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Organised Chaos: Bringing Complexity to Criminology and the Study of Organised Crime, Terrorism and the Crime-Terror Nexus

In memory of my father,
who taught me life's complexity,
and my brother,
who taught me its fragility.

Abstract

Given the complexities of our time, it is not surprising that criminological models, theories and perspectives often fall short of providing complete and satisfactory explanations of complex phenomena. Organised crime and terrorism, and the emerging crime-terror nexus, are examples of such phenomena. If they were simple, they would be easy to understand and prevent, but they are not. Complexity science ('complexity') studies complex phenomena. Given the nature of organised crime, terrorism and the crime-terror nexus, one would expect that the family of complexity, including chaos theory, might lend itself to furthering our understanding and knowledge of these phenomena. Drawing on the natural and social sciences, this thesis explores the notion. In doing so, a new complexity model, using borrowed science, is developed to apply complexity in a criminological context, and to critically examine organised crime, terrorism and the crime-terror nexus through a complexity lens. The new complexity model is tested using the case study method and considers whether the new model furthers our understanding and knowledge of these complex phenomena, together with practical and policy implications. The thesis also considers whether the new complexity model adds a new tool to the criminologist's toolbox to provide fresh and novel insights into complex problems.

Key words

Organised crime, terrorism, crime-terror nexus, criminological theory, complexity science, chaos theory

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Abbreviations

9/11	11 September 2001 terror attacks on the US
ACIC	Australian Criminal Intelligence Commission
AUSTRAC	Australian Transaction Reports and Analysis Centre
AQI	Al-Qaeda in Iraq (Middle-Eastern terrorist group – predecessor to ISI)
CIA	United States Central Intelligence Agency
DEA	United States Drug Enforcement Administration
ETA	Basque Fatherland and Liberty (Spanish terrorist group)
FARC	Revolutionary Armed Forces of Colombia (Colombian guerrilla group)
IDMC	Internal Displacement Monitoring Centre
IEP	Institute for Economics & Peace
ISI	Islamic State of Iraq (Middle-Eastern terrorist group – predecessor to ISIS)
ISIS	Islamic State of Iraq and Syria (Middle-Eastern terrorist group)
MAS	Death to Kidnappers (Colombian vigilante group)
M19	19TH April Movement (Colombian guerrilla group)
NECSI	New England Complex Systems Institute
UK	United Kingdom
US	United States

Translation: Spanish to English

Barrio	Neighbourhood
La Catedral	The Cathedral (name of Escobar's state built prison)
La Violencia	The Violence (1948-1958 period of history in Colombia)
Los Extraditables	The Extraditables (Colombian narco-terrorist group)
Los Pepes	Persecuted by Pablo Escobar (Colombian vigilante group)
Plata o plomo	Silver or lead (choice of a cash bribe or a bullet)
Sicario	Assassin

Originality statement

This is to certify that to the best of my knowledge, the content of this thesis is my own work. This thesis has not been submitted for any degree or other purposes.

I certify that the intellectual content of this thesis is the product of my own work and that all the assistance received in preparing this thesis and sources have been acknowledged.

Julie Beesley

Authorship attribution statement

This thesis contains material published in the *Current Issues in Criminal Justice Journal* (Beesley 2010) and material published in the *Proceedings of the Australian and New Zealand Critical Criminology Conference 2010 (*Beesley 2011*).* This material is dispersed across Chapters 2 to 5.

Julie Beesley

28 July 2017

As supervisor for the candidate upon which this thesis is based, I can confirm that the authorship attribution statement above is correct.

Professor Murray Lee

28 July 2017

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To help me *contextualise* my case study, I would like to recognise the people I met while travelling in and around Colombia. Reconciling the contrasting images of Colombia – the beauty of the mountainous *landscapes* and vibrant cities with the bleakness of the poverty and crime – led me to a deeper understanding and appreciation of Colombia, especially my time spent in Medellín.

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Chapter 1: Introduction

'If you change the way you look at things, the things you look at change'

Wayne Dyer, philosopher (1940-2015)

This chapter provides a brief overview of the research problem, key definitions, objectives, outcomes and implications, together with the context and structure of the thesis, including the role of theory.

1.1   Research problem

Over the past two decades, the Millennium Project, an international think tank set up in part by the Smithsonian Institute, has studied global challenges facing humanity (Millennium Project 2017). Of note is that two of the fifteen global challenges updated annually relate to organised crime and terrorism. To put this into perspective, the other twelve include climate change, natural resource scarcity, health and food crises. Moreover, in today's changing world, there is a growing discourse on the nexus between these two global challenges. Supporting this nexus, in opening the thirteenth United Nations Congress on Crime Prevention and Criminal Justice, the Secretary-General, Ban Ki-moon (2015) stated:

> We must adapt to changing times…we must address the growing links between organised crime and terrorism. Like never before, terrorists and criminals around the world are coming together and feeding off each other…we must take a comprehensive approach…there will always be crime and there will always be extremists. But we must work to stop crime and extremism being seen as attractive or necessary options.

In studying these phenomena, Levi (2007:800) notes, 'areas of criminological explanation are difficult' enough, 'but accounting for changes in how and why people get together to commit a large range of serious crimes for profit and (by violence and the threat of violence) for political/religious change is indeed challenging'. Furthermore, according to von Lampe (1999), there is 'no comprehensive theory that can reconcile the confusing and at times conflicting

understanding of the term organised crime'. Based on the literature, the same can be said about terrorism and criminological phenomena in general. In theories of crime, Agnew (2011:193) argues:

> In brief, we live in a complex and variable world. The assumptions that underlie particular crime theories and perspectives are overly simplistic, each reflecting only a part of this world. As a result, each theory or perspective typically has some support, but falls far short of providing a complete explanation of crime.

Originating from the natural sciences, complexity science ('complexity') studies complex phenomena and uses a holistic approach, where the unit of study is a complex system (Kauffman 1995; Mitchell 2009). It is a set of theoretical concepts and principles, rather than a unified body of theory, and hence the singular word 'complexity' is used as an umbrella term throughout this thesis (Lewin 1992; Waldrop 1992; Kauffman 1995; Cilliers 1998; Byrne & Callaghan 2014). Complexity may also be described as 'an ontological frame of reference' (Byrne & Callaghan 2014:57); where ontology is defined as 'the branch of metaphysics that investigates the nature of being' (Macquarie dictionary). Essentially, in the social world, complexity 'engages with the philosophical foundations of social science, both in terms of the construction of theories…and methodological foundations' (Byrne & Callaghan 2014:57). It also aims to improve our understanding of a complex phenomenon, including why and how it evolved or evolves, and in doing so, may help practically to influence and/or achieve desired outcomes of the phenomenon under study. More importantly, complexity offers the ability to reflect and learn from the past, interpret and respond to the present and predict and prepare for the future.

Given the serious and complex nature of organised crime and terrorism, and the emerging crime-terror nexus, one would expect that the family of complexity, including chaos theory, might lend itself to furthering our understanding and knowledge of these complex phenomena. In turn, perhaps complexity may offer a more comprehensive picture and address some of the short comings of particular crime theories and perspectives raised by Agnew (2011). Furthermore, complexity may also contribute to a new way of knowing and sense of reality in criminological study.

This thesis attempts to explore these notions and to essentially relocate a criminological study of the complex phenomena of organised crime, terrorism and

the crime-terror nexus into a new conceptual space using complexity. It aims to reframe the way we think about these complex phenomena and in doing so further our understanding and knowledge. The thesis comprises an over-arching yet simple hypothesis relating to complex phenomena:

- **Thesis hypothesis**: complexity can be successfully applied with criminological frames of reference to analyse organised crime, terrorism and the crime-terror nexus.

As will be discussed in Part 1 of the literature review, there are a number of approaches that have been developed in the natural and social sciences to apply complexity to social phenomena. However, there are few approaches, if any, developed within criminology to study criminological problems. There is also limited application to date of complexity within criminology and more specifically to the study of organised crime, terrorism and the crime-terror nexus, with some notable exceptions in terrorism studies. To address this balance, the development of a new approach is central to this thesis. The new approach will include the design, development and testing of a new complexity model with criminological frames of reference and a set of steps using the case study method. The criminological frames of reference will form an integral part of the new design, with certain concepts being framed within complexity and other concepts being synthesised with complexity. Ultimately, this thesis argues that the phenomena of organised crime, terrorism and the crime-terror nexus may be described as complex systems and as a result will offer new definitions of these phenomena. Supporting this approach, Byrne and Callaghan (2014:8) argue that complexity is:

> An ontologically founded framework of understanding…which asserts the ontological position that much of the world and most of the social world consists of complex systems and if we want to understand it we have to understand it in those terms.

Accordingly, the thesis aims to offer a new complexity model, with ontological and epistemological knowledge, to apply complexity in a criminological context, and to critically examine organised crime, terrorism and the crime-terror nexus through a complexity lens. Ultimately, this thesis aims to further our understanding and knowledge of these complex phenomena and change some of the practical ways we deal with them.

The thesis is inter-disciplinary and draws from the social sciences (criminology and political science) and the natural sciences (complexity science). As most would agree, different disciplines have different perspectives, and may all be useful, at different times, for different purposes. When Einstein was asked what helped him the most in developing his theory of relativity, he replied, 'figuring out how to think about the problem' (cited in Sanders 2003). Theoretical work often leads us to break-up a problem into parts, study and theorise the parts individually, add them back together again and then theorise as a whole (Kauffman 1995; Mitchell 2009). Complexity leads us to do the opposite. With complexity, a problem can only be understood as an integrated whole; in breaking up a problem, we destroy what we seek to understand – it is more than a sum of its parts (Kauffman 1995; Cilliers 1998; Mitchell 2009). Moreover, complexity is 'good at extending our knowledge from the known to the unknown' (Leary & Thomas 2011:68). Simply put, complexity helps us to think differently, leading us to new ideas and understanding.

Given organised crime, terrorism and the emerging nexus are complex phenomena, local and global in nature, constantly changing and evolving, it is not surprising that they are difficult to analyse and account for (Hoffman 2006; Levi 2007; Holmes 2007; Grabosky & Stohl 2010; ed. Paoli 2014; von Lampe 2016). In the latest research, approaches and models favour the differentiation between the various levels of complexity and multi-dimensionality of the problem, including links between organised crime and terrorism, and the licit-illicit worlds (Grabosky & Stohl 2010; von Lampe 2016). At a macro-level, organised crime, terrorism and the crime-terror nexus may be observed from the whole 'eco-system' in which crime occurs, including society, the economy, geo-politics and the media. At a micro-level, these phenomena may be observed from individual actors, deals or events. The closer one focuses on individual actors, the harder it is to see the bigger picture (Madsen 2007). As aptly expressed by a journalist (cited in Hoffman 2006:295), 'countering terrorism is akin to taking a series of time-lapse photographs. The image captured today is not the same as the image yesterday, nor will it be the same tomorrow'.

As noted earlier, complexity studies complex phenomena and may be described as a body of interdisciplinary knowledge that studies the structure, behaviour and dynamics of change in non-linear dynamic systems (Kauffman 1995; Cilliers 1998;

Mitchell 2009). Some systems are chaotic, i.e. appear random due to their complex behaviour, but in essence are deterministic, although difficult to predict, due to their sensitivity to initial conditions (popularly referred to as the 'butterfly effect' or 'chaos theory'). Other systems, known as complex adaptive systems, have emergent properties, where the behaviour is not deterministic (often labelled 'complexity theory'), but due to emergent patterns of underlying order, certain predictions may be made (Kauffman 1995; Cilliers 1998). Essentially, complexity may be summed up as 'searching for order in the complexity of evolving worlds' (Santa Fe Institute 2017). As such, a complexity approach promotes a patterned style of thinking and 'holds out the promise of identifying underlying patterns that give rise to order from the multiple individual interactions of diverse actors' (Bousquet & Curtis 2011:51). Moreover, as Kuhn (2009:16) argues, 'utilising complexity habits of thought is radically different from just adding a few new words and concepts to old ways of thinking'. Instead, 'it offers a means of discerning and identifying underlying patterns of order, thus providing a richer understanding and appreciation of situations, as well as indicators' (Kuhn 2009:12). In simple terms, 'the new lens of complexity opens a whole new realm of possibilities' in furthering our understanding and knowledge of a complex phenomenon (Frei & Ramalingham 2011:7).

To date, according to Milovanovic (2015:50), criminologists have had 'minimal engagement' in applying complexity within criminology. In the wider social sciences, while there has been more engagement and hence more influence, this influence has not been dramatic (Byrne & Callaghan 2014). Of note, despite their complex nature, is the limited application to organised crime, terrorism and the crime-terror nexus, with a few notable exceptions in terrorism studies. In contrast, within criminology, the study of organised crime and more recently terrorism and the crime-terror nexus, is a growing area of activity and one of much concern and debate (Grabosky & Stohl 2010; von Lampe 2016). In particular, research at a local, regional and global level continues as evidenced by the influential Millennium Project (2017). The more we understand organised crime and terrorism, and the emerging crime-terror nexus, the better we are equipped to detecting and preventing it. With the knowledge that the application of complexity within criminology is marginal and the application to organised crime, terrorism and the crime-terror nexus is limited, this reveals an academic gap which this thesis attempts to address.

1.2 Key definitions

As will be discussed in Part 1 of the literature review, there are no universally agreed definitions for key terms used in this thesis: namely, organised crime, terrorism, crime-terror nexus and complexity. Moreover, the terms such as global, international, transnational, domestic and local all have different meanings for different people when used in conjunction with these terms. Nonetheless, it is recognised that 'definitions are necessary and important…in order to explain the topic of discussion and the parameters of analysis' (Allum & Gilmour 2011:6). As will be explained in Chapter 3, complexity may be defined as the study of 'how a complex system of elements organise themselves, without the benefit of any central controller, into a collective whole that creates patterns, uses information, and, in some cases, evolves and learns' (Mitchell 2009:4). As will also be explained in Chapter 4, the phenomena of organised crime, terrorism and the crime-terror nexus may be described as complex systems; hence, for the purposes of this thesis, new definitions will be constructed. For ease of reference, comparison and to foreshadow the parameters of analysis, two sets of definitions are offered for the phenomena under study and summarised together in Table 1.1 below: i) traditional definitions as defined by criminologists; and ii) the new complexity informed definitions as constructed by the author in this thesis.

Table 1.1: Summary of traditional v complexity definitions of key terms

	Key term	Traditional definitions (see Chapter 2, section 2.2)	New complexity definitions (see Chapter 4, section 4.3)
1.	**Organised crime**	'The ongoing activities of those collectively engaged in production, supply and financing for illegal markets in goods and services' (Gill 2013:300).	A complex system (i.e. a criminal group) comprising a number of interacting, self-organising, dynamic and emergent properties, including individuals, and also interacts with other groups, individuals and its environment, all of which are mutually influencing.
2.	**Terrorism**	'An essentially premeditated political act. The intention is to inflict serious injury on the civilian population and to influence government policy by creating an atmosphere of fear and threat, generally for a political, religious or ideological cause' (McLaughlin 2013:461).	A complex system (i.e. a criminal or criminalised group) comprising a number of interacting, self-organising, dynamic and emergent properties, including individuals, and also interacts with other groups, individuals and its environment, all of which are mutually influencing.

	Key term	Traditional definitions (see Chapter 2, section 2.2)	New complexity definitions (see Chapter 4, section 4.3)
3.	Crime-terror nexus	'The degree of overlap' between organised crime and terrorism (Grabosky & Stohl 2010:2).	A complex system (i.e. a criminal or criminalised group) which evolves, or two or more complex systems which evolve and reciprocally affect each other's evolution and co-evolve to form a different or new complex system or systems (i.e. groups).

Source: Traditional definitions (sources in text) and complexity definitions (author Chapter 4)

Furthermore, as seen in Table 1.1 above, while the complexity definitions of organised crime and terrorism are almost identical, as will be demonstrated in this thesis, the new definitions are also within the context of specific variables and conditions pertinent to the 'environment' of either organised crime and/or terrorism. Moreover, the definitions offered in Table 1.1 above are all from a global perspective, i.e. the phenomena are world-wide.

1.3 Research objectives, outcomes and implications

The primary objective of this thesis is to provide a meaningful contribution to our understanding and knowledge of organised crime, terrorism and the crime-terror nexus. The research is significant as it not only advances our understanding of complex real-world challenges (Millennium Project 2017), but also uses borrowed science to open-up new ways of thinking within the broader area of criminological research.

Key outcomes of the research are major original contributions to:

i)   furthering our understanding and knowledge of organised crime, terrorism and the crime-terror nexus; and

ii) developing a new complexity model and knowledge with criminological frames of reference to apply complexity in criminology.

As will be discussed and concluded in Chapter 9, the primary objective of this thesis and the key outcomes will be achieved. The value and significance of these contributions are based on the difficulties in combating organised crime and terrorism to date, including their increasing nexus, and the ongoing challenges in understanding complex phenomena in criminology.

Of note, as will be discussed in Chapter 4, while it is acknowledged that a key focus of the case study surrounds organised crime, as this thesis will demonstrate, the case study also offers a rich source of material in terrorism and the crime-terror nexus to test and apply the new complexity model, given i) the presence of terrorism and the crime-terror nexus in the criminal structures and activities of the criminal group under study; and ii) the formation of a number of allegiances and alliances, including a terrorist group and two vigilante groups, all of which play a central role in the rise and fall of the criminal group.

Importantly, the new complexity model may also offer an additional tool in the criminologist's toolbox to provide fresh and novel insights into complex problems, and in doing so, perhaps shine light on old ones. Moreover, the new complexity model does not aim to overthrow existing theories, perspectives or knowledge, it merely aims to supplement and/or complement. Furthermore, the value and significance of the new complexity model, may stimulate a much-needed interest, discussion and debate by criminologists, on how to better conceptualise complex problems using the new science of complexity.

1.4   The role of theory

Theory can be seen as a tool for thinking. As noted by Garland (1990:277), 'theoretical work seeks to change the way we think about an issue and ultimately to change the practical ways we deal with it'. In criminology, 'theory occupies a central place' and provides a critical foundation for understanding crime and criminal behaviour (Mazerolle 2007:166). It represents the building blocks for organising knowledge (Tierney 2006; Mazerolle 2007). In essence, theory helps us advance our knowledge, by explaining what is already known, generating discovery of what is currently unknown and predicting what will happen in the future. Dantzker and Hunter (2006:22) define theory as 'an explanation that offers to classify, organise, explain, predict, and/or understand the occurrence of specific phenomena'. Similarly, Maxfield and Babbie (2014:40) define theory as 'a systematic explanation for observed facts and laws that describe and predict'. Dantzker and Hunter (2006:23) further offer a much simpler, but particularly useful, definition of theory, where theory is 'a statement that attempts to make sense of reality', and where reality is phenomena that can be identified, recognised and observed. Essentially, theory helps us understand, explain, represent or model something about the world around us, with the most important task being

explanation or prediction.

There is a multitude of theories used in criminological analysis, each with a different perspective or approach (Tierney 2006; eds Maguire et al 2007; Mazerolle 2007; Rock 2007; White & Perrone 2015; Tittle 2016). Each theory may be categorised as locating its key explanation for criminal behaviour or criminality at one of three broad levels of analysis: the individual, the situational and the social structural (White et al 2012). The individual level focuses on the personal or individual characteristics of the offender or victim; the situational focuses on the interaction and environment of the actors/activity taking place; and the social structural focuses on the broad social relationships and social institutions of society as a whole (White et al 2012). On occasion, a theory may combine more than one of these levels to provide a more comprehensive and perhaps a more sophisticated perspective of crime and criminal behaviour. Moreover, in criminology, we are dealing with human behaviour and theories tend to be in probabilities rather than absolutes (Maxfield & Babbie 2007). For example, a criminologist would say "an adult with a deprived childhood will probably be more at risk of committing delinquent acts than an adult without a deprived childhood". There is no absolute with human behaviour.

The literature reveals that as criminology has developed, different theories and theorists have moved in and out of fashion. At the end of the nineteenth century, for example, in the early days of Lombroso, phrenological measurement of 'criminal' skull types was originally accepted, then later dismissed in the mid-twentieth century (Lombroso-Ferrero 1911). Today, however, more fashionable neurologists are still studying the 'criminal' brain (Jeffery 1993; Eagleman 2011). Since Lombroso, there have been scores of major theoretical models to explain the various causes of criminal behaviour. According to Mazerolle (2007), criminological theory has progressed through a number of phases over the past 125 years, including four key phases: single factor reductionism, multiple factor approaches, systemic reductionism and integrated and inter-disciplinary approaches. The first phase, single factor reductionism and lasting some 50 years focused on single factors or characteristics of the individual's make-up to explain criminal behaviour and commenced with the work of Lombroso. The next phase, multiple factors approach, lasting some 20 years during the 1940s to 1960s, focused on multiple influences and tended to be more predictive rather than explanatory.

