality scores as portrayed in Table 3.2. This means that network 3 became slightly denser than network 2. Although these quantitative differences are minimal and not necessarily significant, the qualitative analyses clearly show that due to the dynamic social interaction, network 3 resembled a fluid protest movement, rather than a static group. The outermost boundary of network 3 as well as the inner contours of the network structure are therefore less perceptible in comparison to network 1 and 2. Due to the unclear outermost boundary, network 3 was probably much larger than the 25 nodes we studied; according to the criminal investigator the network counts 50 people in total, including less significant sympathizers in the network's periphery. Unfortunately, we were unable to identify all related subjects. In addition, due to the unclear contours, clusters within the network are difficult to identify. The modularity score of network 3 was below 0.3 (see Table 3.2), which means the threshold for meaningful clusters is not reached. Furthermore, we were unable to meaningfully elaborate clusters from the modularity measure with qualitative analyses, which confirms the fluid nature of the network. Modularity communities are therefore omitted from Figure 3.3.

Notwithstanding the fluid nature of the network, we did identify a form of network compartmentalization. Like network 2, subjects assembled in cliques of 4 people to go on jihad. For example, subjects 64 and 65, who already belonged to a foreign fighting clique in network 2, were separately identified as part of a clique that headed for Somalia (subjects 78, 79, 65, 80) and Turkey (subjects 64, 82, 85, 91) in 2009. Another clique aimed for Pakistan (subjects 78, 81, 94 and 85) in 2011, although only subject 78 reached the final destination. In addition, several foreign fighting attempts were

