Visual Analysis of "9.18" Terrorism Event in Xinjiang Based on UCINET

Qiwu Wu¹, a,* and Lingzhi Jiang¹,b
¹ Engineering University of CAPF, Xi’an, 710086, China
a wuqiwu700@163.com, b ustb520@163.com

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Abstract. At present, the network-based organizational structure is gradually replacing the hierarchical organizational structure and becoming an important support for the survival and destruction of terrorists. Social Networks Analysis (SNA) is a method for quantitative analysis of various relationships and network structures in social networks. This article takes the “9.18” terrorism event in Xinjiang as an example. Firstly, the relationship matrix is constructed. Then the network analysis tool UCINET is used to construct the event-related terrorist activity network map. Finally, the network characteristics are analyzed by numerical social network. The measured values can be applied to the formulation of China's anti-terrorism strategy.

Introduction

The structure of current terrorist organizations is mainly divided into two categories: stepped and networked. With the increasing intensity of counter-terrorism operations, networking has become a new feature of terrorist organization [1]. The Social Networks Analysis (SNA) method can use points to represent social personnel. The relationship between social personnel is represented by a connection between two points. This method can be used to quantify hidden social relationship [2,3]. UCINET network analysis integration software mainly includes three parts: NetDraw, Mage and Pajek [4]. NetDraw can analyze both one-dimensional and two-dimensional data, Mage can display and analyze 3D data, and Pajek can be used for large-scale network analysis [5]. This article takes the “9.18” terrorism event in Xinjiang as an example. Firstly, the relationship matrix is constructed. Then the network analysis tool UCINET is used to construct the event-related terrorist activity network map. Finally, the network characteristics are analyzed by numerical social network.

Event Background

At 5 am on September 18, a group of thugs attacked a remote coal mine dormitory in a mountainous area of over 2,600 meters above sea level in Baicheng County, Aksu Prefecture. The terrorists madly smashed innocent people and set off to attack the police who went to the scene. 11 innocent people were killed, 18 were injured and 5 policemen were killed. Finally, the mob escaped into the mountains and resisted. After investigating, since 2008, some members of the gang have watched and listened to religious extremist audio and video and gradually formed religious extreme thoughts. The gang was connected to extremist extremism six times before the incident. During the escape period, the mob had reported the crime process and escape experience to the overseas organization three times and requested tactical guidance. Members of extremist extremists have repeatedly issued instructions to the group to swear allegiance. The culprit of this serious violent crime was the terrorist forces that split Tibet in the heads of Musha Tosania and Makati Aisha.

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Data Sorting

Based on the summary of the collected web page text information, we can determine four basic elements. First, the terrorists involved in the planning of the organization, indicated by A. Second, the required skills are indicated by K. Third, specific tasks are indicated by T. Fourth, resources for
organizing violence are indicated by Z. The specific information of these basic elements are shown in Table 1 and Table 2.

Table 1. Persons and resources

| Number | Persons and resources                     |
|--------|------------------------------------------|
| A01    | Musha Toyuniazi                          |
| A02    | Makati Aisha                             |
| A03    | Turhon Amat                              |
| A04    | Yu Suzhen Ai Hemat                       |
| A05    | Makati Tusuniya                          |
| A06    | Hot Imu Makati                           |
| A07    | Nasr Yimin                               |
| A08    | Maida Aishan                             |
| A09    | Aihe Taimu Monia                         |
| A10    | Abdul Ayia                               |
| A11    | Aiken Mauramaton                         |
| A12    | Wujiang-Mai Maidi                        |
| A13    | Middle contact of “Xinjiang Independence” riot organization |
| A14    | Intermediary contact for terrorist organizations outside the country |
| Z01    | Capital supply                           |
| Z02    | Contact tool                             |
| Z03    | Activity staff                           |
| Z04    | Tactical guidance                        |

Table 2. Skills and tasks

| Number | Skills and tasks                               |
|--------|-----------------------------------------------|
| K01    | Organizational planning ability               |
| K02    | Ability to contact members of various organizations |
| K03    | Command ability                               |
| K04    | Fighting ability                              |
| K05    | Uyghur language ability                       |
| T01    | Collect topographic maps of coal mines        |
| T02    | Understand the working hours of coal miners   |
| T03    | Contact foreign terrorist organizations for help |
| T04    | Plan a terrorist campaign                     |
| T05    | Contact the "Independence of Xinjiang" organization |
| T06    | Violent attacks                              |
| T07    | Design escape route after attack              |

Construction of Relation Matrix

According to the relationship determined in the previous section, construct the relationship matrix as shown in Table 3.
Table 3. Relational tables

| Number | Task | Resource | skill |
|--------|------|----------|-------|
| A01    | T03\T04\T06\T07 7 | Z01\Z02\Z03\Z04 4 | K1\K2\K3 |
| A02    | T03\T04\T06\T07 7 | Z01\Z02\Z03\Z04 4 | K1\K2\K3 |
| A03    | T06 | Z02 | K2\K4 |
| A04    | T01\T06 | Z01\Z02 | K2\K4\K5 |
| A05    | T02\T06 | Z01\Z02 | K2\K4\K5 |
| A06    | T01\T06 | Z01\Z02 | K2\K4\K5 |

According to the relationship determined above, the following relationship matrix can be constructed: a terrorist-task relationship matrix, a terrorist-resource relationship matrix, a terrorist organization-skill relationship matrix, as shown in Table 4, Table 5, and Table 6.