The third phase, systemic reductionism, commenced in the 1950s and continues today. It attempts to reduce explanations of criminal behaviour to one system or discipline of knowledge – such as psychological or economic. And finally, the fourth phase, integrated or inter-disciplinary, commenced in the 1980s and also continues today. This phase attempts to bring together and integrate different theories to provide a more complete and comprehensive explanation or understanding. As Agnew (2011:193) argues, 'most theories appear to have *some* merit, explaining a portion of the variation in some crime' but invariably fall short of a complete explanation. In particular, a more complete picture may involve theories drawn from diverse disciplines of knowledge, where all the diverse strands can fit together, with the goal of producing an integrated theory that is superior to any individual theory. As noted by Tierney (2006:352), 'whatever their particular merits, each [theory] at least for a period capture[d] the imagination of some academic criminologists…then something else came along'. As criminological phases and perspectives evolve, theoretical viewpoints continue to counter or complement existing theories and inspire debate and argument – an essential ingredient of today's criminology (eds Maguire et al 2007; ed. Piquero 2016). As in most disciplines, 'the fact that different theories provide competing interpretations…is actually a sign that criminology, as a field of knowledge, is a healthy and robust discipline' (Mazerolle 2007:166). Moreover, given crime itself is essentially a social construct, competing interpretations and perspectives are not surprising.

From its early days, criminology's history 'can be tracked against the waxing and waning of different disciplinary influences', notably psychology, sociology, history, law, economics and politics, and hence the wide range of techniques and methodologies used by criminologists (Zedner 2007:268). Criminological theory has also been synthesised from these interdisciplinary viewpoints; for example, psychological, economic, ecological, gender and social factors (Akers & Sellers 2004; Lainer & Henry 2004; Tierney 2006). However, as noted by Maxfield and Babbie (2014), although theory in criminology is frequently adapted from other disciplines in the social sciences, it is less often adapted from the natural sciences. Today, given the changing world we live in, interdisciplinary thinking and theories born out of the natural sciences are becoming more prevalent. As pointed out by Klein (1990), interdisciplinary is a means of solving problems that cannot be satisfactorily addressed in one's own discipline. Of particular note, the 2004 US

National Academies report, *Facilitating Interdisciplinary Research*, proposed that there are four powerful factors driving interdisciplinary thinking: i) the inherent complexity of nature and society; ii) the desire to explore problems across discipline boundaries; iii) the need to solve societal problems; and iv) the power of new technologies (cited in Bammer 2013:3). According to popular consensus, including academic scholars, 'there appears to be a widely held view that in the twenty-first century the world is changing faster than ever before' and that 'many of these changes are considered to be associated with globilisation' (Muncie 2013:201). As Muncie (2013:201-202) further defines, 'put simply, goods, money and information, as well as crime, pollution, drugs and disease, now routinely travel the world, and that world appears to be more interconnected'; he further notes that 'events and decisions made in one part will have repercussions through the rest.'

Since the turn of the twenty-first century, globalisation, enabled through the advances of technology and in particular the Internet, has created an 'information age' where information is expansive, instant and easily accessible. It has fundamentally changed our lives and affects the way we live, work, socialise and organise ourselves (Gleick 2011; Leary & Thomas 2011). More information means more data and more data means more complexity. To make sense of our increasingly complex world, Elsum (2013:432) argues that:

> Managing the tension between the traditional approach to the quest for fundamental understanding (reductionism and increasingly specialised disciplines) and the needs of complex real-world problems (integration of knowledge from multiple areas at a system level) is critical to success.

As Kauffman (1995:298) suggests in the context of globalisation and complexity, 'we are at that particular time in history when population, technology, economics, and knowledge spin us together'. White and Perrone (2015:52) argue that 'criminology theory can be presented in abstract fashion as discrete perspectives or approaches'. Most notably, postmodern criminology, arising in the early 1990s and still evolving today embraces complexity (Milovanovic 2013b). According to Madfis (2014:634), 'the ultimate postmodern goal is to understand new ways of knowing'. Postmodernists dismiss Newtonian physics of space and time and Euclidean geometry where 'linearity, stasis, determinism and stability are privileged' (Milovanovic 2013b:330). Instead, 'the nature of postmodernism is complex, abstract, interdisciplinary, and expansive…' (Madfis 2014:633) where

'quantum and chaos theories indicate the centrality of chance and indeterminacy as well as disproportionate effects' (Milovanovic 2013b:330). For postmodernists, freewill and determinism co-exist. In postmodern criminology, complexity finds a home, even though it has had minimal engagement by criminologists to date (Milovanovic 2015).

Another recent influence in both criminological study and the world at large is the use of technology and advanced computer modelling to analyse data (Chan & Bennett Moses 2016). The ability to take a data set and subject it to numerous lines of inquiry to look for relationships and patterns is a powerful tool in understanding crime and criminal behaviour, especially where non-linearities exist. Computer models allow us to develop new, visual, geometric mathematical techniques and is certainly helpful for any theory involving complex mathematics and patterns (Kiel & Elliott 1997). In recent years, there has been a plethora of popular science books around the theme of data sets, prediction and thinking differently – from *Super Crunchers*: *How Anything Can Be Predicted* (2007), by Ian Ayres, to the series of books by Malcolm Gladwell, notably *The Tipping Point* (2001) and *Outliers* (2008). In *Super Crunchers*, thinking by numbers is the overriding theme, but as Ayres points out 'Super Crunching is not a substitute for intuition, but a complement. Our intuitions, our experiences, and yes, statistics, should work together' (Ayres 2007:217). While the emergence of Big Data (Chan & Bennett Moses 2016) is certainly a consideration for criminologists, as Lee (1997:28) suggests, 'perhaps mathematics is not a very good language to use in describing the ideas, values, and ideologies that are transmitted during interpersonal interchange'. Moreover, 'perhaps narrative explanation is the best description of the interpersonal signalling and interpreting that takes place as humans interact in micro-contexts' (Lee 1997:28). Essentially, we should seek to understand social dynamics in the languages best suited to describe them. Lee (1997:29) further notes that we can ultimately make use of 'both narrative prose and mathematics to describe a world in which individual human and non-human interaction events culminate through linear and non-linear, local, global, probabilistic and deterministic processes'.

In the words of Bernard Cohen, a historian of science (cited in Kellert 2008:103), the inventional use of borrowed knowledge is not a direct transference or exact copying, but a 'creative transformation – an intellectual leap forward that often

happens when a concept, a method, a principle, or even a theory is transferred from one domain to another'. As globalisation and new technology continue to influence our everyday lives, concepts under the language of complexity, such as tipping points, feedback loops and the butterfly effect have found a place in our everyday vocabulary. In turn, the language of complexity is also finding its way into interdisciplinary study through borrowed knowledge. As one of today's popular thinkers points out 'we favour the visible, the embedded, the personal, the narrated, and the tangible; we scorn the abstract' (Taleb 2007:262). Put simply, as human beings, we are not conditioned to understand the abstract and non-linearities of this world; our emotional apparatus is designed for linear causality. Moreover, it is important to recognise that 'the preconceived ideas that we hold about social phenomena, shape the things we see' and 'no perception is possible without a theory behind it' (Klerks 2001:55). More importantly, 'reliance on theory commits us to believe in a certain kind of reality. In this respect, theory becomes a prism through which we interpret and make sense of people, situations, and behaviour' (Arrigo 2006:44). In the nature of reality or ontology as highlighted by Maxfield and Babbie (2014:271), 'some people believe that a real world exists beyond our perceptions and constructions' and others 'think that reality is a construction based on what we perceive reality to be'. In criminology, as new and innovative ways of thinking are introduced, such as Milovanovic's 'quantum holographic criminology', in the words of Milovanovic (2015:49) himself, 'it remains to be seen how receptive contemporary scholars are to revisiting their underlying ontological and epistemological assumptions'. Essentially, whatever one's perspective of reality, as further highlighted by Maxfield and Babbie (2007:14), 'ultimately, social science aims to find patterns of regularity in social life. This assumes, of course, that life is regular, not chaotic or random'. As we are well aware, life is far from regular or even random. At heart, we are 'pattern makers'– all puzzles need to fit a pattern (Brooks 2010:66).

In summary, criminologists have been working on the same puzzles for decades, and in today's changing world, some of those puzzles are becoming more complex to understand or explain and why new theories and models are being developed and old ones being thought about in different ways. Where there is more than one approach, theory or model that can be adopted, inevitably one is more successful than the others. In complexity research, as Mitchell (2009:300) notes, the most important contribution to date is 'the development of novel ways of

conceptualising complex problems'. In this thesis, it is the thinking in different ways to conceptualise complex problems that it ultimately aims to achieve.

1.5 Thesis structure

The thesis is grouped into four parts and contains nine chapters. Chapters 1 and 9 respectively provide the introduction and conclusion to the thesis. Part 1 lays the foundation with a literature review (Chapters 2-3) and Part 2 sets out the methodology (Chapter 4). Part 3 comprises the core thesis, including the new model (Chapter 5), application and case study findings (Chapters 6-7), and Part 4 (Chapter 8) discusses the outcomes. The contents of each chapter are summarised below:

Introduction

- **Chapter 1**: sets out a brief overview of the research problem, key definitions, objectives, outcomes and implications, together with the context and structure of the thesis, including the role of theory.

Part 1: Literature review

- **Chapter 2**: comprises a literature review of organised crime, terrorism and the crime-terror nexus. In each section, the three areas of study are considered in turn, followed by a short summary. It begins with a historical overview of the origin of these terms and how the terms have developed over time, followed by what is meant by these terms in relation to definitions and characteristics. Next, an examination of how organised crime, terrorism and the crime-terror nexus have been studied in criminology and in other disciplines follows.

- **Chapter 3**: provides a literature review of the science of complexity and its core concepts and principles, together with a brief history of its discovery and development in the natural and social sciences. An examination and overview of the development and application of complexity in criminology, organised crime, terrorism and the crime-terror nexus follows, together with some illustrative examples of how complexity has or may be applied.

Part 2: Methodology

- **Chapter 4**: sets out the research approach, assumptions and limitations in applying complexity in a criminological context, and to the study of organised crime, terrorism and the crime-terror nexus. It begins by considering research questions, followed by the availability of data and the conceptual language of complexity. It next considers key design principles in developing a new complexity model with criminological frames of reference, together with the approach to testing and applying the new model using the case study method. It also sets out the rationale for the case study selection, design and source data.

Part 3: New model & application

- **Chapter 5**: contains the design of the new complexity model to apply complexity in a criminological context and to the study of organised crime, terrorism and the crime-terror nexus. It draws upon the literature review in Chapters 2 and 3 using the approach described in Chapter 4.

- **Chapter 6:** sets out the macro-level findings of the application of the new complexity model as described in Chapter 5 to the in-depth case study of Escobar and the Medellín Cartel. It begins with an overview of the case study and complex system under study, the Medellín Cartel, together with the compilation of the macro-level data sets. An analysis of the macro-level contextual variables, together with the construction of the Medellín Cartel's fitness landscape follows. Based on the data sets, contextual variables and resulting fitness landscape, using complexity prompts, insights are drawn to better understand the nature and strength of the Medellín Cartel, including its rise and fall, and why and how it evolved.

- **Chapter 7:** sets out the micro-level findings of the application of the new complexity model as described in Chapter 5 to the in-depth case study of Escobar and the Medellín Cartel. It begins with an overview and compilation of Escobar's micro-level data sets. An analysis of Escobar's micro-level contextual variables, together with the construction of Escobar's attractor set and the Medellín Cartel's follows. Based on the data sets, contextual variables and resulting attractor sets, using complexity

prompts, insights are drawn to better understand Escobar's behaviours, and ultimately his drivers and vulnerabilities, all of which influenced and shaped the behaviours of the Medellín Cartel. A summary of the overall new complexity model comprising the macro and micro-level case study findings is also presented.

Part 4: Discussion

- **Chapter 8**: discusses the findings and considers the thesis question: can complexity be successfully applied with criminological frames of reference to analyse organised crime, terrorism and the crime-terror nexus? It considers whether the findings shed light on furthering our understanding and knowledge of these complex phenomena, including practical and policy implications. It also considers the contribution of the new complexity model and whether this adds a new tool to the criminologist's toolbox.

Conclusion

- **Chapter 9**: sets out the conclusion to the thesis and resultant contribution, including key outcomes of the research in i) furthering our understanding and knowledge of organised crime, terrorism and the crime-terror nexus; and ii) developing a new complexity model and knowledge with criminological frames of reference to apply complexity in criminology.

PART 1: LITERATURE REVIEW

Chapter 2: Organised crime, terrorism and the crime-terror nexus

'Despite their differences, organised crime and terrorism have much in common'

Grabosky & Stohl (2010:27), criminologists

Chapter 2 comprises a literature review of organised crime, terrorism and the crime-terror nexus. In each section, the three areas of study are considered in turn, followed by a short summary. It begins with a historical overview of the origin of these terms and how the terms have developed over time, followed by what is meant by these terms in relation to definitions and characteristics. Next, an examination of how organised crime, terrorism and the crime-terror nexus have been studied in criminology and in other disciplines follows.

2.1   Historical overview

2.1.1   Organised crime (history)

The origin of the term organised crime can be traced to the 1920s when the Chicago Crime Commission coined the term 'organised crime' in relation to what was perceived as a Chicago only phenomenon (von Lampe 2016). At this time, the term did not refer to criminal organisations and/or groups; instead, it referred to a much broader sense of the 'orderly fashion in which the so-called criminal class of an estimated 10,000 professional criminals in Chicago' allegedly pursued 'crime as a business' (von Lampe 2001:104). By the mid-1920s, the term organised crime had evolved to refer to criminal organisations and/or groups more widely across the United States ('US') (von Lampe 2001). In the 1930s, some of these individuals gained celebrity status such as Al Capone. It was not until the 1950s, that a US Senate Committee decided to investigate. According to the Senate inquiry, numerous criminal groups and syndicates were tied together interstate by a criminal organisation known as 'the Mafia' (von Lampe 2001). Moreover, the

notion of an Italian-American Mafia also added ethnicity to the concept (Cressey 1969; von Lampe 2016). During the 1960s, the novel *The Godfather* was published and shortly thereafter a movie made. Up until the 1970s, the term organised crime had been used almost exclusively by the US (Fijnaut 2014). It was not until the late 1970s and 1980s that the Mafia concept started to spread across Europe and the rest of the world (Fijnaut 2014). Before the 1980s 'virtually all European countries aside from Italy considered themselves largely unaffected by organised crime' (Paoli & Fijnaut 2004a:23). This change in perception coincided with, or 'in fact [was] caused by', the collapse of the Soviet Union, the growth of capitalism in China and the lifting of restrictions of migrants entering Europe (Richards 1999:4). There was also a growing recognition of the concept of transnational crime and the fact that globalisation had 'accelerated the interconnection between previously separate domestic illegal markets and increased the mobility of criminals across national borders' (Paoli & Fijnaut 2004a:3). In Europe, the 1987 book *Der Mob*, by journalist Dagobert Lindlau, became an immediate best seller and brought organised crime to the public's attention. According to Paoli and Fijnaut (2004b:23), it is 'almost a paradox' that discourse on organised crime started to decline rapidly in the US while at the same time rise rapidly in Europe and the rest of the world. It was following the 11 September 2001 terror attacks on the US ('9/11'), that another major shift in the concept occurred. As expressed by Baumann (cited in Paoli & Fijnaut 2004a:5), the term organised crime 'has become a convenient tool to express the anxieties of the general population at living in the ever more uncertain and insecure world of the later or post-modern stage of modernity'. Perhaps it was this convenience in the wake of 9/11 that the term organised crime was extended to include terrorist groups (Holmes 2007; Bovenkerk & Abou Chakra 2007). More recently, policymakers are shifting their emphasis from just 'organised crime' to 'serious and organised crime' (Paoli & Vander Beken 2014:24). Whatever the latest developments, as Paoli and Vander Beken (2014:26) point out, 'organised crime remains a catchy label to signify popular anxieties and foster legislative and institutional changes', even in today's rapidly changing world. In terms of criminal organisations and/or groups, traditionally, organised crime and terrorist groups may be categorised into one of four genres (Richards 1999; ed. Paoli 2014):

i)   the traditional Big Six comprising the Italian Mafia (including Sicilian and American), the Russian Mafia, the Japanese Yakuza, the Chinese Triads,

the Columbian Cartels and the Mexican Cartels;

ii)   the second tier of smaller groups with certain criminal specialities that often work with and for the Big Six;

iii)   domestic criminal organisations, such as outlaw motorcycle gangs; and

iv)   terrorist groups.

In reality, while some criminal groups may still be categorised into one of the four genres, in today's globalised world, there are thousands of actors that cannot be neatly categorised and who work together, either on an ongoing or ad-hoc basis, regardless of nationality, ethnicity or even language barrier. Moreover, government agencies suggest that criminal organisations and/or groups are increasingly working together, realising that at certain times it is better to work in cooperation rather than in competition with each other (Australian Crime Commission 2015; UK National Crime Agency 2015). As Levi and Maguire (2004:398) note 'although small organisations and even individuals may be socially dangerous…larger criminal organisations develop reputational benefits as well as economies of scale…creating a cumulatively greater social threat'. In the study of organised crime today, it is often the nexus between these four genres, including terrorist groups, that presents the greatest challenge and threat.

2.1.2   Terrorism (history)

Terrorism is not new and has been around 'since the dawn of recorded history', stretching far back to ancient biblical times through to today's twenty-first century (Martin 2016:3). Yet the word 'terrorism' in its modern form was only coined some 200 years ago, during the French Revolution to describe the Reign of Terror, when the Jacobin revolutionary government ruthlessly executed anyone suspected of being its enemy (Hoffman 2006; Schmid 2013b; Martin 2016). As noted by Hoffmann (2006:4), the Reign of Terror 'was neither random nor indiscriminate…but was organised, deliberate, and systematic'. Moreover, it was the 'ferocity' of the Reign of Terror that defined its history (Hoffman 2006). Not surprisingly, the word 'terrorism' is derived from the Latin word '*terrere'* meaning to terrify or to frighten (Hoffman 2006; Schmid 2013c). Essentially, a key ingredient of terrorism and/or a terrorist act is that it often terrifies and creates fear. Since the French Revolution, the word terrorism has been used by numerous governments against 'others' and by numerous 'others' against governments (Hoffman 2006; Aly 2015; Martin 2016). In the 1860s, the word was used to

describe the Russian revolutionary group, the Nihilists and in the 1930s and 1940s, it was used to describe the rise of Nazi Germany and Stalinist Russia (Schmid 2013b; Aly 2015; Martin 2016). After the First and Second World Wars, during the era of decolonisation, the word was used by colonial governments to 'negatively label groups fighting for national liberation' (Aly 2015:86). To counter this, the groups labelled themselves 'freedom fighters against a colonial oppressor' as opposed to a terrorist group (Martin 2016:23). It is this truism of 'one person's terrorist is another person's freedom fighter' that still plays a significant factor in the terrorism debate today (Martin 2016:23).

During the era from 1967 to 1990, the term 'modern' terrorism is mostly used, marked by the upsurge of the Palestine Liberation Organisation (Hoffman 2006; Keene 2012). This era also denotes other notorious terrorist organisations such as the Irish Republican Army, the Basque Fatherland and Liberty ('ETA') in Spain and Red Brigades in Italy (Hoffman 2006; Keene 2012; Martin 2016). Since 1990 and in particularly since the 9/11 attacks and subsequent 'war on terror', a new era of terrorism labelled as 'new' terrorism has arisen and refers to 'Islamic extremism' (Keene 2012:16). As Keene (2012:16) points out, new terrorism differs from modern terrorism in that these 'new' Islamic terrorists 'would be insulted if their actions were described as "political" violence'. Moreover, 'rather than focusing on conventional goals of political movements, today's religiously motivated terrorists seek destruction and chaos as ends in themselves' with their ultimate aim of 'global domination' as a single Muslim caliphate (Keene 2012:17). As Aly (2015:85) observes, the rise of violence by non-state actors 'has shifted the focus from state-on-state warfare to warfare carried out by dissident groups and individuals operating both within and across borders' and terrorism has become front and centre-stage in world politics.