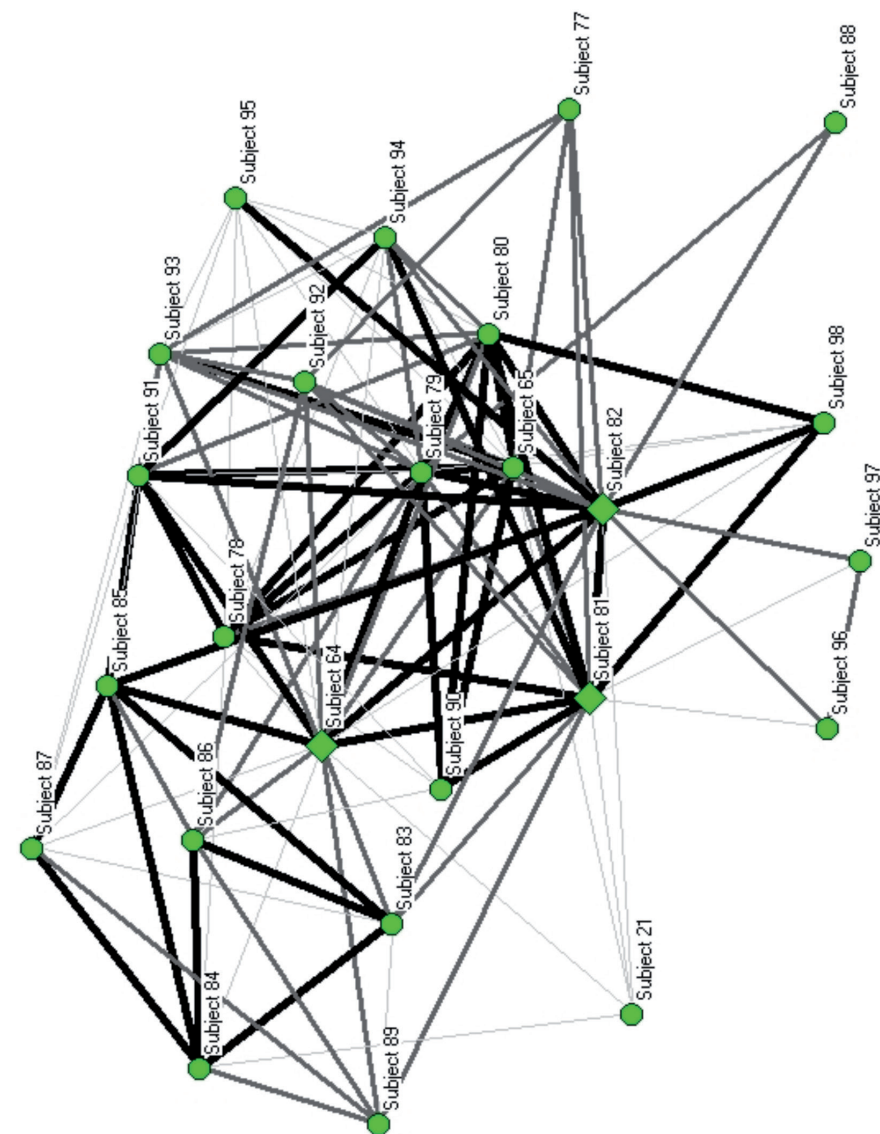


Figure 3.3: Sociogram network 3.



made to Syria in 2012 and 2013, but the data are less clear about any clique forming (see Chapter 4). Unlike the distinct compartmentalization in network 1 and the clearly separated cliques in network 2, the formation of cliques is highly varied in network 3, as several subjects belong to more than one clique. This illustrates, more than in network 2, that subjects in the fluid network only collaborate in small and distinguishable groups when they become operational for the Jihad. Unlike network 1, they seem to operate autonomously and cannot rely on the benefits of organized crime for financial and logistical support in that regard (see Chapter 4).

Having said that, we do notice some parallels to network 1 as network 3 became slightly more organized and international over the years. Several core members took the lead in that respect, when they galvanized others to become more proactive in the jihadist movement. They did so in a more planned manner when compared to network 2. The subjects in network 3 tried to give the previous protests and demonstrations a formal nature by branding it. Particular symbols or trademarks were created to label the movement and to announce and advertise upcoming events, draw additional support, and legitimize their actions in response to criminalization by the government. As a result, they expressed themselves as a protest movement, rather than a terrorist organization. In addition, the foreign fighting attempts became better organized as well, which is illustrated in 3.4.3.2. The intensification of contacts abroad was at the basis of this. Whereas the international fundament of network 1 was the result of incoming international jihadists who brought jihadism to the Netherlands, home-grown jihadists from network 3 spread their wings, gained international experience through foreign fighting, and then returned to share their experience. Unlike network 2, they successfully created an international basis for themselves after multiple foreign fighting attempts.

### 3.4.3.2 Roles

Building on the organizational development and internationalization of the network, we take a closer look at several individual subjects who were responsible for this. Due to the extended time-frame, the division of roles changed over time, which was especially notable with the core members. When this network initially drew the police's attention, they primarily focused on subject 64. He was a foreign fighter in network 2 and enjoyed the status of a jihad veteran in network 3. Accompanied by several others, he preached radical statements in a local mosque, leading to his expulsion. Henceforth, he started collecting jihad money and became a forerunner of the Jihadi-Salafist doctrine outside the mosque, which increased his direct contacts and high degree centrality score. As part of a clique he traveled to Turkey in 2009, where he allegedly dropped off to become the broker between the Netherlands and Pakistan. Whether he became a successful broker is difficult to validate, because we have no evidence of foreign fighting attempts coordinated by him. If he indeed was able to coordinate foreign fighting attempts from his base in Turkey, his betweenness score could have been much higher, if we had included

