UNIVERSITÁ CATTOLICA DEL SACRO CUORE MILANO

Dottorato di ricerca in Criminologia
Ciclo XXVI

S.S.D: SPS/12

LAW ENFORCEMENT AND CRIMINAL NETWORK RESILIENCE:
THE IMPACT OF LAW ENFORCEMENT ACTION ON THE STRUCTURE OF MAFIARELATED DRUG TRAFFICKING NETWORKS

Tesi di dottorato di: Giulia Berlusconi

Matricola: 3911180



INTERNATIONAL PH.D. IN CRIMINOLOGY DOTTORATO INTERNAZIONALE IN CRIMINOLOGIA

Ciclo XXVI

S.S.D: SPS/12

LAW ENFORCEMENT AND CRIMINAL NETWORK RESILIENCE: THE IMPACT OF LAW ENFORCEMENT ACTION ON THE STRUCTURE OF MAFIARELATED DRUG TRAFFICKING NETWORKS

Coordinatore: Ch.mo Prof. Ernesto U. Savona

Tesi di dottorato di: Giulia Berlusconi

Matricola: 3911180

Table of contents

ABSTRACT	1
INTRODUCTION	3
CHAPTER I. THE RESILIENCE OF CRIMINAL ORGANISATIONS	5
I.1. Law enforcement as a factor in criminal networks evolution	
I.2. Criminal networks vulnerability	
I.3. Criminal networks resilience	
I.3.1. The elasticity of criminal networks	
I.3.2. The adaptation of criminal networks	
I.4. Conclusions	
CHAPTER II. ITALIAN MAFIAS: PERSISTENCE AND SURVIVAL	25
II.1. The distinctive features of Italian mafias	25
II.2. The resilience of Italian mafias	28
II.3. The resilient properties of the 'Ndrangheta	32
II.4. Conclusions and research problem	
CHAPTER III. METHODOLOGY	41
III.1. The network approach to organised crime	
III.2. Case studies selection	
III.2.1. Operation Cicala	
III.2.2. Operation Stupor Mundi	
III.3. Data sources	
III.3.1. Data selection and access	
III.3.2. Data coding	
III.3.3. Reliability of electronic monitoring data	
III.4. Operationalisation of criminal network resilience	
III.5. Data analysis	
III.5.1. The quasi-experimental research design	
III.5.2. Analysis of the criminal networks before the arrest	
III.5.3. Analysis of the topology and robustness of the criminal networks	
III.5.4. Analysis of the elasticity of the criminal networks	
III.5.5. Analysis of the adaptation of the criminal networks	
III.6. Limitations and advantages	
III.7. Conclusions	
CHAPTER IV. THE CICALA NETWORK	
IV.1. The context of control	
IV.2. The Cicala network before the arrest	
IV.2.1. Criminal network topology and robustness	
IV.2.2. The arrest of C3	
IV.3. The impact of the arrest on the Cicala network	
IV.3.1. The elasticity of the Cicala network	
IV.3.2. The adaptation of the Cicala network	
IV.3.3. Evolution of communication methods	97

IV.3.4. Evolution of drug trafficking activities	99
IV.3.5. Evolution of protection methods against law enforcement surveillance	100
IV.4. Conclusions	
CHAPTER V. THE STUPOR MUNDI NETWORK	103
V.1. The context of control	103
V.2. The Stupor Mundi network before the arrests	106
V.2.1. Criminal network topology and robustness	113
V.2.2. The arrest of S21 and S22	
V.3. The impact of the arrests on the Stupor Mundi network	118
V.3.1. The elasticity of the Stupor Mundi network	118
V.3.2. The adaptation of the Stupor Mundi network	120
V.3.3. Evolution of communication methods	128
V.3.4. Evolution of drug trafficking activities	130
V.3.5. Evolution of protection methods against law enforcement surveillance	131
V.4. Conclusions	132
CHAPTER VI. DISCUSSION	135
CONCLUSIONS	143
ACKNOWLEDGMENTS	145
REFERENCES	147

List of tables

Table III.1 Selected case studies	44
Table III.2 Sources of data	46
Table III.3 Descriptive statistics of the criminal networks	60
Table III.4 Statistics for the identification of small-world properties	63
Table III.5 Statistics for the identification of scale-free properties	64
Table IV.1 Investigative phases of Operation Cicala	74
Table IV.2 Descriptive statistics of the Cicala network	75
Table IV.3 Degree and betweenness centrality for each actor in the Cicala network	78
Table IV.4 Division of tasks within the Cicala network	79
Table IV.5 Role and status of actors in the Cicala network	80
Table IV.6 Small-world properties of the Cicala network before the arrest	82
Table IV.7 Scale-free properties of the Cicala network before the arrest	83
Table IV.8 Changes across the phases of the investigation	88
Table IV.9 Descriptive statistics of the Cicala network in the three investigative phases	89
Table IV.10 Degree centrality for the top 10 actors in the three investigative phases	91
Table IV.11 Betweenness centrality for the top 10 actors in the three investigative phases.	91
Table IV.12 Conversations and meetings across investigative phases	98
Table V.1 Investigative phases of Operation Stupor Mundi	06
Table V.2 Descriptive statistics of the Stupor Mundi network 1	06
Table V.3 Changes across phase networks 1	07
Table V.4 Degree and betweenness centrality for each actor in the Stupor Mundi network 1	09
Table V.5 Division of tasks within the Stupor Mundi network	10
Table V.6 Role and status of the actors in the Stupor Mundi network	111
Table V.7 Small-world properties of the Stupor Mundi network before the arrest 1	13
Table V.8 Scale-free properties of the Stupor Mundi network before the arrest	14