Since this new era, policymakers are shifting their emphasis from the word 'terrorism' to 'violent extremism' in an attempt to avoid the 'historical legacy and political labelling' of terrorism (Aly 2015:86). For example, on 15 January 2016, the Secretary-General of the United Nations presented a 'Plan of Action to Prevent Violent Extremism' as an action to counter terrorism to the United Nations General Assembly to 'address the drivers of violent extremism at the local, national, regional, and global levels' (United Nations 2016). While both terms include the fundamental characteristic of violence, 'violent extremism acknowledges that

extremism in and of itself is not necessarily harmful' (Aly 2015:86), yet 'extremism' in and of itself is a 'primary feature of all terrorist behaviour', including Islamic (Martin 2016:24). Despite this shift in emphasis, the word terrorism is still more commonly used by scholars and practitioners, and more importantly, by the media, and also used in this thesis. Furthermore, despite the choice of words, in today's information age, rather than words, 'graphic images of terrorist incidents are broadcast instantaneously into the homes of hundreds of millions of people' (Martin 2016:3). This phenomenon is not lost on the terrorists themselves, and many 'try to control the "spin" on reports of their behaviour' (Martin 2016:3). Something that 'new' terrorism, such as Al-Qaeda and the Islamic State in Iraq and Syria ('ISIS') have used to their full advantage (Hoffman 2006; Aly 2015; Martin 2016). As noted by Franks (2006:1), 'few places on the globe are now unaffected by the hysteria caused by [the word] "terrorism"'. Moreover, as many scholars observe, in many respects, the twenty-first century is an era of 'globalised' terrorism.

2.1.3   Crime-terror nexus (history)

The crime-terror nexus is a fairly recent phenomenon. It began with the 'discovery of narco-terrorism' when it became clear in the 1980s that the organised criminal activity of drug trafficking was being used to support political objectives of terrorist organisations (Bovenkerk & Chakra 2007:29). Equally, the term narco-terrorism was also used to describe the attempts of drug traffickers to influence government policies or society, and to hinder law enforcement, through intimidation and violence, essentially for their own cause (Martin 2016). In essence, 'narco-terrorism' was the first time a link between organised crime and terrorism had been identified. Building on the term 'narco-terrorism', the term 'crime-terror nexus' was coined in the early 1990s, not long after the end of the Cold War and the subsequent decline of state sponsorship of terrorism (Makarenko 2004; Grabosky & Stohl 2010; Gendron 2011). According to Makerenko (2004), following this decline, the use of organised criminal activities became a major revenue source for terrorist groups and important in the evolution of terrorism. As such, the 1990s can be described as the decade in which the crime-terror nexus was established (Makarenko 2004). Since this decade, the nexus has evolved, primarily due to the advancement in technology and communications, including the Internet. As Bovenkerk and Chakra (2007:32) note, 'the borders have

faded or are no longer as well guarded…and have provided new opportunities' for criminals and terrorists alike. Globalisation is a paradox, as many scholars note. The very opportunities it offers are also harnessed by criminals and terrorists to enhance their operations (Grabosky & Stohl 2010; Gendron 2011; Makarenko 2011). Furthermore, 'there are strong indications that terror groups and [organised crime groups] have already found common purpose in which to operate and collaborate' (Joint Forces Staff College 2015:2). According to a US Congressional Research Service report (2013:3), in 2003, the US Drug Enforcement Administration ('DEA') 'reported that 14 of 36 (39%) foreign terrorist organisations were involved "to some degree" in illicit narcotics activity'. Conversely, in 2010, the US Department of Justice identified '29 of the top 63 [46%] international drug syndicates' with links to terrorist organisations (US Congressional Research Service report 2013:3). Today, with organised crime and terrorism, 'there is a blurring of distinctions between them and the scale and complexity of the threats they now pose' which 'has required an integrated response' and 'the various departments and agencies to forge their own "nexus"' (Gendron 2011:404). Moreover, as pointed out by the Australian Federal Justice Minister Michael Keenan, 'the links between terrorism and organised crime are emerging and complex problems' (interview in Box 2015). Yet, many prominent scholars still fail to recognise the importance of this growing nexus and even the nexus itself.

2.1.4 Summary of historical overview

Since its coinage some 100 years ago, the concept of organised crime has changed significantly, including a shift to the usage of the term 'serious and organised crime', and also, in some definitions, the inclusion of terrorism, which in part adds to the challenge of defining it today. Moreover, in today's globalised world, there are thousands of actors that cannot be neatly categorised into the more traditional organised crime genres and who work together, either on an ongoing or ad-hoc basis, regardless of nationality, ethnicity or even language barrier. Similarly, terrorism means different things to different people, and since its coinage in the modern form some 200 years ago, its meaning since 9/11 has irreversibly changed, together with a shift in emphasis to the usage of the term 'violent extremism'. Despite this shift, in an attempt to avoid the historical legacy and political labelling of the word terrorism, the word terrorism is still more commonly used. The relatively new concept of the crime-terror nexus, since its coinage some 25 years

ago, is still emerging and complex, as are the emerging threats and opportunities in today's globalised world. Despite an acknowledgment by practitioners, notably law enforcement agencies, of the increasing links between organised crime and terrorism, many prominent scholars still fail to recognise its importance, or even the nexus itself.

2.2   Definitions and characteristics

2.2.1   Organised crime (definitions)

Not surprisingly, there is no universal agreement on how to define organised crime (van Duyne & van Dijck 2007; ed. Holmes 2007; von Lampe 1999; 2002; 2016; Levi & Maguire 2004; Levi 2007; Paoli & Fijnaut 2004a, van Duyne & Nelemans 2011; eds Allum & Gilmour 2011; Paoli & Vander Beken 2014). Van Duyne and van Dijck (2007:101) offer that organised crime is still 'something we know so little about that we are still struggling with its very definition'. According to Beare (2003:xxiv), organised crime 'has become stretched and mythologised to the point of total distortion'. Similarly, Levi and Maguire (2004:397) note that 'organised crime is a notoriously difficult concept to define and measure, and relative to the confident claims that are made about it, little is known about its operation in practice'. As Allum and Gilmour (2011:10) point out, 'we can feel it and have some evidence of its existence, but we are not sure where it is hiding, where it is located, what shape it has and what exactly it looks like'. Furthermore, von Lampe (2016:12) offers a compelling argument that organised crime is simply a 'social construct' in 'an attempt to make sense of a complex social reality'. As such, von Lampe (2016:29) notes it 'should not come as a surprise' that there is a 'lack of consensus in the definition of organised crime' as this is a 'reflection of the different ways in which reality can be constructed and the different factors that influence the social construction of reality'. Similarly, von Lampe (2016) points out that this conceptual confusion also surrounds related issues such as terrorism, as well as more general sociological concepts, such as society itself. A pertinent question posed by Paoli and Fijnaut (2004a:7) is 'where exactly does organised crime begin?'. According to Cohen (1977 cited in Levi 2007:777) 'the term organised crime denotes not just a set of criminal actors, but also a set of criminal activities', although in general usage, the term 'organised crime' primarily denotes 'criminal organisations' (Paoli 2014:2). As von Lampe (2016:3) argues, 'much of

what is commonly associated with the term organised crime has to do with the provision of illegal goods and services', where some are prohibited (e.g. human trafficking), some strictly regulated (e.g. drugs) and others highly taxed (e.g. alcohol).

In Australia, there are few statutes that explicitly define organised crime (Australian Institute of Criminology 2004). At the federal government level, the *Australian Crime Commission Act 2002* (including latest amendments as registered 4 July 2016) includes in its definition (Part I, 4 (1)) of 'serious and organised crime' an offence 'that involves two or more offenders and substantial planning and organisation' and 'involves, or is of a kind that ordinarily involves, the use of sophisticated methods and techniques' and 'that is a serious offence…of the *Criminal Code'*. In contrast, the international instrument in the fight against organised crime – the *United Nations Convention against Transnational Organised Crime* – defines an 'organised criminal group' as 'a structured group of three or more persons, existing for a period of time and acting in concert with the aim of committing one or more serious crimes or offences…in order to obtain, directly or indirectly, a financial or other material benefit' (United Nations Office on Drugs and Crime 2004: Annex 1, Art 2). While the essence of these two definitions is the same, there are slight but important differences, such as the minimum number of persons and what constitutes a serious crime or offence. As pointed out by the Australian Institute of Criminology (2004:66), 'organised crime is not addressed systemically in all parts of the world for a number of political, financial and cultural reasons' and what constitutes a serious crime or offence is a key difference.

Despite the difficulty in defining organised crime, several scholars and organisations have attempted to define organised crime by identifying a set of common characteristics shared by criminal groups (Holmes 2007; Ransley & Prenzler 2007; Allum & Gilmour 2011). Sheptycki (2008:26) argues, 'when it comes to a criminological theorising about organised or professional crime, what remains constant is the deployment of organised violence and the pursuit of illicit wealth'. Even in today's modern society, violence in gangs remains constant. According to Napoleoni (2008:225) 'modern gangs fight fear with violence, and violence has become a way of life'. A particularly useful set of characteristics of criminal groups, including terrorist groups, was developed by Canada's Royal Canadian Mounted Police's Criminal Intelligence Directorate, whereby 14 characteristics

were identified (Richards 1999:4): corruption, discipline, infiltration, insulation, monopoly, motivation, subversion, history, violence, sophistication, continuity, diversity, bonding and mobility. While these characteristics do not set out a specific list of criminal activities (such as drugs, money laundering etc.), they do set out a useful framework of how these criminal actors operate and carry out their criminal activities. For example, the characteristics of 'continuity' and 'diversity' are found in Vander Beken's (2004:476) description of an organised crime group – 'predominately dynamic and fluid' suggesting 'adaptable and flexible networks capable of responding to both market requirements' and changes in 'the external environment'. Another example is Sheptycki's (2008:24) description – organised crime 'thrives in the interstices of power that exist in the grey area between licit and illicit markets' – the characteristics of 'corruption' and 'infiltration' are found here. According to a 2015 report on organised crime in Australia, the 'three key capabilities' of the 'increasingly complex nature' of organised crime include: i) the ability to conceal criminal activity by integrating into legitimate markets; ii) the uptake and ability to exploit new and emerging technologies to facilitate their crime; and iii) the global nature of organised crime with the ability to adapt to market requirements and demands (Australia Crime Commission 2015:7-10). Similarly, according to the United Kingdom ('UK') National Crime Agency 2015 report on the national strategic assessment of serious and organised crime, the 'changing risk' profile of the 'wide-ranging and complex' threat of organised crime includes: i) a range of new opportunities for criminals due to more sophisticated technology; ii) a presence in multiple jurisdictions through the global communications infrastructure; and iii) a risk of extremists seeking to exploit criminal contacts, e.g. for financial and logistical support (UK National Crime Agency 2015:1-3). Of note, is that these key capabilities and changing risks are all present in the 14 characteristics identified above.

Despite the definitional debate, for the purposes of this thesis as summarised in Chapter 1, a traditional definition of organised crime is offered by the Sage Dictionary of Criminology as 'the ongoing activities of those collectively engaged in production, supply and financing for illegal markets in goods and services' (Gill 2013:300).

2.2.2   Terrorism (definitions)

Similar to the term organised crime, there is no universal agreement on how to define terrorism (Hoffman 2006; Schmid 2013b; McLaughlin 2013; Ally 2015; Institute for Economics & Peace 2015; Martin 2016). As pointed out by Saul (2006:1), 'few words are plagued by so much indeterminacy, subjectivity and political disagreement as "terror", "terrorise", "terrorism" and terrorist"'. To illustrate this point, Schmid (2013b) compiled an exhaustive list of over 250 terrorism definitions in use and even proposed one himself that runs to 570 words. As Martin (2016:32) notes, 'defining terrorism can be an exercise in semantics and context, driven by one's perspective and worldview', including perspectives of the terrorists themselves, supporters, victims, targets, onlookers and analysts, such as political leaders, the media and scholars. Similar to organised crime, one's perspective, or in other words one's sense of reality, is inevitably selective, which means different people focus on different aspects of terrorism while neglecting others. Martin (2016:31-32) further notes the different 'types of terrorism', which also add to the definitional debate as summarised below:

i)   state terrorism: 'from above' and committed by governments;

ii)   dissident terrorism: 'from below' and committed by non-state actors against governments and other perceived enemies;

iii)   religious terrorism: motivated by an 'absolute belief' and 'in defence of' what believers consider to be the true faith;

iv)   criminal terrorism: motivated by 'sheer profit or some-amalgam of profit and politics' such as profits from drug trafficking (labelled narco-terrorism) to fund and sustain political objectives of terrorist groups or to influence government policies to advance the trafficker's own cause;

v)   international terrorism: impacts 'state boundaries'.

According to Ally (2015:86), 'official and unofficial definitions of terrorism today serve the political, legal, social or defence purpose of the particular government or organisation that defines it'. Moreover, 'terrorism is recognised as a criminal act by most legal codes, and those groups who are defined by the state as 'terrorists' will have to negotiate an extreme form of criminalisation' (McLaughlin 2013:461). Despite this definitional debate, as some would say, we tend to know it when we see it.

In Australia, at the federal government level, the *Criminal Code Act 1995* (including latest amendments as registered 19 December 2016) contains the legal definitions of terrorism. In the *Criminal Code Act 1995*, Chapter 5, Part 5.3, Division 100.1, a terrorist act is essentially defined as 'an action or threat of action where the action is done or the threat is made with the intention of advancing a political, religious or ideological cause' and 'coercing, or influencing by intimidation' the government or public. In addition, in Chapter 5, Part 5.3, Division 102.1, 'a terrorist organisation means an organisation that is directly or indirectly engaged in, preparing, planning, assisting in or fostering the doing of a terrorist act.' More importantly, the Australian Attorney-General's Department helps to explain Australia's federal government's counter-terrorism laws in a published document entitled 'Australia's counter-terrorism laws' (Australian Attorney-General's Department 2016). In this document, Australia's federal government clarifies that 'a terrorist act does not cover engaging in advocacy, protest, dissent or industrial action where a person does not have the intention to urge force or violence or cause harm to others' (Australian Attorney-General's Department 2016:5). In contrast, the United Nations has yet to agree a definition of terrorism or terrorist act.

Similar to organised crime, despite the definitional difficulties, a number of scholars and organisations have attempted to define terrorism by identifying a set of common characteristics. In an analysis of frequencies of definitional elements of terrorism, the most common characteristics were violence, political, fear and threat (Schmid & Jongman 1988 cited in Hoffman 2006:34). Not surprisingly, Hoffman's (2006:40) own definition of terrorism includes these four characteristics: 'the deliberate creation and exploitation of *fear* through *violence* or the *threat* of violence in the pursuit of *political* change [*emphasis* added]'. With the most common characteristic of violence, it is important to distinguish the difference between terrorism and organised crime. While ordinary criminals also use violence, the purpose or motivation is different (i.e. for material gain, rather than political, religious or ideology) and the victim of violence is usually the target (e.g. gang member turned informant or rival gang members) in organised crime (Hoffman 2006; Aly 2015; Martin 2016). In contrast, the victims are not usually the target in terrorism. The target is usually symbolic (e.g. a building) to change 'the system' and the victims are usually innocent bystanders, mostly civilians (Hoffman 2006; Martin 2016). Despite the fundamental differences between organised crime and terrorism, as described earlier, the 14 characteristics of

criminal groups are relevant to both. According to a report on Australia's counter-terrorism machinery, there is 'a new generation of increasingly capable, mobile, and digitally-connected terrorists with the ability to disseminate their extreme ideology around the world' (Australian Department of the Prime Minister and Cabinet 2015:10). Moreover, the rapidly growing scale of the threat, is becoming 'increasingly complex' in nature (Australian Department of the Prime Minister and Cabinet 2015:18). As Keene (2012:13) notes, 'terrorism is a complex, multi-causal problem where many of its components are interrelated'.

Similar to organised crime, for the purposes of this thesis as summarised in Chapter 1, a traditional definition of terrorism is offered by the Sage Dictionary of Criminology as 'an essentially premeditated political act. The intention is to inflict serious injury on the civilian population and to influence government policy by creating an atmosphere of fear and threat, generally for a political, religious or ideological cause' (McLaughlin 2013:461).

2.2.3   Crime-terror nexus (definitions)

The term 'crime-terror nexus' is essentially an interconnection (*nexus*) between organised crime (*crime*) and terrorist (*terror*) groups (Makarenko 2004; 2011; Bovenkerk & Chakra 2007; Levi 2007; Grabosky & Stohl 2010; Gendron 2011; von Lampe 2016). While most scholars would agree on this simple definition, the exact nature and extent of the nexus is not agreed upon and is still being debated (Grabosky & Stohl 2010; Makarenko 2011). Seminal works seeking to understand and define the nexus include Williams (1998), Makarenko (2001; 2003; 2004; 2011) and Shelley et al (2005). Other notable contributions focus on certain aspects of the nexus, including how some groups are political by day, but criminal by night (Dishman 2001). Moreover, operational freedom is a key consideration, especially where certain groups control specific regions or territories. Since both organised crime and terrorist groups seek similar operational environments, 'it is natural that their paths converge' (Joint Forces Staff College 2015:17). Essentially, this growing trend of illicit partnership is fuelled by 'ungoverned spaces', where both groups prosper, leading to 'a pattern [that] is self-perpetuating', as both groups 'often provide the fuel for destabilisation, in order to create operational spaces' (Joint Forces Staff College 2015:17).

Moreover, as noted earlier, the nexus is not without its controversy, with prominent scholars on each side of the organised crime and terrorism literature referring to words such as 'alleged' nexus. One such controversy surrounds the concept of convergence and whether terrorists take on criminal traits for the purposes of terrorism or actually become criminals and vice-versa (Grabosky & Stohl 2010). Despite this lack of agreement, Makarenko (2011) offers a useful 'crime-terror continuum' model between an organised crime group and terrorist group by categorising the nexus on three planes which may be summarised as follows:

- *Operational*: the nexus is where one group adopts the tactics of the other or where the 'functional merging' of each group in terms of an 'ad hoc alliance' or 'integration' occurs between the groups.
- *Evolutionary*: the nexus is where 'the tactics and motivation' of one type of group turns into the other, i.e. a terrorist group may evolve into an organised crime group or vice-versa.
- *Conceptual*: the nexus is where a 'hybrid group emerges' and 'simultaneously displays ideological and economic motivations' by engaging in acts of both terrorism and organised crime.

For the purposes of this thesis as summarised in Chapter 1, a traditional definition of the crime-terror nexus is offered by Grobosky and Stohl (2010:2) as 'the degree of overlap' between organised crime and terrorism. Of note, as will be discussed in the next section, is that the study of the crime-terror nexus is relatively new within criminology; as such, a definition is not yet offered by the Sage Dictionary of Criminology (eds McLaughlin & Muncie 2013).

2.2.4   Summary of definitions and characteristics

While definitional debates continue, traditional definitions, together with common characteristics of organised crime and/or terrorist groups are still offered, including a particularly useful set of characteristics developed by Canada's Royal Canadian Mounted Police's Criminal Intelligence Directorate (Richards 1999). While these characteristics do not set out a specific list of criminal and/or criminalised activities (such as drugs, money laundering etc.), they do set out a useful framework of how these criminal actors operate and carry out their criminal and/or criminalised activities. Moreover, despite the lack of agreement

of what constitutes a crime-terror nexus, Makarenko (2011) offers a useful 'crime-terror continuum' model between an organised crime group and terrorist group by categorising the nexus on three planes, being operational, evolutionary and conceptual.

2.3   Studies in criminology

2.3.1   Organised crime (in criminology)

Following on from the difficulties in defining organised crime, it is not surprising to note the challenges in studying and theorising organised crime. Of note, while von Lampe (2016:12) argues 'organised crime is not something that exists clearly discernible in the real world', he further argues that 'this does not mean that…[it] is a figment of someone's imagination without any link to reality'. In other words, organised crime may be studied in the context of how one perceives reality. Nonetheless, as pointed out by Kleemans (2014:32), despite one's perception of reality, 'a basic problem in organised crime research is that theories and theoretical perspectives are underdeveloped'.