Table 4. Terrorist-task relationship matrix

|   | T01 | T02 | T03 | T04 | T05 | T06 | T07 |
|---|-----|-----|-----|-----|-----|-----|-----|
| A01 | 0   | 0   | 1   | 1   | 0   | 1   | 1   |
| A02 | 0   | 0   | 1   | 1   | 0   | 1   | 1   |
| A03 | 0   | 0   | 0   | 0   | 0   | 1   | 0   |
| A04 | 1   | 0   | 0   | 0   | 0   | 1   | 0   |
| A05 | 0   | 1   | 0   | 0   | 0   | 1   | 0   |
| A06 | 1   | 0   | 0   | 0   | 0   | 1   | 0   |
| A07 | 0   | 1   | 0   | 0   | 0   | 1   | 0   |
| A08 | 1   | 0   | 0   | 0   | 0   | 1   | 0   |
| A09 | 0   | 1   | 0   | 0   | 0   | 1   | 0   |
| A10 | 0   | 0   | 0   | 0   | 0   | 1   | 0   |
| A11 | 0   | 0   | 0   | 0   | 0   | 1   | 0   |
| A12 | 0   | 0   | 0   | 0   | 0   | 1   | 0   |
| A13 | 0   | 0   | 0   | 0   | 0   | 1   | 0   |
| A14 | 0   | 0   | 0   | 1   | 1   | 0   | 1   |

Table 5. Terrorist-resource relationship matrix

|   | Z01 | Z02 | Z03 | Z04 |
|---|-----|-----|-----|-----|
| A01 | 1   | 1   | 1   | 1   |
| A02 | 1   | 1   | 1   | 1   |
| A03 | 0   | 1   | 0   | 0   |
| A04 | 1   | 1   | 0   | 0   |
| A05 | 1   | 1   | 0   | 0   |
| A06 | 1   | 1   | 0   | 0   |
| A07 | 1   | 1   | 0   | 0   |
| A08 | 1   | 1   | 0   | 0   |
| A09 | 1   | 1   | 0   | 0   |
| A10 | 0   | 1   | 0   | 0   |
| A11 | 0   | 1   | 0   | 0   |
| A12 | 0   | 1   | 0   | 0   |
| A13 | 0   | 1   | 0   | 0   |
| A14 | 1   | 1   | 1   | 1   |
Table 6. Terrorist organization-skill relationship matrix

|     | k01 | k02 | k03 | k04 | k05 |
|-----|-----|-----|-----|-----|-----|
| A01 | 1   | 1   | 1   | 0   | 0   |
| A02 | 1   | 1   | 1   | 0   | 0   |
| A03 | 0   | 1   | 0   | 1   | 0   |
| A04 | 0   | 1   | 0   | 1   | 1   |
| A05 | 0   | 1   | 0   | 1   | 1   |
| A06 | 0   | 1   | 0   | 1   | 1   |
| A07 | 0   | 1   | 0   | 1   | 1   |
| A08 | 0   | 1   | 0   | 1   | 1   |
| A09 | 0   | 1   | 0   | 1   | 1   |
| A10 | 0   | 1   | 0   | 1   | 1   |
| A11 | 0   | 1   | 0   | 1   | 1   |
| A12 | 0   | 1   | 0   | 1   | 1   |
| A13 | 0   | 1   | 0   | 1   | 1   |
| A14 | 1   | 1   | 1   | 0   | 1   |

**Construction and Analysis of Terrorist Activity Network**

According to the above data, UCINET network analysis integration software NetDraw template can be used to draw the network diagram between different elements. Figure 1 shows the terrorist-task relationship, Figure 2 shows the terrorist-resource relationship, Figure 3 shows the terrorist-skill relationship, and Figure 4 is shows terrorist relationship. From these relational network diagrams, we can visually observe which elements are in an important position.

![Fig.1 Terrorist-task relationship](image1)

![Fig.2 Terrorist-resource relationship](image2)

![Fig.3 Terrorist organization-skill relationship](image3)

![Fig.4 Terrorist relationship](image4)

According to the density and centrality of the person-to-person relationship diagram, the results are shown in Figures 5 and 6.
From Figure 5, the network density of the relationship between terrorists is 1. This shows that there is a connection between the people involved in the "9.18" terrorist incident, so in the fight against terrorists, the terrorists should be stalked and the terrorists will be wiped out. To achieve the impact of key people, it is necessary to measure the centrality of the relationship network. It can be seen from Figure 6 that the terrorists with the highest degree of centrality and intermediate degree are A01 and A02, indicating that the terrorist is at a critical position in the relationship network. From the actual situation of the incident, these two individuals are the organizers and planners of this terrorist activity. Similarly, in Figure 6, the network density of the relationship between the assigned tasks is 1, indicating that the tasks are closely related.

Summary

Based on the theory of social network analysis, this paper studies the "9.18" incident. The multi-relational network model of two events was constructed by UCINET, and some network characteristics were analyzed. The experimental results show that the results of visualization and data analysis are consistent with the actual situation.

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