Table V.9 Individual positions within the Stupor Mundi network before the arrest 117	
Table V.10 Changes across the phase networks	
Table V.11 Descriptive statistics of the Stupor Mundi network in the four investigative phases	
Table V.12 Degree centrality for the top 10 actors in the four investigative phases 122	
Table V.13 Betweenness centrality for the top 10 actors in the four investigative phases 122	
Table V.14 Conversations and meetings during the four investigative phases	

List of figures

Figure I.1 Ball and cup heuristic of system stability	15
Figure III.1 Operationalisation of resilience	56
Figure IV.1 Wiretapped persons and telephone lines over time	72
Figure IV.2 Wiretapped telephone calls and meetings over time	73
Figure IV.3 Average degree of criminal networks in the literature	76
Figure IV.4 Degree and betweenness centralisation of criminal networks in the literature	77
Figure IV.5 Task, status and role of each actor in the Cicala network. Node size	by:
betweenness centrality	81
Figure IV.6 Cumulative degree distribution for the Cicala network before the arrest	83
Figure IV.7 Sequences of node failure and robustness plot of the Cicala network	84
Figure IV.8 The position of C3 within the Cicala network	86
Figure IV.9 Changes in the structure of Cicala network over time	87
Figure IV.10 Degree and betweenness centralisation of the Cicala network in the th	hree
investigative phases	89
Figure IV.11 Division of tasks within the Cicala network in the three investigative phases	93
Figure IV.12 Roles of actors in the Cicala network in the three investigative phases	94
Figure IV.13 Task, role and location of each actor in the Cicala network at P1	95
Figure IV.14 Task, role and location of each actor in the Cicala network at P2	96
Figure IV.15 Task, role and location of each actor in the Cicala network at P3	97
Figure IV.16 Topics of conversation across the investigative phases	99
Figure V.1 Wiretapped persons and telephone lines over time	104
Figure V.2 Wiretapped telephone calls and meetings over time	105
Figure V.3 Average degree of criminal networks in the literature	108
Figure V.4 Degree and betweenness centralisation of criminal networks in the literature	108

Figure V.5 Task, status and role of each actor in the Stupor Mundi network. Node size by
betweenness centrality
Figure V.6 Cumulative degree distribution for the Stupor Mundi network before the arrest 114
Figure V.7 Sequences of node failure and robustness plot of the Stupor Mundi network 115
Figure V.8 The position of S21 within the Stupor Mundi network at P2
Figure V.9 The position of S22 within the Stupor Mundi network at P3
Figure V.10 Changes in the structure of the Stupor Mundi network over time
Figure V.11 Degree and betweenness centralisation of the Stupor Mundi network in the four
investigative phases
Figure V.12 Division of tasks within the Stupor Mundi network in the four investigative phases
Figure V.13 Roles of actors in the Stupor Mundi network in the four investigative phases. 125
Figure V.14 Task, role and location of each actor in the Stupor Mundi network at P1 126
Figure V.15 Task, role and location of each actor in the Stupor Mundi network at P2 126
Figure V.16 Task, role and location of each actor in the Stupor Mundi network at P3 127
Figure V.17 Task, role and location of each actor in the Stupor Mundi network at P4 128
Figure V.18 Topics of conversation during the four investigative phases

ABSTRACT

To understand mafia persistence over time and address the problem of the impact of law enforcement interventions on criminal groups, some scholars have introduced the concept of resilience into organized crime research; this refers to the ability of criminal groups to deal with ongoing changes and reorganize themselves accordingly.

Adopting a network approach to organized crime and drawing on previous studies on criminal network resilience, this study analyses the evolution of two 'Ndrangheta criminal groups over around two years, seeking to understand how they adapted to the external pressure of law enforcement agencies, and to identify the mechanisms that drove their evolution and the structural changes that they experienced.

The results show that the two mafia groups had several sources of resilience. The possibility to rely on non-economic ties, which are not the consequence of their participation in illegal markets, enabled the mafia groups to rapidly, though partially, replace the actors arrested. A less prominent role of the formal hierarchy of the 'Ndrangheta in criminal networks mainly involved in drug trafficking instead gave rise to a more flexible internal configuration.