Mainstream criminological theories

In criminology, mainstream influential theories such as routine activity theory (Cohen & Felson 1979), differential association theory (Sutherland 1934) and strain theory (Merton 1938) have all been applied to explain organised crime. However, as argued by Grabosky and Stohl (2010), they do not explain all aspects. As von Lampe (1999) argues, while there is a 'variety of alternative, definitional approaches to organised crime', there is 'no comprehensive theory'. Furthermore, as Grabosky and Stohl (2010:9) point out, 'life is complex, and individuals are rarely driven by a single objective'. For example, critics of situational crime prevention inspired by routine activity theory and rational choice theory have noted the absence of cultural, economic, and political contingencies of crime situations (Edwards & Levi 2008). In terms of organised crime, it is 'not commonly associated with one-off crime events in a specific location but with continuous activity' (von Lampe 2016:392). More importantly, 'it has been argued that organised criminals, through cooperation, tend to be more resourceful than ordinary criminals' and 'do not necessarily encounter lucrative crime situations in the course of routine activities' (von Lampe 2016:393). Instead, organised criminals mostly do the opposite and 'methodically seek out or even engineer

opportunities' (von Lampe 2016:393). Likewise, in terms of 'guardians' who are in a position to intervene with the criminal event, Edwards and Levi (2008:375-77) argue that 'the opposite can be true in areas dominated by criminal groups' as 'in an atmosphere marked by fear and intimidation…bystanders are unlikely to intervene with criminal activity'. Of particular note, when applying criminological theories to organised crime, is that a key difference between 'normal' crime and 'organised' crime is the relevance of 'offender networking relative to the mere commission of criminal acts' (von Lampe 2016:393). In other words, illegal activities involving organised criminals are not only dependent on opportunities for crime, but also on opportunities within their network.

Factors to consider

Based on these shortcomings, von Lampe (1999) argues the obvious – that a 'framework which distinguishes various levels of complexity and accounts for the fact that the issue of organised crime has social, economic and political dimensions' is a more useful way of theorising organised crime. As Lilley (2006:18) notes, 'organised crime does not somehow operate in glorious isolation'. Furthermore, von Lampe (2016:xiii) suggests that 'placing the main analysis on underlying patterns and dynamics' of organised crime may better address its 'increasing level of sophistication' in today's modern world. According to Levi (2007:795), organised crime is 'a dynamic process that evolves as offenders adapt (or fail to adapt) to their changing environment', thus any theory of organised crime needs to be dynamic. Moreover, van Duyne and van Dijck (2007:101) argue that 'empirical research repeatedly demonstrates that "organised crime" is plagued by much disorganisation'. Of note, Findlay (2008:68) argues that organised crime 'requires comparative analysis from the local to the global if the complex nature of criminal enterprise is to be understood at all the vital phases of its organisation'. To sum up in a few words by van Duyne and van Dijck (2007:101), organised crime is perhaps 'a subject of art?', i.e. you need to go beyond the scientific facts to really behold the 'seriousness of organised crime'.

Models of organised crime

Over the past 30 years, a number of models of organised crime have emerged. Most of these models sit in one of three categories as proposed by Jay Albanese (1989): i) hierarchical model; ii) patron-client model; or iii) enterprise model. The

hierarchical model suggests a nationwide bureaucratic organisation (also referred to as bureaucracy theory) and ties in with the work performed by Cressey (1969) on explaining the Italian-American Cosa Nostra Mafia Group (von Lampe 2003). Much of Cressey's work, however, relies on evidence supplied by law enforcement, which critics suggest may have been structured in a similar way to their own hierarchy in terms of ranks and divisions thus tainting the information (Gill 2013). At the time, the US policymakers also referred to Cressey's work as the 'alien conspiracy theory' suggesting that organised crime in the US was imported by immigrants rather than shaped by society itself (Kleemans 2014). The central idea in this theory, is that organised crime 'is the problem of "outsiders" that threaten society' (Kleemans 2014:33). Next, the patron-client model suggests a web of asymmetric ties embedded in local or ethnic networks and reflects the work of Joe Albini (von Lampe 2003). These networks, for example, are based on families, friends and business associates (Gill 2013). Finally, the enterprise or market model suggests a focus on the market and economic activities regardless of the organisation style. The enterprise model reflects the work of Dwight Smith where 'the dynamics of the market operating past the point of legitimacy establish the primary context for the illicit entrepreneur' (Smith 1980:375 cited in Vander Beken 2004:473). In other words, the point at where legitimacy and illegitimacy meet is crucial. Smith looks at the economy as a whole, instead of two distinct and disconnected parallel economies (i.e. an upper and underworld), enabling a more sophisticated organised crime system where the nexus of the two legitimate and illegitimate worlds are 'grey' economies (Vander Beken 2004). According to Smith, the focus of organised crime research is in the interdependencies between economies. Edwards, amongst a plethora of others have further developed Smith's work (Vander Beken 2004). Edwards has attempted to conceptualise the shape, form and dynamics of organised crime by focussing on Smith's interdependencies. To make the point, Edwards argues (1999:80):

> Illicit firearms trafficking is not conducted in parallel to licit firearms trafficking but is enabled by the complex network of relationships between firearms producers, distributors, wholesalers and users. The structure of relationships provides opportunities for the establishment and reproduction of criminal enterprise. Through a focus on such structures of interdependent relations it is also possible to discern both the opportunities for organised crime and the opportunities for disturbing its reproduction.

More recently over the last decade, several other models and theories of organised crime have developed which may be categorised under social, political or environmental models. A useful way of looking at these models is by applying Turner's classification of either a causal or analytical model (Turner 1991 cited in von Lampe 2003:4). A causal model is one where a dependent variable is explained by the interaction of one or more independent variables in a simple linear view. An analytical model is one where a complex array of variables interact in a non-linear way. Causal models of organised crime tend to conceptualise one aspect or one-dimension of organised crime such as Cressey's hierarchical model. In contrast, analytical models correspond to the complexity and multi-dimensionality of organised crime such as Smith's enterprise model and the latest trends in social network analysis (Beesley 2000; Klerks 2001; Williams 2001; Morselli 2009).

Analytical model

Based on an analytical model, von Lampe (2003) argues that any meaningful model of organised crime should include three core elements: i) actors who cooperate in rational non-impulsive criminal activities; ii) structures that connect these actors; and iii) criminal activities these actors are involved in. Moreover, von Lampe (2003) argues that environmental factors should also be included, such as society, the government and the media. Based on this model, a variety of connections can be made; for instance, there is no organised crime without organised criminals, and these criminals are, in part, a product of their environment. Moreover, the types of crime the actors are engaged in will depend on their individual skill sets and structures. The structures formed are also influenced by the type of activities carried out and 'the notion that criminals organise themselves to respond to specific needs' (von Lampe 2016:101). For example, an extortion gang will require a different type of structure to say that of running an illegal casino. More importantly, environmental factors also play a role in the emergence of a particular group. Of significance, since 9/11, the world has changed and a 'whole raft of new arrangements and legislation has been implemented' (McCulloch 2003:284). An increase in legislation has not only led to an increase in surveillance by law enforcement and the military, but also an increase in surveillance by the private sector, such as financial institutions, and society itself (McCulloch 2003; Mythen & Walklate 2006; Olding 2015). As a feature

of the modern world, the media also plays a crucial role in raising or shifting attention to certain criminal groups or areas of crime, although at times, the media, especially social media, tends to blur fact with fiction (Tierney 2006; Chambliss & Williams 2011). As noted by Passerini and Bahr (1997:219), in the context of collective behaviour, 'opinions are influenced by the mood of the community, the media, the state of the economy, and so on'. In other words, the general mood is measured as a property of a group and not individuals.

Procedural model

Another way to look at and understand organised crime is by considering the tasks that need to be performed to commit organised crime. As such, Levi (2007:781) offers a useful six step approach of 'tasks that need to be performed to commit serious crimes over a long period, most of these tasks being as easily accomplished at a local level as transnationally' as follows:

> i)   obtain finance for crime;
> ii)   find people willing and technically/socially competent to commit crimes (though this may not always be necessary);
> iii)   obtain equipment and transportation necessary to commit the crimes;
> iv)   convert, where necessary, products of crime into money or other usable assets;
> v)   find people and places willing to store proceeds (and perhaps transmit and conceal their origin); and
> vi)   neutralise law enforcement by technical skill, by corruption, and/or by legal arbitrage, using legal obstacles to enforcement operations and prosecutions which wary between states.

Levi (2007:781) argues that these procedural steps may be further broken down 'when analysing the dynamics of particular crimes and/or criminal careers' and that 'some similarities exist with the process of terrorism'.

Licit-illicit environment

Of importance, as mentioned earlier, is the licit-illicit environment of organised crime. In the European Commission's 2000 Falcon organised crime research programme, a key finding was that criminal networks 'always require the cooperation or services of the licit environment' and that these necessary contact points form "bridges" between the two worlds (van de Bunt & van der Schoot 2003b:21). The interfaces were categorised into three areas: i) the demand for illegal products and services from the licit environment; ii) the abuse of facilitators

in the licit environment; and iii) the availability of 'tools' in the licit environment. Another European Project comprising 13 European countries and 33 scholars involved a 'systematic comparison of organised crime patterns and control policies in Europe' (Paoli & Fijnaut 2004a:9). The findings are presented in a lengthy and comprehensive 2004 book *Organised Crime in Europe* with the interface between the licit-illicit environment being a key finding (Paoli & Fijnaut 2004a). As pointed out by van de Bunt et al (2014:321), while 'organised crime groups are often portrayed as entities that derive their strength from strong internal cohesion and an ability to conceal their illegal activities from the outside world', at the same time 'organised crime is a thoroughly social phenomenon'. In other words, 'instead of operating in a social vacuum, organised crime has a habit of interacting with its social environment' and 'the relationships between legality and illegality are by no means necessarily antagonistic or aimed at avoiding one another' (van de Bunt et al 2014:321). Moreover, Allum and Gilmour (2011:1) argue, 'if anything, [organised crime] is the product of a country's history, its social conditions, its economic system, its political elite and its law enforcement regime'. Furthermore, for organised crime to flourish, 'it needs accomplices' from the outside world, meaning network analysis is key (Allum & Gilmour 2011:1).

Criminally exploitable ties

In relation to network analysis, in a seminal paper, Granovetter (1973:1360) argues the strength and importance of weak ties in interpersonal networks and that 'small-scale interaction becomes translated into large-scale patterns, and that these, in turn, feed back into small groups'. More recently, von Lampe (2016:107) argues that most analysis is based on tangible links between criminals and hence is likely to produce an 'incomplete picture of the patterns of relations that matter for understanding the organisation of crime, namely those webs of relations that enable or facilitate criminal conduct'. Similarly, Hobbs (2013:5) notes, 'criminal collaborations generate chaotic sets of personal and commercial affiliations featuring fluid and often unpredictable interchanges that are ill suited to the sociometric analysis [form of network analysis] favoured by police and police science'. Von Lampe (2016:123) proposes 'a more complete picture is obtained when one looks at the underlying networks of criminally exploitable ties, of which manifest criminal structures tend to represent only a smaller part'. Essentially, it can be argued that an understanding of how these exploitable ties are formed

underpins the 'level of resilience of criminal structures' (von Lampe 2016:123). Furthermore, von Lampe offers a continuum of criminally exploitable ties from manifest (actual co-offenders and facilitators), to latent (available co-offenders and facilitators) to potential (based on convergence setting and matching dispositions). Von Lampe (2016:110) defines: i) manifest ties as relationships that are active; ii) latent ties as dormant, but at any given time would be available to lend their support; and iii) potential ties as conceivable based on convenience or similar disposition. Von Lampe (2016:110) also notes that some scholars have referred to these manifest and latent ties as 'criminal social capital'. Moreover, von Lampe goes one step further and considers those individuals who contribute to the outcome of a criminal endeavour by passively standing by without interfering or are unwitting accomplices (von Lampe 2016:109). Von Lampe (2016:5) further suggests, 'one of the main challenges in the study of organised crime is to sort through the myriad social relations of criminals and to understand how these relations influence and shape criminal behaviour'. Furthermore, von Lampe (2016:336) surmises, 'the big picture of organised crime has to be analytical rather than descriptive and abstract rather than concrete', something that this thesis aims to embrace.

Reduction and prevention

In reducing and preventing organised crime, Levi and Maguire (2004) offer a useful list of 16 non-traditional approaches (i.e. outside of law enforcement and the justice system) adapted and extended from the work of Schneider. The list is categorised into three buckets: i) community approaches; ii) regulatory, disruption and non-justice system approaches; and iii) private sector involvement. Of note, while most prevention focuses on repressing 'dangerous people and groups', in some areas, 'the supply and distribution of goods and services that are in popular demand' are not always seen as preventable in the same way, especially by the communities who are the end-buyers (Levi & Maguire 2004:424). Nonetheless, Levi and Maguire (2004:410) propose that while these approaches 'are at present diverse and scattered, they may point cumulatively to a "way forward" that will eventually be followed more consistently on a wider scale'.

2.3.2 Terrorism (in criminology)

Similar to organised crime, the difficulties in defining terrorism also present challenges in studying and theorising it. Unlike organised crime, however, criminology is not the 'home' discipline of terrorism studies. According to Schmid (2013c:458), 'terrorism literature can be found mostly in the social sciences, especially political science, international relations…but, strangely, hardly at all from criminology until recently'. It is also 'one of the most multidisciplinary subjects in the social sciences' (Martin 2016:xix). As White and Perrone (2015:296) point out, terrorism 'certainly has layers of complexity that need to be drawn out'. In criminology, 'explanations generally hold that terrorism is a product of the same socialisation process that cause individuals to engage in criminal behaviour' and that the 'criminological approach argues that terrorism and crime are explainable within the framework of established theoretical perspectives used to explain criminal deviance' (Martin 2016:54-56). Moreover, in criminology, a key perspective is 'about constructing the "other"' (White & Perrone 2015:296). White and Perrone (2015:296) note, that from the point of view of terrorists, 'it means seeing people as the "other" in a particular way'. Conversely, from the point of view of governments, terrorists are constructed as the 'other', although this has unfortunately resulted in 'a whole category of people as the "other"', particularly since 9/11 (White & Perrone 2015:296). In the new era of terrorism, an 'outpouring of racist sentiment directed at people of Arabic or Muslim backgrounds in Western nations on a global scale' has certainly become problematic (White & Perrone 2015:296). Of note is one's choice of words, as Lakoff and Frisch (2006) argue, 'language matters, because it can determine how we think and act'. Post 9/11, a war metaphor rather than a crime metaphor was chosen by the Bush administration, not dissimilar to the 'war on drugs' metaphor during the rise of organised crime and drug trafficking. As Fairweather (2012) argues, war is one of choice and not one of necessity, and so is the choice of one's words.

Similar to criminological research in organised crime, routine activity theory, differential association theory and strain theory have all been applied to certain aspects of terrorism studies (eds Freilich & LaFree 2016). Moreover, during the 1960s and 1970s, radical criminology and critical theories reflecting the 'political and social discord of the period' were also applied including Marxist perspectives (Martin 2016:58). In their recent book, *Criminology Theory and Terrorism,* editors

Freilich and LaFree (2016:i) note, 'although there has been an increase in terrorism research across the social and behavioural sciences in the past few decades, until recently most of this work has originated from political science, psychology or economics'. Freilich and LaFree (2015:2) further note that 'most criminological terrorism studies to date have focused on neoclassical models like routine activities, rational choice and situational crime prevention' and call on 'criminologists to broaden their inquiry to include criminology's other major frameworks like social learning, classic strain theories, social control, life course, and psychological and biologic perspectives'. Recent studies using anomie/strain (e.g. Pisoiu 2015), social disorganisation (e.g. Fahey & LaFree 2015), and routine activities frameworks (e.g. Parkin & Freilich 2015) provide valuable insights. Yet similar to organised crime, these studies still lack a comprehensive theory of terrorism. Of particular note, is that the topic of 'terrorism' only made it into the 2nd edition of the Sage Dictionary of Criminology in 2006 (McLauglin 2013; eds McLaughlin & Muncie 2013). Nevertheless, Freilich and LaFree (2015:6) argue that 'both terrorism studies and criminology [would] benefit from a closer association between the two'. They also argue 'by focusing on the obvious connections between terrorism and crime, we may be able not only to contribute to a better understanding of terrorism, but also to help formulate more rational policies for combating it'.

2.3.3   Crime-terror nexus (in criminology)

The study of the crime-terror nexus in criminology is relatively new. As Grabosky and Stohl (2010:1) point out, in criminology, 'it is surprising, yet understandable, that the explicit comparison of crime (especially organised crime) and terrorism has received relatively little scholarly attention', with notable exceptions being Levi (2007) and Morselli (2009). In their seminal book *Crime and Terrorism,* Grabosky and Stohl (2010) draw upon four criminological perspectives using routine activity theory, differential association theory, strain theory and resource dependency theory to explore the crime-terror nexus. Moreover, they offer two levels of analysis (organisational and the individual) and in doing so, provide notable and valuable contributions. Of particular note, is that 'unlike terrorist organisations…conventional criminal groups may have competition' (Grabosky & Stohl 2010:111). This often involves 'aggressive efforts to maintain "market share" and so called "gang wars"' (Grabosky & Stohl 2010:111). Despite their differences,

they also suggest that organised crime and terrorism have much in common and in the globalised era, 'the fluid environment within which terrorist and organised crime groups operate provides both threats and opportunities' (Grabosky & Stohl 2010:71). Of concern are the increasing networks arising between criminals and terrorists which may be described as 'temporary, dynamic, emergent, adaptive, entrepreneurial and flexible structures' (Grabosky & Stohl 2010:79). Also of concern, is that 'both types of organisation tend to recruit their members from the same reservoir of marginal segments of the population, which are subject to social, cultural or political frustration (strain theory)' (Bovenkerk & Chakra 2007:36). Of significance by Bovenkerk and Chakra (2007:36) is the observation that 'terrorist groups may bring forth leaders' but 'the criminal underworld may produce people with the necessary operational and survival skills'. In conclusion, Grabosky and Stohl (2010:127) recognise that 'the problems of organised crime and terrorism have long histories and deep roots within the communities in which they have arisen' and that any approach to understanding these problems must recognise 'the history and context in which the problems and the organisations have emerged'.

2.3.4   Summary of studies in criminology

In the study of organised crime, a number of mainstream criminological theories have been applied, together with various models; however, prominent scholars argue that they do not explain all aspects of organised crime. Furthermore, the latest research favours the differentiation between the multi-dimensionality of the problem, including links between organised crime and terrorism, and the licit-illicit worlds. Relative to the study of organised crime, until recently, terrorism appears to have received scant attention by criminologists, despite its obvious criminal connections. In criminology, explanations generally hold that individuals engage in terrorism as a product of the same socialisation process that cause individuals to engage in criminal behaviour. In contrast, research on the crime-terror nexus is still in its infancy, despite the commonalities between organised crime and terrorism. Notwithstanding data challenges, as the literature review reveals, studying and theorising organised crime, terrorism and the crime-terror nexus is not a simple undertaking – it is difficult and complex – and likely due to the nature of what constitutes these complex phenomena in the first place.

2.4   Studies in other disciplines

2.4.1   Organised crime (in other disciplines)

Outside its 'home' discipline of criminology, organised crime has not been widely studied in other disciplines (von Lampe 2006). As von Lampe (2006:5) notes, it can only be beneficial 'when organised crime is viewed through the lens of, or rather within the paradigms of, another discipline'. Notwithstanding, there are notable studies in economics, political science, psychology and neurobiology, where each have either drawn metaphors or analogies to the concept of organised crime or applied their own theories. It is usually the former. On the individual 'organised' criminal level, while psychology and neurobiology study the criminal psychopath and the like, the study of the 'organised' criminal has only been marginal. One such example is Richard Dawkin's work on the 'selfish gene' which draws analogies between genes and the 'successful Chicago gangsters' (Dawkins 1989:2). On the organisational level, the ongoing question of how 'organised' organised criminals really are still exists. Areas such as economics have addressed two major lines of research into organisational theory and network analysis (von Lampe 2006). Notable work includes Phil Williams. As Williams (2001:93) himself points out, 'understanding network structures and operations makes it easier to identify vulnerabilities against which concentrated attacks should be directed'. Moreover, 'in attacking networks, it is also critical to target the boundaries, either from one network to another, or from the criminal world to the upper world' (Williams 2001:94). As von Lampe (2016:138) argues, 'it is not uncommon to see individuals being involved in two or more illegal firms at the same time'. Another noteworthy contribution is by Skaperdas and Syropoulos (1995) who have used a game theory model to explain the emergence of criminal groups specialising in the monopolistic use of violence; this model rests on an analogy between power syndicates and primitive states.