**Table 3.5:** Actor level centrality scores for network 3.

Network 3				
CD(ni)	Weighted CD(ni)	Rank	CB(ni)	CC(ni)
0.7917 Subject 82	0.5917 Subject 82	1.	0.1797 Subject 82	0.8276 Subject 82
0.7917 Subject 64	0.4667 Subject 81	2.	0.1203 Subject 81	0.8276 Subject 64
0.6667 Subject 79	0.4462 Subject 64	3.	0.1098 Subject 64	0.7500 Subject 79
0.6667 Subject 81	0.4333 Subject 79	4.	0.0748 Subject 79	0.7500 Subject 81
0.6250 Subject 65	0.4083 Subject 65	5.	0.0369 Subject 65	0.7273 Subject 65
0.5000 Subject 80	0.4000 Subject 80	6.	0.0257 Subject 93	0.6667 Subject 80
0.5000 Subject 93	0.3333 Subject 91	7.	0.0185 Subject 86	0.6667 Subject 93
0.5000 Subject 91	0.2833 Subject 85	8.	0.0184 Subject 91	0.6667 Subject 91
0.4583 Subject 78	0.2750 Subject 78	9.	0.0180 Subject 78	0.6486 Subject 78
0.4167 Subject 94	0.2500 Subject 93	10.	0.0138 Subject 84	0.6316 Subject 94
0.3750 Subject 95	0.2167 Subject 86	11.	0.0136 Subject 83	0.6154 Subject 95
0.3333 Subject 87	0.2167 Subject 84	12.	0.0125 Subject 87	0.6000 Subject 83
0.3333 Subject 83	0.2167 Subject 83	13.	0.0113 Subject 85	0.6000 Subject 85
0.3333 Subject 86	0.2000 Subject 92	14.	0.0104 Subject 92	0.6000 Subject 92
0.3333 Subject 85	0.2000 Subject 94	15.	0.0095 Subject 80	0.5854 Subject 90
0.3333 Subject 84	0.1917 Subject 90	16.	0.0056 Subject 90	0.5714 Subject 87
0.3333 Subject 92	0.1500 Subject 98	17.	0.0051 Subject 89	0.5714 Subject 98
0.2917 Subject 90	0.1500 Subject 87	18.	0.0051 Subject 21	0.5714 Subject 86
0.2500 Subject 89	0.1333 Subject 89	19.	0.0019 Subject 94	0.5581 Subject 89
0.2500 Subject 98	0.1250 Subject 77	20.	0.0005 Subject 77	0.5581 Subject 21
0.2083 Subject 21	0.1083 Subject 95	21.	0.0005 Subject 95	0.5455 Subject 77
0.2083 Subject 77	0.0583 Subject 97	22.	0.0000 Subject 88	0.5455 Subject 84
0.1250 Subject 97	0.0583 Subject 96	23.	0.0000 Subject 97	0.5000 Subject 96
0.1250 Subject 96	0.0500 Subject 88	24.	0.0000 Subject 98	0.5000 Subject 97
0.0833 Subject 88	0.0417 Subject 21	25.	0.0000 Subject 96	0.5000 Subject 88

external contacts. This would further validate his broker position. Nonetheless, he got arrested in Turkey for his alleged connections with Al Qaida, which meant other people had to fill his position. Subjects 81 and 82 seemed to fill this gap and became the primary core members in network 3 (highlighted cells in Table 3.5). They are known throughout the network, which explains their high centrality scores. Moreover, according to an investigator, all subjects from network 3 are in contact with them. However, because we based the connections in our SNA on evidence from the police files, their centrality scores may be underrated which would be in line with the investigator's statement. Together they become the network's forerunners who ideologically motivated the supporters