In summary, given the lack of study of organised crime in other disciplines, perhaps the criminological difficulties in defining organised crime, yet alone theorising, provides an unattractive framework for other disciplines to tap into.

2.4.2   Terrorism (in other disciplines)

In other disciplines, there is a plethora of literature on terrorism studies evaluating the events, ideas, motivations, theories, and histories that result in terrorist

activities (Hoffman 2012; Schmid 2013c). Since 9/11, the literature has expanded 'exponentially' with scholars now focussing their attention on terrorism (Hoffman 2012; Schmid 2013c). Most studies sit within political science and international relations, with some in law, psychology and economics (Hoffman 2012; Schmid 2013c). Of note, as Martin, (2016:xix) argues, 'at the outset, it is important to understand that the study of terrorism, is first and foremost, a study of human behaviour' and none of the factors that make terrorism 'can be discussed in isolation from one another'. Schmid (2013a:7) also argues that terrorism, clearly, 'should not be studied in isolation'.

In Schmid's (ed. 2013) comprehensive handbook on terrorism research, Schmid draws on responses from some 90 terrorism experts (scholars and counter-terrorism agencies). In response to a question on which theory the respondents use to study terrorism, 'more than half of the researchers has their own theory' (Schmid 2013a:11) – that is at least 45 different theories of terrorism in this pool of experts. As Schmid (2013a:12) points out, in the underlying responses, there were even 'different views as to what constitutes a "theory" as opposed to a "framework" or a "perspective"'. McAllister and Schmid (2013:261) conclude 'if we look at the theories…one cannot fail to see (and deplore) the lack of common ground'. Moreover, 'there were also a number of respondents who felt that there are no well-established theories' and 'one prominent researcher wrote "there really is no theory of terrorism, which is the biggest conceptual problem in the field"' (Schmid 2013a:12). Addressing this point, Schmid (2013a:2) suggests that there are five conceptual lenses through which we can look at terrorism; acts of terrorism as/and: i) crime; ii) politics; iii) warfare; iv) communications; and v) religious crusade/jihad. Schmid (2013:2) further suggests that all 'are useful to understand better some aspects of some forms of terrorism', yet 'it would be wrong to single out any one' as none are mutually exclusive.

Of particular note, Franks (2006:1), a scholar in peace and conflicts studies, argues, 'the study of terrorism has become preoccupied with the constant debate that revolves around explaining *what* actually constitutes terrorism and *how* to counter it. Instead of perhaps concentrating on *why* it actually occurs'. In Franks 2006 book *Rethinking the Roots of Terrorism*, Franks seeks to explain why terrorism occurs drawing on conflict theory and argues that terrorism cannot be adequately explained without considering its social, political and economic situation,

including ideology and culture. As Franks (2006:34) argues, 'societies can be sensitised to accept different levels of violence depending on their history and experience'. For example, in South America, Africa and the Middle East, a culture of violence has developed that 'tends to perpetuate itself' (Franks 2006:34).

A recent novel approach in media and literature studies is offered by the 2016 book *Re-Visioning Terrorism: A Humanistic Perspective* where the concept of 'rack focus' is borrowed from cinema to create an interpretative approach to terrorism (eds Coda & Lawton 2016). The concept 'rack focus' can be defined as (eds Coda & Lawton 2016:333):

> The change of focus of a lens so that one image can come into focus while another moves out of focus. Though the focal distance changes, the reality has not changed. Both items and events coexist, but given the nature of optics we can only see clearly one or the other.

Furthermore, it is argued that a rack focus response in human perceptions can lead to a 'more nuanced, non-dogmatic, and flexible' response to terrorism (eds Coda & Lawton 2016:333). For example, 'the response of a typical American to the events of 9/11 will be vastly different from that of a follower of bin Laden' (Code & Lawton 2016:8). We see each other 'reciprocally as "evil" and ourselves as "good"', yet 'between these two extremes there are myriad other possible responses, which can only be seen by shifting the focus of our gaze' (Code & Lawton 2016:8). Following a reaction to an event, one should move to reflection which 'requires us to focus on the depth of field that is absolutely clear to the "other". Although we don't have to arrive at the same conclusions' (Code & Lawton 2016:9).

In a 2015 report on global terrorism by the Institute for Economics & Peace ('IEP'), 'statistical analysis has identified two factors which are very closely associated with terrorist activity: political violence committed by the state and the existence of a broader armed conflict' (IEP 2015:3). Furthermore, 'the link between these two factors is so strong that less than 0.6 per cent of all terrorist attacks have occurred in countries without any ongoing conflict and any form of political terror' (IEP 2015:3). The report also notes that 'terrorism is driven by a variety of country-specific factors' based on 'a country's level of development and history' (IEP 2015:68). For example, 'reasons that people join FARC will be different to those who join ISIS' (IEP 2015:68). As Franks (2006:36) points out, 'the role of the

individual in the root causes of terrorism should not be underestimated. Ultimately it is the individual who carries out a lethal act by detonating a bomb or pulling a trigger'. This risk is clear in Hoffman's (2006:xv) personal observations:

> I am still always struck by how disturbingly "normal" most terrorists seem when one actually sits down and talks to them. Rather than the wild-eyed fanatics or crazed killers that we have been conditioned to expect, many are in fact highly articulate and extremely thoughtful individuals.

In a recent study by psychologist Anne Speckhard (2016), Speckard notes 'after interviewing almost five hundred militant jihadi terrorists, their family members, close associates, and even their hostages' from places ranging from the Middle East to Russia, Canada and Western Europe, 'I think I have a pretty good idea of how and why some people get onto the terrorist trajectory'. Speckhard (2016) concludes that there are 'four necessary ingredients that go into making a terrorist' and 'fifty individual vulnerabilities/motivations that may also play a role'. The four key factors may be summarised as (Speckhard 2016):

i) *A terrorist group*: 'there is always nearly a group…purporting to represent some faction of society and offering terrorism as an answer'.

ii) *An ideology*: 'one that always *wrongly* attempts to justify terrorism and the attacking of innocent civilians for the cause' – including political and religious causes.

iii) *Social support*: always 'some level…that can vary widely by context'. For example, 'a youth thinking about joining a terrorist group in Gaza…is likely to have friends who are also part of Hamas or Fatah and may choose his group the way other youth in other countries chose a football team'. In comparison, 'a youth growing up in Boston…will have to dig deeper in his community to find other like-minded individuals'. However, today's Internet 'means that one can quickly and easily tap into social networks supportive to terrorist groups' such as ISIS which 'currently maintains a 24/7 presence on the Internet'.

iv) *Individual vulnerabilities that resonate with the first three factors*: i.e. 'the group, its ideology and the social support provided' by the terrorist group. Speckhard identifies 50 individual vulnerabilities which can be further divided by whether or not the individual lives 'inside or outside a conflict zone'.

According to Speckhard (2016), 'those who reside in conflict zones are most often primarily motivated by trauma and revenge as well as frustrated aspirations'. In non-conflict zones, 'unemployment, underemployment and frustrated aspirations can all lead to feelings of alienation and a longing for personal significance that a terrorist group may offer' (Speckhard 2016). With ISIS having declared a caliphate, 'this draw is even more powerful to the socially alienated, the person falling off his [or her] tracks or unable to succeed in the society in which he [or she] lives' (Speckard 2016). Based on this analyses, ideology is a fundamental factor, as without an ideology, as simple as it sounds, there would be no terrorist group. As Franks (2006:37) puts it, 'ideology provides the individual terrorist with the cognitive reasoning with which to justify the use of violence'. As most scholars are now advocating, 'there is a growing consensus that tools to counter the ideology that drives violent extremism are needed since military force alone cannot defeat violent extremism' (Liang 2015). Of note, is a point made by Lakoff and Frish (2006) – 'terror is an emotional state. It is in us. It is not an army. And you can't defeat it militarily and you can't sign a peace treaty with it'. As Bennis (2016:223) puts it, 'terrorism survives wars; people don't'. Moreover, in preventing and combating terrorism, Schmid (2013a) offers a list of 12 useful rules, including addressing underlying conflict issues and work towards peaceful solutions. As a final point, English (2015:20), a political scholar, argues, 'it is emphatically terrorism*s* and counter-terrorism*s* in the plural that we are [now] considering, and the emergent picture will necessarily therefore be complex'.

2.4.3   Crime-terror nexus (in other disciplines)

As in criminology, the study of the crime-terror nexus is also relatively new in other disciplines and largely in the area of political science and international relations. As Shelley et al (2005:4) argue, the 'interaction between terrorism and organised crime is growing deeper and more complex all the time'. A pertinent point made by Gendron (2011:404), is that despite differing motivations, both groups 'are incompatible with the principles and values of civil society'. This in itself, creates common ground, although 'organised criminals, in most cases, will not want to be associated with extremists for fear of coming under additional scrutiny' (UK National Crime Agency 2015:3). In addition, international relations theorists have provided a range of scholarly work, although most focus on 'environmental or behavioural aspects of the interaction' (Shelley et al 2005).

Others have theorised 'crime-terror cooperation as an example of a changed world order' with most arguing the 'forces of globalisation have empowered both organised crime and terrorism, which some call the "dark side of globalisation"' (Shelley et al 2015:17). Another way to look at the nexus is provided by Mandrick (2015), a military scholar, who offers an ontological perspective. Mandrick (2015:157) proposes an 'ontological framework' based on a taxonomy of predefined terms, which facilitates 'the creation of nodes and links (relationships) in a graph-like structure' for a better understanding of the nexus. Furthermore, in Shelley et al's (2005) seminal work, an analysis of links between organised crime and terrorist groups resulted in a list of 12 watch points to help identify specific indicators of the crime-terror nexus. The watch points are categorised into: i) behavioural and environmental; and ii) organisational. To sum up, as Makarenko (2011:238) argues, 'the better an organisation learns and adapts to its environment in the context of the crime-terror nexus, the greater the threat it is likely to pose on a multiple of levels'. Hence the greater need to study and better understand this nexus.

2.4.4   Summary of studies in other disciplines

Outside its 'home' discipline of criminology, despite some notable contributions in applying organisational theory and network analysis, the study of organised crime appears to be a marginal area of interest and not widely studied in other disciplines. With terrorism studies, the opposite is true. In other disciplines, notably political science and international relations, there is a multitude of new theories and observations where various theories and models have been applied in today's era of globalised terrorism. However, similar to criminological studies, prominent scholars in other disciplines argue that there are no comprehensive theories or models that explain all aspects of organised crime, terrorism or the crime-terror nexus. Furthermore, similar to criminological studies, the latest research favours the differentiation between the multi-dimensionality of the problem, including links between organised crime and terrorism. In the study of the crime-terror nexus, while still in its early days of research, work by Shelly et al (2005) highlights the growing need to study and better understand this nexus. In summary, whether in criminology or another discipline, one thing remains the same, the growing complexity of these real-world problems, which in turn reveals an academic gap in how best to address them.

Chapter 3: Complexity science

'The next century will be the century of complexity'

Stephen Hawking (cited in Chui 2000), theoretical physicist

Chapter 3 provides a literature review of the science of complexity and its core concepts and principles, together with a brief history of its discovery and development in the natural and social sciences. An examination and overview of the development and application of complexity in criminology, organised crime, terrorism and the crime-terror nexus follows, together with some illustrative examples of how complexity has or may be applied.

3.1   Understanding complexity

As Sanders (2003) aptly points out:

> We hear the words 'chaos' and 'complexity' used daily to describe everything…yet very few people, the news media and policy-makers included, have stopped to ask what the words really mean and what the new science of complex systems might contribute.

As noted earlier, the science of complexity may be described as a set of theoretical concepts and principles, rather than a unified body of theory, and hence the singular word 'complexity' as an umbrella term is used throughout this thesis (Lewin 1992; Waldrop 1992; Kauffman 1995; Cilliers 1998; Byrne & Callaghan 2014). Importantly, it may also be described as 'an ontological frame of reference' (Byrne & Callaghan 2014:57). In short, complexity is a body of interdisciplinary knowledge that studies the structure, behaviour and dynamics of change in non-linear dynamic systems, where the whole is more than the sum of its parts and the unit of study is a complex system (Kauffman 1995; Cilliers 1998). In simple terms, a system can be described as 'a set of inter-related elements' and a complex system as 'the whole is greater than the sum of its parts' (Byrne & Callaghan 2014:4). A dynamic system is one that simply moves or changes over time and the term non-linear is best defined by what is not linear (Mitchell 2009). Basically, linear systems always respond proportionately between cause and effect, while non-linear

systems respond disproportionately, and may appear random and are often difficult to discern (Smith 2007).

In literature, one often sees the terms 'chaos' and 'complexity' used interchangeably; while both fall under the science of complexity and have overlapping properties, prediction is different in both (Lewin 1992; Kauffman 1995; Cilliers 1998; Johnson 2007; Wolf-Branigin 2013; Byrne & Callaghan 2014). In everyday use, the term 'chaos' means 'utter confusion or disorder, wholly without organisation or order' (Macquarie dictionary). However, mathematical chaos, known as 'chaos theory' is not about disorder or randomness, which is misleading given the everyday use of the word (Gleick 1987). In a chaotic system, the system appears random due to its complex behaviour, but in essence is deterministic, although difficult to predict due to its sensitivity to initial conditions (popularly referred to as the 'butterfly effect' or 'chaos theory') (Cilliers 1998; Gleick 2008; Mitchell 2009). In a random system, the current state does not define its future state. In chaotic systems, it does (Gleick 1987). It is our limitations or simply our ignorance of knowing all initial conditions that make things appear random and long term prediction difficult (Saperstein 1997; Brooks 2010). However, with chaos, difficulty in prediction 'does not mean failure to understand or explain' (Kauffman 1995:17). Randomness is perfect unpredictability, mathematical chaos is not (Byrne & Callaghan 2014). Nevertheless, whether anything is truly random or truly predictable, is still a question that lies at the centre of one of the most fundamental debates in science (Brooks 2010).

In comparison, the everyday use of the term 'complexity' means 'the state of quality of being complex; intricacy or something complex' (Macquarie dictionary). In complexity science, complex does not mean complicated, otherwise the point is missed (Cilliers 1998). If a system can be fully explained by its individual parts, even with a large number of parts, such as the mechanism of a clock, it is merely complicated (Cilliers 1998). In contrast, if a system cannot be fully explained by analysing its individual parts, it is complex, such as living things, including the brain, social systems and even ourselves (Cilliers 1998). These systems are also known as complex adaptive systems, with emergent properties, where the behaviour is not deterministic, but due to emergent patterns of underlying order, certain predictions may be made (Kauffman 1995; Cilliers 1998). In Ball's (2009a; 2009b; 2009c) triology of books, *Shapes*, *Flow* and *Branches*, Ball demonstrates how

much of nature's systems and patterns contain mathematical complexity and a sense of underlying order and structure. Kauffman (1995:5) goes a step further and suggests complexity provides 'evidence that it is not merely a human creation, but part of the natural order of things'. Just to confuse things, complex systems may demonstrate both chaotic (inherently deterministic, but difficult to predict) and complex adaptive (inherently non-deterministic) behaviour, yet both still reconcile the unpredictability of non-linear dynamic systems with a sense of underlying order and structure (Gleick 1987; Lewin 1992; Mitchell 2009).

In summary, put simply, complexity at its core is research on pattern formation (Gleick 2008). Key to understanding complexity is the patterns of relationships and interactions amongst a system's components. Complexity offers a way of understanding patterns that are not predictable by traditional methods. It is essentially the study of the changing relationship between order and disorder where 'both order and disorder can coexist' (Milovanovic 2003:55). If you can tease out the changing patterns underlying complexity, you can unlock the hidden structures demonstrating predictability. Essentially, complexity aims to improve our understanding of a phenomenon, including why and how it evolved or evolves. It also provides insight and foresight of what guides behaviours of elements in the system and the system as a whole. In turn, this may help to better determine strategies and measures to achieve desired outcomes of the complex system and phenomenon under study.

3.2   Core concepts and principles

The science of complexity has its own language. For the purposes of this thesis, a technical understanding of the physics and mathematics behind complexity is not required, although a grasp of the core concepts and principles is. Having the right conceptual vocabulary is essential in applying complexity in a criminological context to criminological problems. As noted earlier, complexity may be described as a set of theoretical concepts and principles; however, given the diverse backgrounds of complexity researchers, in the words of one of the early pioneers, researchers 'have adopted different vocabulary' and even key terms have 'different meanings for different researchers' (Gell-Mann 1994:17). Essentially, scholars have not consistently used or adopted the same terms or expressions, yet alone agreed on standard definitions (Mitchell 2009; Byrne & Callaghan 2014). Over two decades later, little has changed. For this thesis, concepts and principles

have been drawn from a broad range of literature with general consensus amongst scholars, and where possible, terms and expressions used that best suit criminology. To begin, 'complexity' and a 'complex system' are defined, followed by 'chaos theory' and the concept 'edge of chaos':

- **Complexity**: studies how a complex system of elements 'organise themselves, without the benefit of any central controller, into a collective whole that creates patterns, uses information, and, in some cases, evolves and learns' (Mitchell 2009:4).

- **Complex system**: a set of 'inter-related elements' that change non-linearly over time, where 'the whole is greater than the sum of its parts' (Byrne & Callaghan 2014:4). Elements are defined as components of a system. In the natural sciences, elements are usually referred to as 'agents'. In the social sciences, elements may comprise individuals, groups of individuals, processes and activities (Cilliers 1998; Byrne & Callaghan 2014). Complex systems have a history (also known mathematically as 'path dependence'), and hence, their past is typically co-responsible for their present state (Cilliers 1998; Byrne & Callaghan 2014).

- **Chaos theory**: occurrences where small effects can lead to major changes, otherwise known as 'sensitivity to initial conditions' (Gleick 1987; Cilliers 1998; Wolf-Branigin 2013).

- **Edge of chaos**: represented by a midpoint between order (determinism) and disorder (randomness), where you have enough structure and patterns in a complex system that it is not random, but also enough fluidity and emergent creativity that it's not deterministic – this edge is emergent complexity and is a place where innovation occurs (Kauffman 1995). The edge of chaos is also known as 'far from equilibrium' where the word equilibrium means steady state or static, or in other words, death of a complex system (Cilliers 1998).

Next, ten core concepts and principles forming the building blocks of complexity are defined and characterised. The concept of sensitivity to initial conditions arising from chaos theory is also further explained in this section.

1. Sensitivity to initial conditions

As defined earlier, the concept 'sensitivity to initial conditions', otherwise known as chaos theory, may be defined as occurrences where small effects can lead to major changes (Gleick 1987; Cilliers 1998; Wolf-Branigin 2013). In other words, a system's future state is dependent on any slight change at any given time (Gleick 1987; Lorenz 1993; Williams & Arrigo 2002; Milovanovic 2003). This concept is also known as the 'butterfly effect'; the analogy being that something as insignificant as a butterfly flapping its wings in one country can alter a weather system and cause a tornado on the other side of the world (Gleick 1987). It has been popularised in films such as *Sliding Doors* (1998) and the *Butterfly Effect* (2004) where the characters take multiple paths. This concept also draws attention to the history of a system and 'calls into question the habit of ignoring small disturbances on a system' (Kellert 2008:12).

2. Bifurcation

A bifurcation may be defined as the division of something into two branches or parts (Gleick 1987). In a non-linear dynamic system, it is a point of destabilisation in the qualitative system from a state of order to a higher state of disorder (Gleick 1987; Williams & Arrigo 2002). Metaphorically, it is a choice of two paths in the evolution of a system where patterns emerge (an order within the disorder) following the bifurcations (Gleick 1987). In other words, a 'bifurcation is the cusp at which the system changes; things can go one way or another' (Hassett & Stevens 2014:101).

3. Attractors

An attractor may be defined as 'a location to which a complex system tends to move' (Milovanovic 2003:56). It is like a magnet or gravity pit, pulling the system towards it. The attractor attracts the behaviour of the system, thus producing an order within the disorder, and in doing so creates patterns and structures. It is these patterns and structures in states of disorder that give a complex system its stability (Gleick 1987). There are three types of attractors: fixed points, limit cycles and strange attractors (Gleick 1987). The first two types of attractors are simple and stable. It is the third type of attractor 'strange' that is complex and although unstable, is marked by an underlying order, and hence an overall complex level of stability. It also has a fractal structure (i.e. exhibits self-similarity) and is often, but

not always, chaotic (i.e. exhibits sensitivity to initial conditions). One of the strange attractors is known as the Lorenz attractor as it gives rise to a butterfly shape with two winged areas or 'outcome basins'. An example of a fixed point attractor is a swinging pendulum – without any further external forces, gravity will eventually attract all movement or behaviour of the pendulum to the point beneath it. An example of a limit cycle attractor is where a system oscillates between consistent points such as a quartz crystal. The third attractor 'strange' is where the motion never repeats itself yet forms an overall pattern. An example would be a marble within the confines of a bowl. In the absence of any external forces, including gravity, the marble would spin around the bowl indefinitely without ever retracing the exact same path. The path would look random and disordered, but the overall shape of the system (the bowl) would remain ordered. The behaviour 'is globally stable, but locally unstable' (Elliott & Kiel 1997:7) and also 'focuses on the intermingling of the two' regions (Forker 1997:73). It is this example where complexity is best explained; within a defined shape (the bowl) a stability exists even though within the system there appears to be disorder (Young 1997a; Williams & Arrigo 2002).

4. Fractals

A fractal may be defined as a fraction of a dimension which exhibits self-similarity (Milovanovic 2003). There are two key features of fractals: i) it has infinite complexity due to self-similarity (i.e. a small portion of the system is representative of the whole); and ii) its measurement depends on scale. Its complexity is due to the iterative (feedback) generation of its form which leads to self-similar geometry – this is best illustrated by nature, for example a snowflake or a fern (Gleick 1987). With regard to scale, the best example is a coastline – if you measure it in kilometre lengths, you will get one result; in centimetres, with all its twists and turns, you will get another result (Milovanovic 2003). Practically, 'fractional dimension becomes a way of measuring qualities that otherwise have no clear definition: the degree of roughness or brokenness or irregularity in an object' (Gleick 1987:98). It is also useful for identifying patterns that are easy to see at one scale, but not at another, i.e. micro and macro-levels, where a pattern easily identifiable at one level may demonstrate fractal tendencies and therefore be replicated at another level, albeit with a smaller or larger scale (Pepinsky 1997).

5. Interconnectivity

Interconnectivity may be defined as the state or quality of connected elements in a complex system (Cilliers 1998). In other words, it is a measure of the degree of interconnection. Other terms used for interconnectivity are 'coupling' (Kauffman 1995; Marion 1999). In a complex system, elements interact and exchange information through relatively rich means creating connections among all elements in a system (Kauffman 1995; Cilliers 1998). The interactions do not have to be physical; they can also transfer information (Cilliers 1998). Any element may influence, and is influenced by another element or elements in the system. An important point is that each element is ignorant of the system as a whole and only responds to its local interactions (Cilliers 1998). Moreover, it is the local rich interconnectivity of elements in the system, that gives rise to the global structures and patterns of the system (Kauffman 1995; Cilliers 1998; Byrne & Callaghan 2014).

6. Feedback

Feedback may be defined as the ability of a system to refer back to itself, as it builds off and on itself (Williams & Arrigo 2002; Milovanovic 2003). Other terms for feedback are iteration or recurrency where there are loops in the interactions between elements (Gelick 1987; Cillier 1998). Feedback can be positive (enhancing, stimulating) or negative (detracting, inhibiting) (Cilliers 1998). It can also be direct or indirect and gives the system its ability to learn (Pycroft 2014). With feedback in a system, both directions are important – top down and bottom up – as feedback helps to drive the system.

7. Self-organisation

Self-organisation may be defined as a process where elements mutually adjust without the benefit of any central controller to cope with changing internal and external environmental demands on the system and in doing so create new patterns and structures (Kauffman 1995; Cilliers 1998). Self-organisation 'allows the system to adapt, evolve and survive' (Pycroft 2014:24). It is a concept that promotes order out of disorder and can be described as a system self-organising into a more complex order when it reaches a certain state of disorder (Williams & Arrigo 2002). Optimal self-organisation is at the 'edge of chaos' where the 'emergent order will be richer, more creative and adaptable, if there is a diversity of [elements] in the system, with different characteristics and different behaviours'

(Lewin & Regine 1999:201). With self-organisation, the emergent order is not imposed from above, but from 'distributed influence' through the interactions of the system's elements (Lewin & Regine 1999:201).

8. Dissipation

Dissipation may be defined as structures that form momentarily in a complex system and appear stable, but are quick to collapse or dissipate at the slightest perturbation (Milovanovic 2003). A system that demonstrates dissipation needs to persistently dissipate matter and energy to maintain its structures (Kauffman 1995). A dissipative system requires more energy than the simpler system it replaced. When energy is no longer supplied the system dies (Kauffman 1995). This process promotes order out of disorder in that a stronger 'more adaptive order' is obtained (Williams & Arrigo 2002:75).

9. Emergence

Emergence is a key concept and often labelled 'complexity theory' in itself. It may be defined as the whole is greater than the sum of its parts (Cillliers 1998; Wolf-Branigin 2013). It is an outcome when elements interact under the influence of feedback and something that was not there before is (Cilliers 1998; Johnson 2007). In complex systems, emergence breaks the idea of determinism because it means the outcome of some interaction can be inherently unpredictable. In large systems, macro features can emerge that cannot be traced back to any particular element (Byrne & Callaghan 2014). In everyday phenomena, it is like the beauty of a painting cannot be simply reduced to its individual brush strokes or a musical symphony to its notes (Pycroft 2014).

10. Co-evolution

Co-evolution may be defined as the outcome when two or more complex systems reciprocally affect each other's evolution (Kauffman 1995). Complex systems are usually open systems and thus elements can interact with their external environment. Closed systems are usually merely complicated (Cilliers 1998). When systems interact, they co-evolve (Kauffman 1995). Because of co-evolution, it is important to consider the impact of other systems over time in any given environment as current and future behaviour of a complex system is intrinsically linked to its history (Kauffman 1995). More importantly, due to the nature of open

systems, it is often difficult to determine system boundaries. Cilliers (1998) argues that 'we have to decide what our "distance" from the system will be' to frame the boundaries and level of detail we wish to study. Another important phenomenon is allegiance and alliance formation in co-evolution. According to Kauffman (1993;1995), complex systems must be sensitised to one another and feel some sense of common identity or common purpose to form allegiances and alliances, although this does not mean that all parts are reading from the same page. Each complex system maintains its own identity and focuses on its own well-being, but certain parts will change to the extent needed to accommodate one another and compromises made (Kauffman 1993).

In summary, the above ten core concepts and principles of complexity describe how a complex system begins to change, adjusts to change or appears after change. It is also important to recognise that the concepts are all interrelated and that complexity is a science of the whole and not of its parts.

Fitness landscapes

In addition to the ten core complexity concepts and principles, a borrowed concept called fitness landscapes is next considered. First developed in the 1930s, by an evolutionary biologist, a fitness landscape originally visualised how different combinations of gene variants under different circumstances would be more successful (Gerrits & Marks 2014). Since it was introduced to the field of complexity in 1987, by Kauffman and Levin, and subsequently refined in 1993 by Kauffman, the concept has been adopted and further developed by complexity researchers (Gerrits & Marks 2014). Traditional imagery is one of peaks and valleys to represent fitness probabilities, where height measures the level of fitness. In complexity, Kauffman (1993) developed the model to show how a complex system within an environment can also be represented visually to help understand which of its components are fitter. As depicted in Figure 3.1 below, individual components may sit at different heights on a traditional landscape (Kauffman 1993).

Figure 3.1: Traditional depiction of a fitness landscape
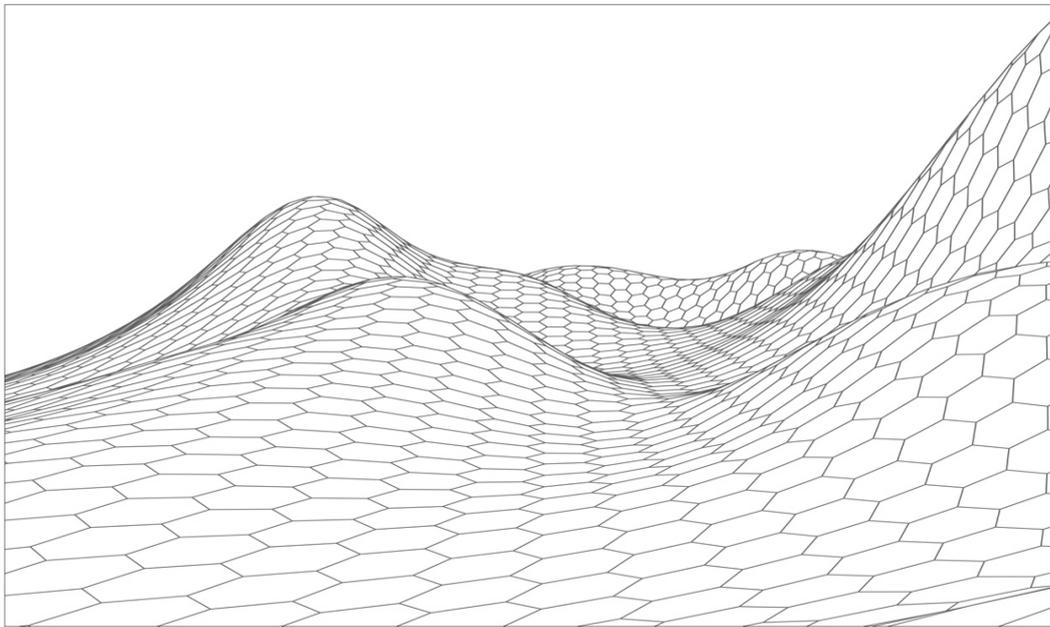
Source: Standard imagery (using licensed image)

Both Kauffman (1995) and Marion (1999) propose that optimal fitness exists on the 'edge of chaos' where complex systems are moderately interconnected with some weak and strongly interconnected elements.

3.3 Complexity in the natural and social sciences

3.3.1 Natural sciences

The genealogy of complexity can be traced to the natural sciences, notably physics, mathematics, cybernetics, systems science and biology (Kauffman 1995; Mitchell 2009). While complexity builds upon several strands of work, it was the earlier work of chaos theory, which provides a mathematical vocabulary for complexity researchers, that the new science of complexity began to emerge (Kauffman 1995; Mitchell 2009).

Chaos theory first came to light in 1961 through the work of a meteorologist, Edward Lorenz (Gleick 1987). Lorenz was trying to predict the weather by running a series of computations on his computer. When he came to repeating his computations, he tried to save time by rounding some of his starting numbers and found that the difference produced an entirely different weather forecast. This was the origin of the principle 'sensitivity to initial conditions' popularly referred to as the 'butterfly effect'. By the time of Lorenz's discovery, non-linear equations

had been around for a long time, but no one was able to solve them (Gleick 1987). Traditional Newtonian science, largely based on linearity, order and stability, was being challenged by this new theory based on polar-opposites – non-linearity, disorder and instability (Elliott & Kiel 1997). Some of the earlier work was so revolutionary that papers were often rejected for publication (Gleick 1987). By the mid-1970s, chaos as a new science had emerged and has since been applied in areas such as medicine, to explain the beating of the heart and spread of diseases, and economics to explain the movements in the stock market (Gleick 1987). Although Lorenz's discovery was an accident, it became the catalyst to create a paradigm shift and create the new science of chaos theory that later provided a core building block to the broader science of complexity (Gleick 1987; Kauffman 1995; Mitchell 2009).

In 1984, the new science of complexity finally emerged following the creation of the Sante Fe Institute, a dedicated research centre to study complex systems, by a group of prominent scientists and mathematicians (Kauffman 1995; Mitchell 2009). Early pioneers of complexity research include Murray Gell-Mann (physicist), John Holland (physicist, mathematician, computer scientist and psychologist) and Stuart Kauffman (theoretical biologist) (Mitchell 2009). Since then, other research centres have emerged, notably the New England Complex Systems Institute ('NECSI') in 1996. Shortly thereafter, in 1997, NECSI's founding President, Yanner Bar-Yam (physicist), published a comprehensive and technical book called *Dynamics of Complex Systems* and remains one of the leading experts in the field of complexity. Bar-Yam largely uses mathematical models to study 'how interactions lead to patterns of behaviour' (NECSI 2017). Today, these Institutes (Sante Fe Institute 2017; NECSI 2017) are at the forefront of complexity research and are attempting to solve some of the hardest, most fundamental and most challenging problems in today's world of science and society.

In summary, since the emergence of the science of complexity some thirty years ago, today, complexity researchers are leading the way in twenty-first century science.

3.3.2   Social sciences

Historically, the social sciences have a long history of borrowing theories, concepts and principles from the natural sciences (Maxfield & Babbie 2014). It was

following the publication of James Gleick's 1987 book *Chaos, Making a New Science*, that chaos theory first caught the attention of social scientists and the general public alike (Williams & Arrigo 2002). This seminal book was followed five years later in close succession by Roger Lewin's 1992 book, *Complexity: Life at the Edge of Chaos*, Mitchell Waldrop's 1992 book, *Complexity: The Emerging Science at the Edge of Order and Chaos* and Stuart Kauffman's 1993 book, *The Origins of Order: Self-Organisation and Selection in Evolution*. These authors did the same for complexity as Gleick did for chaos. In Gleick's twentieth anniversary edition of his 1987 book, Gleick comments in an afterword section 'what a difference twenty years make. The ideas of chaos have been adopted and internalised, not just by mainstream scientists, but also by the culture at large' (Gleick 2008:319). Likewise, in Lewin's (1999) second edition of his 1992 book, Lewin comments in the preface that since the first edition, 'complexity science has become firmly established as an important field'.

Although complexity remains a relatively new science, its concepts have been borrowed and applied by social scientists since the early 1990s (ed. Milovanovic 1997; Milovanovic 1997a; eds Elliott & Kiel 1997; Williams & Arrigo 2002). TR Young emerged as an early leader in applying chaos theory to the social sciences (Milovanovic 1997a). Her work significantly influenced the work of others through the 1990s, notably Bruce Arrigo, Dragan Milovanovic, Hal Pepinsky and Robert Schehr (Milovanovic 1997a). In 1998, Paul Cilliers book, *Complexity and Postmodernism,* greatly influenced the application of complexity in the social sciences (Byrne & Callaghan 2014). Since then, a number of disparate attempts have been made over the last two decades, notably in the study of organisations, business, management, health, social work and politics (eds Eve et al 2007; Bousquet & Curtis 2011; Byrne & Callaghan 2014; eds Pycroft & Bartollas 2014). While some of these efforts are more influential than others, most are insufficiently advanced. Notably, where research is qualitative, the conceptual language is often developed to a 'sophisticated degree within complexity' but on application 'a full appreciation of that underlying sophistication is absent or left unstated' (Bousquet & Curtis 2011:44). In the social sciences, the availability of suitable quantitative data remains a key challenge, however, as argued by social scientists, complexity concepts may still be applied metaphorically (Hayles 1990; Marion 1999; Kellert 2008; Kuhn 2009; Wolf-Branigin 2013). For example, Wolf-Branigin (2013), suggests a number of complexity qualitative research methods in social program

evaluations. As Lee (1997:29) suggests, 'a variety of languages and methods are actually necessary if we wish to produce an ongoing description of differing relationships that behave quite differently at differing levels'. Just because social science lacks time-series data, does not mean that 'social science ought to downplay mathematical [complexity] and its insights' (Dendrinos 1997:242). In modelling social processes, lack of adequate and suitable data is always a problem, but using complexity concepts to social dynamics is still 'helpful' (Lee 1997:29). For example, 'the inherent non-linearity of many social phenomena' demonstrates the value of the application of complexity to the social sciences (Elliott & Kiel 1997:4). While there are both pros and cons in using complexity to understand human and social phenomena, complexity ideas have certainly reconfigured social scientists' understanding of what is 'normal' and what is not. As Waldrop (1992:12) points out, 'there is more here than just a series of nice analogies'. Notably, in Byrne and Callaghan's (2014:213) recent book, *Complexity Theory and the Social Sciences,* they comment on 'how complexity is becoming part of what might best be called the intellectual culture' in today's social sciences and new ways of thinking. Williams and Arrigo (2002:3) sum up the application of complexity as directing 'our attention to those previously disregarded factors of human social interaction, defined as anomalies, inconsistencies, or "noise" in a system'. Bousquet and Curtis (2011:48) further note that 'the turn towards complexity in the social sciences has been partly driven by the growing realisation that non-linear and networked social relationships characterise much of the contemporary world'. As a dynamic theory, capturing movement and change, it can be argued that complexity is perhaps a more useful ally than more traditional theories of social phenomena (Eve et al 1997).

In summary, upon a review of the available literature, applying complexity to problems in the social sciences has certainly been influential, but not dramatic, unlike the impact in the natural sciences.

3.4   Complexity in criminology

Within criminology, early attempts were made to apply complexity, notably chaos theory, but there has been little evidence since of criminologists building upon these contributions (Young 1991; Milovanovic 1997a; 2006; 2013a; Arrigo 1997). Young (1991) argues that complexity informed criminology explores the 'varying connectedness of the whole eco-system in which crime occurs rather than a study

of the differences between those who commit crime and those who do not commit crime at a given slice of time'. Young (1997a:44) also notes that it offers a 'crime of alternatives in a changing mix of order and disorder. In such a view, crime and its dynamics are relocated from the separate person to changes in constraints within the larger environment'. In short, Young (1998a) sums up complexity as a world where there needs to be sufficient order to serve the human interest of conformity, regularity, dependability and planning, but also sufficient disorder to harness the human interest in change and renewal, through variability, creativity and innovation.

According to Milovanovic (2003), one of the few authors on complexity and criminology, chaos theory has been applied in a number of areas such as rural crime, banditry, gender violence, racial violence, property crime, corporate crime, white collar crime, blue collar crime, organised crime and delinquency in general. However, it is noted that available research is sparse. In law, chaos theory has been applied to better understand areas such as the American legal system (Simons & Stroup 1997), legal decision-making processes (Milovanovic 1997b) and mental illness within the court system (Williams & Arigo 2002). It has also been used to develop notions of justice (Capeheart & Milovanovic 2007) and has been swept up and integrated into the latest criminological trends such as critical and constitutive criminology (Milovanovic 1997a; Schwendinger et al 2002; Milovanovic 2003). Walters (1999) argues that the application of a theory which reconciles polar-opposites (order and disorder) provides criminologists with a useful tool to reconcile and integrate several long-standing opposites such as the classical-positivist view (free will versus determinism) and the micro-macro view (individuals versus wider social influences). To illustrate this point, Walters (1999) provides a useful comparison of four criminological perspectives (positivist, classical, rehabilitative and chaologist) to a criminal's set of circumstances. Unlike other perspectives, Walters demonstrates that complexity copes with the diametric components of determinism and free will, stability and change, structure and transformation.

Despite some notable efforts to build upon earlier contributions, complexity continues to receive little attention from criminologists and remains somewhat stubbornly on the margins (Robinson 2014; Milovanovic 2015). Perhaps this is due to the fact that criminology textbooks, including dictionaries and theoretical

handbooks, either have i) no reference to complexity (or its subset chaos theory) whatsoever (recent examples: White & Perrone 2015; ed. Piquero 2016); ii) incorrect usage of the term complexity interchangeably with chaos theory (for example eds McLaughlin & Muncie 2013); or iii) limited reference to complexity with no real explanation or depth. One can also argue that certain areas of social science, including criminology, still 'lack the vocabulary and methodological toolkit to deal with it effectively' (Gerrits & Verweij 2015:484). Or as Gilstrap (2005) points out, 'the mere knowledge of complexity science by students, teachers [and] faculties' may serve as an attractor in actually using it. As Robinson (2014:72) argues, 'to better explain crime, criminological theory must, at the least, acknowledge and embrace the reality of the complexity of crime'.

On review of the available literature, despite limited contributions within criminology, illustrative examples are provided below in criminological terms, by each of the ten core concepts and principles, to facilitate a deeper insight and understanding into how complexity is or might be applied to criminological problems. In particular, insights into how complexity may be used have been drawn from the field of organisational studies, especially where examples in criminology are sparse.