and prepared the jihad journeys, although there seems to be a distinct division of labor between them. For example, like subject 64, subject 81 is considered a jihad veteran due to his part in the 2011 clique that travelled to Pakistan. He was arrested and detained for 8 months at the Iranian-Pakistani border, which brought him a significant social status upon return. The police consider him to be the operational coordinator who arranges all foreign fighting attempts to Syria in 2013. Since he is able to directly communicate with fixers on the Turkish-Syrian border, he facilitates the logistics for the foreign fighters. Due to his external contacts overseas, he is regarded as the prime broker and his position is of crucial importance to successfully coordinate other subjects' foreign fighting attempts. However, he does not have the highest betweenness score, which is probably the result of not including external contacts. Whereas subject 81 has the external focus and arranges the practical side of foreign fighting attempts, subject 82 has the internal focus and communicates with many jihadist sympathizers and other followers who may want to become a foreign fighter. He is being monitored by the police for several years and has extensive ideological expertise. He provides lectures in different mosques or in informal house settings. He also is one of the initiators to brand the movement. Under these brands he organizes several protests and demonstrations through which he incites others to internalize the doctrine. He expresses himself as a leader during these events, via which he builds many direct contacts. This explains his top rank position on all centrality metrics. He became well-known in the Netherlands and does not appear to be afraid of public attention. He explicitly faces the media and he does so on a regular basis; he publishes online and he was interviewed on national television. In sum, both quantitative and qualitative analyses seem to confirm that subjects 81 and 82 successfully succeeded subject 64 as the primary core members in network 3, who tried to bring the operational foundation of the network to a new level.

If we look at Table 3.5, there are some other subjects that deserve attention. Subjects 79 and 65 for instance have relatively high centrality ranks, but are not considered core members. They were part of the 2009 clique travelling to Somalia, where they were arrested and which led to the deportation of subject 79 to his native country Morocco. Allegedly he was re-arrested and severely tortured by the Moroccan authorities, which only motivated him more to travel to Syria in 2013, where he eventually died in battle. In addition, subject 65 was already part of a foreign fighting clique in network 2, which shows his long-term presence in the jihadist movement. However, he struggles with mental issues and consequently shows odd behavior. Although subjects tolerate his behavior, it seems to make him unsuitable for a key role. These backgrounds of both subjects illustrate their determination and may explain the high number of direct contacts they made during different foreign fighting attempts, gatherings, and events. This does however not indicate power, leadership, and a centralized position, despite their relatively high centrality scores, especially when you take into account the mental health of subject 65. Because they have no significant operational or broker positions either, we categorized them as active supporters rather than core members.

Finally, looking at Figure 3.3 and Table 3.5, we found that aforementioned subject 21 is again present in network 3. His presence did not last forever though, because he died in Syria in 2013, after more than a decade of jihadist involvement. Known as the most centralized person in network 2, his low centrality scores in network 3 imply that he only plays a marginal role in this network, as was the case in network 1. But like in network 1, the qualitative analyses do attenuate his "limited" role. He is one of the aforementioned *street preachers* who motivated potential new sympathizers. Because of these external contacts, street preachers functioned as brokers in order to expand the network or at least the jihadist movement. This broker-like position is not reflected in their centrality scores, because the potential sympathizers are not included in the dataset. Despite the importance of qualitative data to identify key subjects, the information on this case was to some extent limited. Most subjects probably had contact with more people within and outside the network than we were able to observe. This affects both the centrality scores, as well as the additions we could make, on the basis of our qualitative analysis. Nonetheless these additions are a valuable contribution, as we tried to illustrate in the foregoing examples.

### 3.5 Conclusion

By means of *social network analysis*, based on longitudinal data derived from police files, interviews, and field notes from court sessions, this chapter analyzed network features of the jihadist movement in the Netherlands between 2000 and 2013. The main research question is: *To what extent do the organizational structures of the studied jihadist networks differ over time and what kind of roles do the studied subjects adopt in these networks?* To answer this research question, a mixed method of qualitative and quantitative analyses was used to compare three different networks that were active during a particular episode.

We found that the jihadist movement changed from a hierarchically organized network with a distinct cell structure and a strong international foundation, to a fluid dynamic home-grown network without a clear leadership. The analyses and different sociograms show that over time the relationships between subjects intensified, and subjects appeared to be located closer to each other. Somewhat counter-intuitively, the networks became denser over time, in spite of their fluid nature. Yet, network 3 also demonstrated parallels with network 1, which suggests an ongoing development of network structures. A more detailed depiction of this dynamic nature can best be illustrated with regard to the *efficiency-security trade-off*. The most desired network structure that can effectuate a balance in this trade-off is often considered by other scholars to be a compartmentalized network. We can conclude that the networks studied also demonstrated a form of compartmentalization. The sociograms and the modularity scores quantitatively illustrated several dense communities in which the members are more strongly connected to each other than to subjects from other communities.