1.   Sensitivity to initial conditions (criminological examples)

This is perhaps the easiest concept to understand, but the hardest to detect. As noted by Kaplan (*The Science and Psychology of Chaos Theory* 2004), 'who is to say what is an insignificant event?'. The fact that one small event can result in notable consequences does not mean that every small event will yield such an effect. According to Young (1997a), a slight change may impact an individual, a group of individuals, businesses or even societies; for example, someone speaking up in a situation, a slight change in the frequency of police brutality, a change in legislation, such as taxation or criminalisation levels. With criminalisation levels, such as the chosen quantity of drugs to deem a dealing level, a slight change may have notable consequences to those who fall just under or over the new level. Moreover, in crime prevention by design or situation, a slight change in a train timetable or bus route might lead to two antagonistic groups being kept separate in time and space. From a policy point of view, if these variables could be identified, a small low-cost policy change could have a notable impact on a society.

2. Bifurcation (criminological examples)

According to Young (1997a:41), 'the concept of bifurcation is most important to the criminologist in that it sensitises one to expect the emergence of alternative ways to do business, family, religion, or perchance, crime'. In criminology, identification of the bifurcation point at which 'murder, theft, malpractice, embezzlement or warfare emerge offer some of the greatest challenges' (Young 1997a:43). For example, identification of such points could lead to a better understanding of exploding crime rates where critical social parameters bifurcate (Young 1997b). Young (1997b:82) argues that in all complex systems, some people, even well regarded citizens, will 'skirt the borders of criminal behaviour now and again' as a way to accomplish their goals. A useful example of bifurcation paths is provided by Young (1997b) in the area of white collar crime. In the area of medical practice, suppose insurance companies triple their premiums to cover an increase in claims. This would create a bifurcation point. Four possible outcomes may emerge: i) doctors deciding to change their practice and move into lower-risk surgery where insurance premiums are lower; ii) doctors retaining their current practice but adjusting their outgoings to compensate for the increased premiums; iii) doctors retaining their current practice but adjusting their lifestyle ambition; and iv) doctors moving into illegal billing procedures by increasing the number of unnecessary operations or claiming for surgery not taking place. As seen in this example, the concept of bifurcation helps to identify alternative outcomes and the new area of 'illegal billings' as an attractor.

3. Attractors (criminological examples)

The strange chaotic attractor may be used metaphorically for social phenomena (Young 1991; Marion 1999). As Marion (1999:22) argues, 'it is stable but its trajectory never repeats itself; likewise, social behaviour is stable but never quite repeats itself'. As attractors gain momentum, they provide structure and coherence to a system and draw people into it and influence their behaviours (Uhl-Bien & Marion 2009). Young (1997a:33) also notes, 'why do ordinary people move from one way of behaving to another way; that is to say, when and why do new attractors arise'. In criminology, if we can locate these attractors by looking for patterns, then we can 'experiment to see how and when small changes produce such bifurcations in human behaviour since the size and shape of any strange attractor depend, sensitively, upon key parameters' (Young 1997a:33). In short,

'systematic patterning' is key to identifying attractors (Eve et al 1997:xxx).

In particular, the butterfly attractor 'is most interesting to criminologists' as the shape of the two wings or outcome basins is twinned with a clear juncture in between (Young 1997a:38). Using deviancy as an example, one wing may depict pro-social behaviour and the other anti-social behaviour. Given a similar set of circumstances, an individual over time may fluctuate between the two wings. The 'point of most uncertainty occurs just at the juncture between the two wings' (Young 1997a:39). From a criminological perspective, if we could identify such junctures, we could identify the 'tipping point' of where an individual chooses criminal over non-criminal behaviour. For example, in banditry, the same individual or group will be kind and supportive of some persons, while stealing and robbing others. Social histories also play a key role in 'differing sets of attractors for differing sectors of a given society' (Young 1997c). As Young (1997a:40) points out 'the geometry of good and evil is not simple'. One needs to discern the specific points where individuals or groups transform from pro to anti-social behaviour.

Stroup (1997) also provides examples of the limit point, limit cycle and strange attractor in social interaction. For example, most people eat lunch around noon, sometimes earlier or later – if we place bounds on how close behaviour must be to qualify as repetition, then a limit point is acceptable. In the social sciences, social limit cycle patterns would fluctuate or cluster around a norm or average, for example, family size, matrimonial age, retirement age, solidarity or value consensus. Other examples include grocery shopping, voting, three meals a day, sleeping patterns. Again, bounds need to be placed on how close values must be to warrant repetition and an acceptable pattern. In relation to the strange attractor, irregular behaviour or order mimicking randomness would be observed. Examples include addictive disorders coupled with irregular habits, dating behaviour, or social change via 'incremental deviance'. According to Kiel and Elliot (1997:28) 'notions of periodicity have always been used in analyses of society' such as fads and social movements.

Given that complexity is a science of the whole, Young (1997a) reminds us that an individual's criminal actions need to be taken into the wider social context. For example, a burglar's attractor may include a variety of parameters including needs

and desires, the types of goods that may be inside a house, the number of potential victims inside, and policing patterns of the neighbourhood (Young 1997a). Whilst the individual burglar is responsible for his criminal actions, there are macro-structures in society that he is not responsible for, but which he must adapt to. For example, losing his job due to a downturn in the economy (Young 1997a). Given this view, 'recourse to violence, self-destructive behaviour, or hate crimes can be seen to be adjustments…[to] the larger structures in which a person or a group find themselves' (Young 1997a:44). Young (1997a:35) further argues that 'it is these whole-system variables which must be found and altered if we want a more peaceable society'.

According to Young (1997b:88), there are four types of attractors when considering society and crime in general: social power, economic power, physical power and moral power. Young's (1998b) basic argument is that 'when power inequalities increase beyond given limits, entirely new forms of social behaviour may emerge'. Young further argues that the life of any given individual or group could be mapped to each of these attractors and that each form of crime entails some combination of the four. Young (1997b) suggests social power arises from social relationships, be it family, friends, colleagues, church, recreation or the community. Economic power arises from one's income and wealth. Physical power arises from the use or threat of violence and moral power arises from shared values, such as religion or professional ethics.

As a methodology to use attractors in research, Young (1997b:95) offers a five step approach that may be summarised as follows:

i)   locate the attractors hidden in complex data sets;

ii)   determine how many attractors exist in the data set;

iii)   find the change points(s) at which new attractors are produced;

iv)   identify the key parameters which drive the system into ever more uncertainty (for purposes of social control); and

v)   determine which setting of those key parameters is acceptable to the whole society (for purposes of social policy).

Although Young does not offer any workable examples, the approach by Young appears promising. As Jennings (2014:41) points out in organisational studies, attractors 'can provide useful insights into organisational behaviour when trying

to understand why organisations behave in a particular way given particular inputs' and more importantly, can be used to gain insights into 'how to tailor interventions in order to achieve the required goals'. Young (1991) further suggests 'rather than analysis, interaction is the focus of attention' and 'rather than intention, adjustment to external conditions spark the patterns of crime'. Recently, Byrne and Callaghan (2014:36) emphasise the importance of control parameters in applying complexity to social science as 'we have to know something about what we change to make a difference'. Byrne and Callaghan (2014:36) offer a definition of control parameters, as 'elements in a complex system which are less than the system as a whole but where changes in these elements have an effect such that the nature of the system is changed in a qualitative fashion'. Essentially, complexity suggests that as parameters in the external environment change, then individuals, organisations and/or societies 'move to occupy differing regions/attractors in an outcome field' (Young & Kiel 1994). An example of control parameters is offered by Young and Kiel (1994) in the form of car parking regulations, where individuals change their behaviour, such as parking illegally, to accommodate changes in parking regulations and other external factors such as weather or traffic congestion on any particular day.

4. Fractals (criminological examples)

The fractal concept of self-similarity has been applied by the work of Pepinsky (1997) in understanding violence. Pepinsky (1997:103) suggests that 'small-time street crime is paralleled by big-time suite crime' and that 'the more power our social position confers on us in relation to others, the more numerous and serious crimes we will commit'. There is a parallel and scaling in place. Pepinsky (1997:103-104) further argues that 'if violence works fractally…the more intense the large-scale violence around us, the more intense and prevalent violence should become at the interpersonal level through the social system'. In applying fractional dimension, Arrigo (1997) has applied a fractal nature to truth values. Meaning, 'rather than identifying a behaviour as right or wrong, good or bad, just or unjust' the fractal concept 'takes the position that such determinations are matters of degree' (Arrigo 1997:185). In simple terms, there is not always a clear yes or no answer to everyday questions and 'shades of grey' might be more useful in criminological study.

5. Interconnectivity (criminological examples)

In organisational studies, interconnectivity is associated with the concept of a 'shared need' where individuals interact to 'accomplish a task, goal, objective, [or] vision' (Uhl-Bien & Marion 2009:642). Simply put, a shared need starts with the 'what's in it for me question' (Uhl-Bien & Marion 2009:642). If a shared need 'is not felt', then 'individuals will not be motivated to engage' (Uhl-Bien & Marion 2009:642). Lewin and Regine (1999) suggest that to promote the extent to which individuals interact in an organisation, leaders should create conditions to foster personal attachment with both the organisation and people within in. Moreover, to promote greater creativity and adaptability, one needs to find whatever 'enriches the interactions' or relationships amongst individuals (Lewin & Regine 1999:203). Although these examples are from organisational studies, these examples resonate with the 'dark side' of organisational life, such as criminal organisations and/or groups in criminology.

6. Feedback (criminological examples)

Feedback may be applied to how words or phrases obtain new meanings when the 'original intent' becomes modified and reconstructed over time resulting in problematic definitions (Milovanovic 1997b; Schulman 1997). For example, in law 'because legal precedent necessarily is preserved through language, there is opportunity at every new reading for its meaning to be perturbed' to fit a new situation (Simons & Stroup 1997:117). In the context of Murray Lee's 'fear of crime feedback loop' the concept of feedback is clearly apparent (Lee 2007:77). Lee's feedback loop describes a process which breeds fear in today's society using the media to inform the public of their fears based on research polls and the like, which, in turn, politicians use to justify tougher policies on crime, which, in turn, breeds more fear and accordingly more research. In McBurnett's (1997) complexity research in the evolution of public opinion, McBurnett argues compelling evidence that feedback is key. As noted by Stroup (1997) the pre-existing or historical character of social facts make them potential indicators for feedback. In practice, it can be argued that any aspect of society is affected by its history where feedback loops either amplify or constrain crime. In complexity, history matters.

7. Self-organisation (criminological examples)

In criminology, a practical outcome of a system spontaneously self-organising to a stronger order, could be the result of no action or intervention. In fact, this outcome was already put forward by labelling theorists in the 1960s in relation to juvenile delinquency where the theorists were advocating a 'radical noninterventionist policy: leave the kids alone wherever possible' (Schur 1973 cited in Milovanovic 2003:70). More recently, Arrigo and Williams (2014) critically examine the relationship between substance abuse and spontaneous self-healing of drug addicts using complexity insights of self-organisation. In organisational studies, the message for business leaders in fostering a stronger self-organised business is 'encourage diversity if you want to achieve creativity and adaptability' (Lewin & Regine 1999:201). More importantly, 'nurture distributed control' rather than top-down control as this is 'true empowerment' of the people and they will 'self-organise around problems that need to be solved' (Lewin & Regine 1999:202).

8. Dissipation (criminological examples)

In a complexity informed view of drug addiction and natural recovery, Arrigo and Williams (2014) note a variety of perturbations that serve as critical events on the individual that may cause dissipation. For example, family, job or legal concerns or simply feelings of losing control. While individuals can resist even the largest of these perturbations, given the right circumstances, the smallest of perturbations can produce an entire 'melt down' of an individual, but 'be sufficient to instigate a process of reorganisation' in the individual 'to better able to withstand future perturbations' (Arrigo & Williams 2014:250). For example, rather than a complete abstinence from drugs, low-risk drug use may be a solution. Similarly, bureaucracies demonstrate dissipation where they are resistant to change and even large perturbations, however, in certain circumstances, a slight perturbation can produce an entire collapse, but give rise to a more adaptive and stronger order (Milovanovic 2003).

9. Emergence (criminological examples)

Numerous social scientists have argued the phenomenon of emergence in complex social systems, notably in organisational studies (Kauffman 1995, Cilliers 1998; Byrne & Callaghan 2014). Emergent examples include innovation, learning, creativity and social, cultural, political or educational movements (Marion 1999;

Wolf-Branigin 2013). As Marion (1999:127) puts it, the 'interactions, interdependencies, and inter-commitments among the parts' in socially complex systems are 'not like a room full of furniture that can be rearranged, added to, or deleted from at will'. In other words, in a complex room, a piece of furniture may appear suddenly and unexpectedly out of nowhere, although the arrangement or 'pattern' of how the furniture is placed may leave traces as to its origin.

10. Co-evolution (criminological examples)

In the social world, there are numerous examples of co-evolution, involving allegiances and alliances, including the concept of the crime-terror nexus, in and of itself. Industries, for example, 'depend upon a network of suppliers, consumers, and related industries for fitness' and co-evolution (Marion 1999:51). Kauffman (1995:217) argues that 'goods and services "live" in niches created by other goods and services'. Kauffman (1995:240) offers a simple, but powerful, example of co-evolution. The horse as a means of transport, led to the cart, cart whip, blacksmith and saddlery trade. However, the arrival of the car led to the extinction of the horse as everyday means of transport and with the horse went the cart, cart whip, blacksmith and saddlery trade. He argues that 'when one goes extinct, it alters the niche it helped create and may drive its neighbours extinct' (Kauffman 1995:240). When considering co-evolution in the social world, determining system boundaries are important. Boundaries may be constructed using limits, such as legislation or geographical boundaries, to 'bracket' a system (Pycroft 2014). Other limits may be constructed and placed on the available choice of actors or activities in a system (Wolf-Branigin 2013). Cilliers (1998:5) argues that framing a system involves the distance and level of detail we wish to study; for example, in the banking world 'if we stand far away, we could only consider the activity of large financial institutions…if we are going to examine the system in microscopic detail, we may have to keep a track of the status of every individual penny'. In criminology, framing an individual and their immediate social circumstances is paramount as they are also embedded in the wider social, political and cultural systems, which can greatly influence the outcomes (Pycroft 2014). Of particular note, when framing using the case study method, 'complexity suggests that important insights can be gleaned by studying behaviour that occurs *at* and *across* the boundaries that define the case' unlike in traditional case studies where study of phenomenon is restricted to *within* the boundaries (Anderson et al 2005:674).

Fitness Landscapes (criminological examples)

As mentioned earlier, both Kauffman (1995) and Marion (1999) argue that optimal fitness is at the 'edge of chaos' where a system is moderately interconnected, with some elements having a weak or strong interconnectivity within the system. In organisational studies, Marion (1999) argues that an organisation's fitness is at the 'edge of chaos' when the organisation is sufficiently rigid to carry information about itself, co-ordinate activity, share resource and perform its core tasks adequately, but also sufficiently slack to allow it to use its information creatively, to explore new strategies for surviving and to change. Marion (1999:163) further argues that organisations that are too slack, 'cannot coordinate and differentiate', while those that are too rigid are 'either unstable or are frozen'. As a consequence, a system can adjust its fitness landscape by adjusting its degree of interconnectivity. Adjustments may be made by changing the number of linkages among parts or changing the nature of interactions among parts (Marion 1999). In short, fitness landscapes can aid 'sense-making' as they can 'represent a complex story about adaption and fitness in one coherent image' and help us understand the many aspects of a complex system 'in an accessible way' (Gerrits & Marks 2014:1).

In summary, while existing research in the application of complexity within criminology is limited, broader available research as illustrated above provides useful building blocks for the development of a new complexity model in a criminological context to criminological problems.

3.5   Complexity in organised crime, terrorism and the crime-terror nexus

As in criminology, based on a literature review, the application of complexity to the study of organised crime appears limited and in the study of the crime-terror nexus non-existent. In the study of terrorism, however, an area that has grown rapidly since 9/11, available research in the application of complexity, while still limited and mostly in the area of mathematical modelling, is growing (eds Fellman et al 2015). Equally, research in applying complexity in organisational studies is also growing (Uhl-Bien & Marion 2009). While research is primarily in relation to legitimate organisations and businesses, it is the recognition that criminal groups are also organisations and businesses that allows complexity learnings to be borrowed and applied from organisational studies.

Lewin and Regine (1999:198) argue that if complex systems, be it in the natural or business world, share fundamental properties and processes, then in business, complexity offers 'a way to understand and work with the deep nature of organisations'. They further note that in today's competitive environment, 'companies will survive only if they are able constantly to adapt and evolve' (Lewin & Regine 1999:198). One of the key complexity findings offered by Lewin and Regine (1999:198) is that 'managers and executives cannot *control* their organisations to the degree that the mechanistic perspective implies, but they can *influence* where their company is going, and how it evolves'. In organisational studies, shortly after 9/11, Marion and Uhl-Bien (2003) examined the leadership of Al-Qaeda through an organisational and complexity lens, generating unique insights into Al-Qaeda's leadership. Marion and Uhl-Bien (2003) argue that Al-Qaeda is a complex system and hence complexity helps to explain its organisational behaviour. Using the concept of fitness landscapes, Marion and Uhl-Bien (2003:73) suggest that 'complexity perspectives tell us that going after Al-Qaeda's top leadership would not be enough to take care of the problem, and might even create a catalyst to further energise the system'. While bin Laden was a charismatic leader, 'he did not make himself so central to the Al-Qaeda network that innovation is restricted to his vision or the movement would die with his demise' (Marion and Uhl-Bien 2003:73). As history tells us some eight years later in 2011, Al-Qaeda did not die with bin Laden's demise. Marion and Uhl-Bien (2003:74) conclude that 'while there is obviously much that we don't know about this organisation, or the leadership' by 'examining organisations through a new lens of complex leadership we may be able to generate insights for organisational leadership far beyond traditional views'.

Elliott and Kiel (2004:63) also explore ways in which complexity can be 'successfully exploited to develop a better understanding of terrorist dynamics'. They consider the use of agent-based simulations as a means for modelling terrorism dynamics and how the results could be used to develop successful strategies of response to terrorism. They conclude with some observations about the potential of agent-based modelling, although the discussion is largely exploratory. A few years later, Johnson (2007) explores the use of complexity in understanding the nature of war and conflict. Johnson suggests (2007:160), 'that the way in which wars evolve has less to do with the original causes and more to do with the way in which humans act in groups'.

A notable contribution, containing some elements of complexity, is by Michael Kenney. Kenney (2007) applies organisational learning theory and network analysis to trafficking and terrorist networks, and government bureaucracies. Kenney (2007:3) is one of the few scholars who has studied 'the "dark" side of organisational life'. Although Kenney does not offer any meaningful analysis or discussion on complexity, his narrow application of organisational learning theory does offer some novel insights. Kenney (2007) argues and concludes that the resilience of Colombia's drug trade and Al-Qaeda is the ability to learn, build skills and change practices that make it difficult for law enforcers to stop them. Moreover, Ayling (2009) draws on organisational and ecological literature, containing some elements of complexity, to consider the resilience of criminal organisations and their ability to change, survive and prosper. Like Kenney, no analysis or discussion is offered on complexity.

In organisational studies, Kuhn (2009) applies complexity concepts to create new approaches to understanding structure, processes, problems and practices within legitimate businesses. Kuhn also provides concrete examples and concludes her findings with suggestions on how an organisation can enhance its opportunities. In Kuhn's (2009) work, she introduces a concept called 'fractal fragment' on how she's approached her data collection and analysis. Kuhn (2009) defines a fractal fragment as short stories or narrative accounts that she has compiled from documents or through interviews with individuals about their experiences. As Kuhn (2009:14) puts it, 'examining one fractal component at one scale enables you to thereby manage what would otherwise be overwhelming detail'. In other words, fractal fragments allow you to better manage large amounts of data when studying organisations.

In 2007, Madsen (2007) proposes the use of network theory to better understand 'transnational organised crime and terrorism' and links certain elements under complexity. He also uses a useful concept in managing his data collection and analysis by referring to the notion 'packets of information' to parcel up pieces of information about a case example of a terrorist. Madsen (2007:18) breaks-up his case example of a terrorist into 16 'packets of information' where each packet is useful individually (examples provided below), as well as collectively. Examples include: i) pale skin and red hair (this packet of information conveys unusual features for a person born in Syria and would facilitate observation); ii) a member

of the 'Muslim Brotherhood' (this packet of information would alert the intelligence and security communities); and iii) dual nationality that allowed him unfettered travel within the European Union (this packet of information would alert agencies to his freedom of movement). Madsen also expresses his view on the unresolved problem of 'packets of information' being parcelled in different ways by different intelligence agencies and the problematic sharing of 'packets of information' between countries to paint a global picture of the terrorist (Madsen 2007:12).