However, what has received much less attention in the literature, is that the nature of compartmentalization can differ; both between and within networks. Whereas network 1 demonstrated the often referred and preferred compartmentalization of a strictly distinguished and non-redundant cell structure, network 2 and 3 did not. This is not very odd, considering the fact that the density of network 2 and 3 was much higher than network 1, suggesting a more coherent organizational structure with more redundant ties. Nonetheless, based on qualitative analysis we found that network 2 and 3 did show a relative compartmentalization in the sense that subjects formed cliques within their embedded and dense social environment. Hence, somewhat counter-intuitively, it appears that compartmentalization can thus occur alongside a higher network density. An explanation for this is that network structures are flexible and may vary per activity. On the one hand, when subjects aim to conduct criminal activities or prepare foreign fighting attempts for example, they tend to cluster together in smaller and denser cliques or communities. In network 1 there was a clear division of labor in that respect, which was accompanied with separated communities. Foreign fighters in network 2 and 3 then were more socially embedded in the larger network, but they shielded their foreign fighting preparations from the rest of the network by working in smaller cliques. Hence, by keeping the communication purely functional, this increased the efficiency in the cells and cliques but protected the rest of the network from unwanted exposure. On the other hand, the core activity of disseminating the ideology required a different balance in which compartmentalization was less preferred. In network 2 and 3 for instance, the ideological dissemination had a broader reach due to the increased use of the Internet. This outward focus and altered settings increased higher network density, which facilitated the process of ideological dissemination even further. Instead of covertly compartmentalizing the network, the social mobility among jihadists intensified, leading to more and more network exposure. Although there was some form of compartmentalization in the sense that gatherings were separated based on gender, this separation was grounded on religious rather than security considerations. Exposure and minimal covertness rather appear to be the purpose of disseminating the ideology, especially in network 3, which means that efficiency seems to be favored over covertness. This indicates that secrecy is not always prioritized in the efficiency-security trade-off, as often implied by other scholars, but depends on the activity.

Within the foregoing network structures, different kinds of actors play an essential role to conduct the various activities. With both qualitative and quantitative analyses we identified so-called core members. They were ideologically and/or operationally more active than others and clearly motivated others to become more active and involved. What is most interesting in this regard is that several subjects were present in more than one network, some of them even in all three, and that their roles developed over time. Some started as supporters in a network's periphery but developed into core members in posterior networks. An explanation for this development is that they learned and gained social status from previous experiences. This is an interesting finding that has

received minimal attention in the literature so far. In addition, we also found that core members differed in nature. For instance, the international jihadists in network 1 appear to be more leader-like core members who seem to be both ideologue, operational leader, and broker, whereas the mainly home-grown core members in network 2 seem to be forerunners who guided instead of directing or recruiting other subjects. Core members in network 3 display resemblance to those from network 2, but with seemingly more operational power and charisma. In other words, network 3's core members mix particular features from their predecessors.

### 3.5.1 Implications

The dynamic nature of both network structures and roles shows that certain assumptions and conclusions in the literature, as indicated in the introduction, cannot be instantly derived from the quantitative SNA findings. The current findings show that network features can be far more complex than these assumptions indicate. This has several implications for both the academic and the policy domain.

First, the identified changes and differences between networks show how transient or perishable certain findings may be when merely looking at a static picture. This does not mean that the current findings are more valid than other studies, but unlike a static network analysis it emphasizes that organizational features and roles are more dynamic than often expressed. Not only due to the passing of time, but also because subjects adopt a dynamic network positioning to conduct different types of activities.

Second, although SNA was a suitable analytic tool to identify the differences, it was necessary to complete the analysis with complementary qualitative assessments. Without these assessments, we found that the assumptions regarding the implications of quantitative findings were not undisputedly correct. For instance, as illustrated above, the efficiency-security trade-off is not as straight-forward as expressed in the literature; compartmentalization does not always guarantee a strict balance and jihadists do not always favor security at all costs. Yet, we must be aware that the networks studied are essentially extremist networks, rather than terrorist organizations. The one-time action assumption regarding terrorist groups does therefore not fully apply, limiting its influence on structure type. An additional assumption refers to the centralization of actors. We found that the most centralized actors are not necessarily leaders, and brokers (especially those with an exterior focus) could not always be identified with betweenness scores. The reason for this is that the qualities of different core members (human capital) are not easily detected with quantitative analysis only. While this partially disputes the role assumptions, this anomaly can also be caused by the boundary specification problem. Due to our inclusion criteria we have omitted certain subjects from the analysis, which certainly affected the centrality scores. Nonetheless, we also noticed that facilitators without any leadership competence were indistinguishable from the network's core members in terms of centrality ranks. This was not necessarily an effect of boundary specification, but the fact that facilitators can be equally socially mobile.

Third, building on these SNA remarks, we argue that the value of SNA for law enforcement and intelligence investigations is ambiguous. It is certainly useful to visualize a network and to illuminate the centrality differences between suspects in a quick and orderly fashion, but without additional qualitative assessments it is doubtful whether SNA inspired disruption strategies are successful. To disrupt a network, more specified qualitative knowledge on the network's *modus operandi* is required. Several scholars have therefore argued that a better way to use SNA with regard to disruption strategies, is to combine it with a qualitative *crime script analysis* (Duijn et al., 2014; Duijn & Klerks, 2014; Morselli & Roy, 2008).<sup>28</sup> This is a tool that enables systematic categorization of all network proceedings in different stages so to draft a general outline of the network's MO. Combining this network's procedural blue-print with quantitative SNA will aid to determine the aforementioned *human capital*, which can be used to determine crucial intervention points. More specifically, it enables clarification of the most crucial players in the network's *proceedings*, rather than just the most central subjects within the network's *intercommunication*. In that respect, Chapter 4 will apply crime script analysis on the preparation of foreign fighting attempts. Finally, the findings from both chapters will be integrated in Chapter 7 to illuminate policy implications.

In relation to this, this chapter demonstrated that identification of the core activities of a network is important. Awareness of diverging agenda's and varying goals is essential if you want destabilize a network, because it may alter the network's structure or its reliance on either efficiency or security. This awareness may determine the effectiveness of a particular disruption strategy. For instance, in a high density network that primarily aims to disseminate the ideology, the often cited kingpin method will not disrupt a network. In that case, removing alleged leaders will not interrupt the communication flow between densely connected nodes, although removing external minded brokers may prevent a network from growing. On the contrary, when a network is preparing violent measures, removing central figures may be effective since they appear to have a coordinating role. Also, because it is more likely that security is enhanced by some form of compartmentalization, as illustrated in network 1, removing the essential ties between these communities may disrupt the communication flow and the necessary proceedings. However, as shown in this chapter, extremist networks are likely to be oriented on both activities, which may involve dynamic network structures. In such cases, keeping network density low, but preventing the network from compartmentalizing could be a useful starting point to disrupt both activities.

To conclude, despite inherent limitations, this chapter demonstrates the dynamic nature of the jihadist movement in the Netherlands. A mix of quantitative and qualitative SNA illuminates how networks are structured and how certain features within the

jihadist movement have evolved over time. Additional studies must nonetheless be conducted to validate the current findings, especially since the phenomenon is changing rapidly and becomes more pressing at the moment this thesis is in press.

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<sup>28</sup> See also Bruinsma & Bernasco (2004). They do not formally and systematically apply a crime script analysis, but they integrate elements of social network theory with the MO of different illegal markets and criminal networks.