In policing and intelligence, Leary and Thomas (2011) apply complexity concepts to organised crime and terrorism, although the attempt is largely illustrative. Leary and Thomas (2011:69) argue that 'the hierarchical view of criminal networks…is based upon a linear view of the world' and 'ignores the inter-relatedness of the elements of feedback loops operating within the network'. They further argue that based on recent research, if 'hierarchies are not as common a feature of crime networks as we once thought, we need to rethink our approach. We need to "complexify" our view of the world' (Leary & Thomas 2011:69). Essentially, crime networks are more often than not 'self-organising systems with no real top and no real bottom' (Leary & Thomas 2011:69).

More recently, Fellman et al (2015) demonstrate how the decision dynamics of terrorist networks can be understood using mathematical modelling of a fitness landscape. Fellman et al (2015) also recently edited a new book called *Conflict and Complexity: Countering Terrorism, Insurgency, Ethnic and Regional Violence* which presents a complexity approach to analysing, modelling, understanding, and combating terrorism and conflict. Examples include military operations in asymmetric warfare and global patterns of ethnic violence where patterns of population mixing and boundaries are being isolated. It is noted that at the core of this research is pattern formation. While much of the content explores mathematical models, there is a useful discussion offered by Mesjasz (2015) on terrorism studies and how complexity has been or may be applied.

Finally, despite the limited application of complexity in criminology, one notable exception is by Young and her early consideration of attractors. In organised crime, Young (1997b:88) proposes that economic power is the key attractor where 'organised crime offers several manageable alternates to open-up (bifurcate) a basin of economic attractors for young people' – for example, the sale of drugs,

auto theft, property theft, arson or prostitution. As young people move into adulthood, they undergo a lifestyle change and desire and want more: e.g. cars, fashion, separate accommodation and travel. Allowances and part-time jobs may not be enough to cover their desire, and most are too young to access other income sources such as property or portfolio income. Organised crime is the opening for some of these people with low incomes to experience higher incomes. In complexity informed organised crime, the bifurcations between the 'desire for consumer goods and services on one side, and legal sources of income on the other' is the point where economic attractors such as property crime come into play (Young 1997b:87). For some, the mismatch between income and desire might be resolved through another bifurcation, for example, the dropping out of school and working full-time. For others, the foregoing of desirable goods and the participation in youth culture is a way out. For those that are unable to do without, and organised crime is not an option, petty shoplifting or stealing from family and friends is another alternative. Organised crime is also an attractive option for certain people, of all ages, where it offers a higher income and a certain status not otherwise attainable (Young 1997b). Young (1998b) further argues that 'it is not so much that poverty pushes great changes but rather that people innovate in order to cope with uncertainty'. As Young (1992) points out, attractor analysis is concerned with the 'patterns, regularities and certainties found in the same outcome field in which disorder, uncertainty, and surprising transformations are found'. Given Young's early insights into attractor analysis, it is surprising that her work has not been built upon by other scholars, particularly in organised crime, except for this author's earlier work (Beesley 2010; 2011).

In summary, as demonstrated by the literature review of existing research in the application of complexity to organised crime and terrorism, and more specifically in the field of criminology, the limited research reveals an academic gap which this thesis attempts to address. Notwithstanding, the limited research does provide some useful insights in developing the new model. Of particular note, are insights using the concepts of fitness landscapes (Marion 1999; Marion & Uhl-Bien 2003; Uhl-Bien & Marion 2009) attractors (Young 1992; Young 1997b) and fractal fragments (Kuhn 2009).

PART 2: METHODOLOGY
Chapter 4: Approach

'If we knew what it was we were doing, it would not be called research, would it?'

Albert Einstein, physicist (1879-1955)

Chapter 4 sets out the research approach, assumptions and limitations in applying complexity in a criminological context, and to the study of organised crime, terrorism and the crime-terror nexus. It begins by considering research questions, followed by the availability of data and the conceptual language of complexity. It next considers key design principles in developing a new complexity model with criminological frames of reference, together with the approach to testing and applying the new model using the case study method. It also sets out the rationale for the case study selection, design and source data.

4.1   Research questions

As discussed in Chapter 3, there are a number of qualitative and quantitative approaches that have been developed in the natural and social sciences to apply complexity to social phenomena. However, there are few approaches, if any, developed within criminology to study criminological problems. There is also limited application to date of complexity within criminology and more specifically to the study of organised crime, terrorism and the crime-terror nexus, with some notable exceptions in terrorism studies. Accordingly, a key question is how to operationalise the application of complexity in a criminological context to criminological problems. To address this question, a new complexity approach to study criminological problems, and more specifically to the study of organised crime, terrorism and the crime-terror nexus, is central to this thesis.

As explained in Chapter 1, this thesis comprises an over-arching yet simple hypothesis relating to complex phenomena: that complexity can be successfully applied with criminological frames of reference to analyse organised crime,

terrorism and the crime-terror nexus. As also explained in Chapter 1, the criminological frames of reference will form an integral part of the new design, with certain concepts being framed within complexity and other concepts being synthesised with complexity. In this hypothesis, success may be measured in two parts. The first part refers to the success of developing a new model 'to apply' in the first place, complexity with criminological frames of reference to the phenomena under study – without this success, the second part of the hypothesis is redundant. Success may be measured on the extent of the fit of the application. The second part refers to the success of using the new model 'to analyse' the phenomena under study and to improve our understanding, where success may be measured on the extent of the improvement of our knowledge. To operationalise the hypothesis and subsequently measure its success, the following two research questions have been developed, where the phenomena under study are organised crime, terrorism and the crime-terror nexus:

i)   On application of the new model, are the themes arising from the analysis of the phenomena consistent with the concepts and constructs of complexity?

ii)   Can complexity help to improve our understanding of the phenomena, including their nature and strength, why and how they evolve, and what shapes actor behaviour?

In short, the first research question measures the success of the fit of the new model and the second measures the success of the improvement of our knowledge of the phenomena under study. Accordingly, the response to the first question needs to be yes, before the second question can be considered, and if the first question is satisfied, the second question may not be satisfied, i.e. there may not be an improvement to our knowledge. To address these research questions, the overall approach comprises the development of a new complexity model, with criminological frames of reference, using the case study method, to apply the new complexity model to organised crime, terrorism and the crime-terror nexus.

This chapter sets out the methodology in designing, developing, testing and applying the new complexity model, with the resulting new model contained in Chapter 5. Based on the testing and application of the new complexity model, using the case study method in Chapters 6 and 7, the case study findings will aim to address these research questions in Chapter 8.

4.2   Data consideration

In developing any new approach, the consideration of data is fundamental (Dantzker & Hunter 2006; Maxfield & Babbie 2014). The new model will need to consider four aspects: i) data availability: what is available and accessible; ii) data collection and sorting: how to collect and sort the data into a workable format to apply complexity; ii) data coding and analysis: how to code and analyse the data using complexity; and iv) data interpretation: how to interpret the complexity informed analysis to provide understanding and insights. The first point is considered here; the other three points will be considered in Chatper 5.

In considering data availability, the first point is key, but more importantly, the availability of 'good' data. As Sheptycki (2008:15) argues, in the criminological study of organised crime, 'good data [is] far rarer than bad data'. Moreover, 'transnational criminologists try to squeeze meaning out of often very limited knowledge' (Sheptycki 2008:15). Paoli and Fijnaut (2004a:8) also note the data issues faced in the European research Project where 'agencies [were] hardly willing to open their files to social scientists' and when police and judicial bodies did open their files, the data collected was not for the purpose of 'scholarly analysis' and as such 'neglect[ed] or los[t] most of the information that would be most interesting for researchers'. As noted by von Lampe (2011:186), 'surprisingly little empirical information is available about the day-to-day reality' of organised crime and its offenders and 'available information, including academic literature, journalistic and autobiographical is "rather fragmented"'.

Similarly, in terrorism studies, availability of good data is rare. As Freilich and LaFree (2015:4) note, 'in criminology, data on illegal behaviour come traditionally from three sources': i) 'official' data collected by legal agents, especially police; ii) 'victimisation' data collected from victims and non-victims; and iii) 'self-report' data collected from offenders. With terrorism data, 'all three of these sources are problematic' (Freilich & LaFree 2015:4). In police data, 'terrorist acts often cut across several more common types of criminal categories', for example, an assassination may be classified as homicide and destruction of a building as arson, rather than acts of terrorism (Freilich & LaFree 2015:4). As noted in Chapter 2, victims are rarely targets and most are usually killed in the terrorist act such as in an explosion (Freilich & LaFree 2015). With self-report data, 'most active terrorists are unwilling to participate in interviews' and even if willing, access and safety

issues raise obvious challenges (Freilich & LaFree 2015:4).

Another area of data that is often inaccessible or overlooked by scholars is within the private sector such as financial institutions (Levi 2007; 2014). As noted earlier, the financial services sector, including banks, is one of the 'tools' of organised crime and terrorism operations. Global and national anti-money laundering and counter-terrorism financing legislation has forced the financial services sector to look more closely at its data to identify suspicions of money laundering and terrorism financing and report any suspicions to their local regulator (Levi 2014; AUSTRAC 2016). Although this data (both qualitative and quantitative in nature) is accessible by a number of governmental agencies and law enforcement, it is rarely accessible by academic scholars (Levi 2014).

Not surprisingly, based on the literature review, the lack of good data is a common theme, largely due to the covert and clandestine nature of organised crime and/or terrorist groups, and the data that is available is largely qualitative in nature, i.e. textual rather than numerical. Notwithstanding data challenges, as noted earlier, when quantitative techniques cannot be applied, complexity may still be applied qualitatively and conceptually. Based on data considerations, the new complexity model will be qualitative and conceptual in nature, rather than numerical and absolute.

4.3 Conceptual language

On reading the literature review in Chapters 2 and 3, the reader may have noticed traces of complexity language, both explicitly and implicitly, within the description of organised crime, terrorism and the crime-terror nexus. These traces appear as likenesses or similarities in the descriptions, that resonate with the core concepts of complexity, and therefore, may form a conceptual basis to develop the new model. As noted by Bousquet and Curtis (2011:59), 'some of the conceptual language of complexity simply did not exist more than a few decades ago'.

As a recap from Chapter 3, complexity is concerned with the behaviour of a system, meaning that any single part of a system can only be understood with reference to the entire system which requires a consideration at both the local and global level. The system comprises multiple elements that are interconnected through local interactions that tend to be non-linear, feedback on each other and do not have to be physical, i.e. can transfer information. Fractals identify patterns

that are easy to see at one scale, but not at another. Attractors produce an order within the disorder of the system, and in doing so create patterns and structures that give a complex system its stability and as such, both order and disorder can coexist. The Lorenz attractor, also known as a butterfly attractor, has the shape of two wings or outcome basins with a clear nexus between the two; the point of most uncertainty is at this nexus. The boundaries between the system and its environment are indistinct and dynamic and more importantly, the system can adapt to changes in its internal and external environment. The system has a history, which largely determines its current structure, internal organisation and behaviour, and is often capable of learning and self-organisation, which allows the system to adapt, evolve and survive. Finally, the system demonstrates emergent properties as the whole is more than a sum of its parts. When two or more complex systems reciprocally affect each other's evolution, they co-evolve and allegiances and alliances may form. For allegiances and alliances to form, complex systems must be sensitised to one another and feel some sense of common identity or common purpose. Each complex system maintains its own identity and focuses on its own well-being, but certain parts will change to the extent needed to accommodate one another and compromises made.

In Chapter 2, in the descriptions of organised crime, terrorism and the crime-terror nexus, the following traces of complexity language may be found with *emphasis* added that resonate with the core concepts of complexity and thus lend themselves to explanations through the new model.

Organised crime

In the description of organised crime by Levi (2007:795), organised crime may be considered as a '*dynamic* process that *evolves* as offenders *adapt* (or fail to *adapt*) to their *changing environment*'. Moreover, according to a report from the Australian Crime Commission (2015:7-10), organised crime has an 'increasingly *complex* nature' and is global with the *ability to adapt* to market requirements and demands. More importantly, Findlay (2008:68) argues that organised crime 'requires comparative analysis from the *local to the global* if the *complex* nature of criminal enterprise is to be understood at all the vital phases of its organisation'. In relation to the two-tiered structure of criminal groups, Levi and Maguire (2004:398) argue the concept of a *fractal*, in that 'although small organisations and even individuals may be socially dangerous…larger criminal organisations develop reputational

benefits as well as *economies of scale*…creating a cumulatively greater social threat'. Von Lampe (2016:5) also notes, 'one of the main challenges in the study of organised crime is to sort through the myriad social relations of criminals and to understand how these *relations influence* and *shape* criminal *behaviour'*. Furthermore, the structures formed are also influenced by the type of criminal activities carried out and 'the notion that criminals *organise themselves to respond* to specific needs' (von Lampe 2016:101). As pointed out by van de Bunt et al (2014:321), while 'organised crime groups are often portrayed as entities that derive their strength from *strong internal cohesion'*, at the same time, 'instead of operating in a social vacuum, organised crime has a habit of *interacting* with its social *environment'*.

Terrorism

In terrorism, English (2015:20) argues that 'the *emergent* picture…will be *complex'* and Hoffmann (2006:4) points out that the Reign of Terror where the word terrorism was first coined 'was neither *random* nor indiscriminate…but was *organised*, deliberate, and *systematic'*. As Franks (2006:34) argues, 'societies can be *sensitised* to accept different levels of violence *depending* on their *history* and experience'. For example, in South America, Africa and the Middle East, a culture of violence has developed that 'tends to *perpetuate itself'* (Franks 2006:34). Moreover, White and Perrone (2015:296) note that terrorism 'has layers of *complexity* that need to be drawn out'.

Crime-terror nexus

In the statement by the United Nations Secretary-General, Ki-moon (2015), reference was made to 'terrorists and criminals around the world are coming together and *feeding off* each other...we must take a *comprehensive* approach…we must work to stop crime and extremism being seen as *attractive* or necessary options'. According to Shelley et al (2005:4), the '*interaction* between terrorism and organised crime is growing deeper and *more complex* all the time'. Furthermore, the Australian Federal Justice Minister, Michael Keenan, observes that, 'the links between terrorism and organised crime are [still] *emerging* and *complex* problems' (interview in Box 2015). Moreover, 'the *fluid environment* within which terrorist and organised crime groups operate provides both threats and opportunities' (Grabosky & Stohl 2010:71). As Makarenko (2011:238) argues, 'the better an

organisation *learns* and *adapts* to its environment in the context of the crime-terror *nexus*, the greater the threat it is likely to pose on a multiple of levels'. Grabosky and Stohl (2010:79) also summarise the increasing *networks* arising between criminals and terrorists as '*temporary, dynamic, emergent, adaptive, entrepreneurial* and *flexible structures'*. Of particular note, as organised crime and terrorist groups seek similar operational environments, 'it is natural that their *paths converge'* (Joint Forces Staff College 2015:17). Essentially this growing trend of illicit partnership is fuelled by 'ungoverned spaces', where both groups prosper, leading to 'a *pattern* [that] is *self-perpetuating'* (Joint Forces Staff College 2015:17). Moreover, in organisational studies (Uhl-Bien & Marion 1999), *interconnectivity* is associated with a shared need where individuals *interact* to accomplish a task, goal, objective, or vision. If a shared need is not felt, then individuals will not be motivated to engage. In interpersonal networks, Granovetter (1973:1360) argues that '*small-scale interaction* becomes translated into *large-scale patterns*, and that these, in turn, *feed back* into small groups'. Finally, Grabosky and Stohl (2010:127) recognise that 'the problems of organised crime and terrorism have *long histories* and deep roots within the communities in which they have arisen' and that any approach to understanding these problems must recognise 'the *history* and *context* in which the problems and the organisations have *emerged'*.

Based on this analysis, the conceptual language of complexity lends itself well to organised crime, terrorism and the crime-terror nexus. This conceptual resonance with complexity is expressed in the very language itself. The common features are surprisingly many: systems operating at both a local and global level, the co-existence of order and disorder in a dynamic and non-linear fashion, the application of fractals, attractors and feedback loops, the ability to learn and adapt, the notion of a nexus between two worlds and systems reciprocally affecting each other's evolution where allegiances and alliances may form.

As such, in developing the new model through a complexity lens, as highlighted and summarised in Chapter 1, new definitions of organised crime, terrorism and the crime-terror nexus may be constructed as follows:

- **Organised crime**: a complex system (i.e. a criminal group) comprising a number of interacting, self-organising, dynamic and emergent properties, including individuals, and also interacts with other groups, individuals

and its environment, all of which are mutually influencing.

- **Terrorism**: a complex system (i.e. a criminal or criminalised group) comprising a number of interacting, self-organising, dynamic and emergent properties, including individuals, and also interacts with other groups, individuals and its environment, all of which are mutually influencing.

- **Crime-terror nexus**: a complex system (i.e. a criminal or criminalised group) which evolves, or two or more complex systems which evolve and reciprocally affect each other's evolution and co-evolve to form a different or new complex system or systems (i.e. groups).

Supporting this approach, is the philosophical lens of epistemology and ontology (eds Arrigo & Williams 2006; Byrne & Callaghan 2014). As highlighted in Chapter 1 and subsequently discussed in Chapter 8, in developing a new model of complexity, reality is seen through a world of complex systems, and if we want to understand organised crime, terrorism and the crime-terror nexus through the new model, we need to understand it in those terms.

4.4   Design principles

The design and development of the new complexity model is considered analogous to having a computer (i.e. complexity), but to access it, you need a keyboard (i.e. interface or model) and the keyboard needs to have the right keys (i.e. a frame of reference). As the complex system is a criminal group, the new keys need to have criminological frames of reference, and so the new model is analogous to building a new keyboard. In considering the development of the new model, as contained in Chapter 5, to bring some sophistication of thought and understanding, three design principles are proposed: i) theory-driven; ii) analytical tool; and iii) visualisation.

The first design principle is theory-driven, comprising a synthesis of criminological and complexity concepts. As such, it will propose some criminological objects of study that are implicated by complexity and how studying these might provide new insights into organised crime, terrorism and the crime-terror nexus. As pointed out by Kleemans (2014:32), 'theory is not the opposite of empirical research. On the contrary, theories and theoretical

perspectives shape the ways in which we are able to describe and analyse empirical realities'. Furthermore, 'theories are "spotlights" and all observation is theory-driven' (Kleemans 2014:32).

The second design principle is an analytical tool, to ensure its ability to organise, shape and structure information and make conceptual distinctions to capture something that is easy to understand. In considering the new design, complexity suggests the key to understanding complex systems is contained in the patterns of relationships and interactions amongst a system's elements. Hence, the overall approach to applying complexity in a criminological context to criminological problems is to develop a model that emphasises patterned thinking. As Maxfield and Babbie (2014:294) observe, an analytical tool 'adds structure' and aids the emergence of 'patterns'. Furthermore, as discussed earlier, one of the central concepts of complexity is that while it is difficult to predict the exact state and outcome of a complex system, it is generally possible to model the overall behaviour. As such, complexity lays emphasis not on the *disorder* of the system, but on the *order* or patterns inherent in the system and offers a means of discerning and identifying these patterns. The analytical tool will thus provide a way to discern such patterns and provide a richer understanding and appreciation, as well as indicators of events.

The third and final design principle is visualisation. Visual imagery will allow the reader to better visualise and grasp the complexity concepts being used to frame the new approach and complexity model in criminology. As NECSI (2017), a leading Institute points out, 'visualisation tools' are important as 'one of the biggest challenges of studying complex systems is how to represent their behaviour in a way that makes intuitive sense'. Of particular note, is the 'increasing interest in the use of visual tools and techniques in criminology' and 'the potential for visual criminology to better present complex research findings' (Wheeldon & Harris 2015:141). Moreover, as Tufte (2001:191) notes, 'what is to be sought in designs for the display of information is the clear portrayal of complexity'. In other words, 'not the complications of the simple; rather the task of the designer is to give visual access to the subtle and difficult – this as, the revelation of the complex' (Tufte 2001:191). To date, as Wheeldon and Harris (2015:143) argue, 'although data visualisation has thrived in many areas of social inquiry, criminology has been comparatively slow to adopt these techniques'. In

complexity, a number of descriptive metaphors – the butterfly effect, attractors, fractal fragments, edge of chaos, landscapes – are offered which are easily accessible by criminologists as meaningful descriptors of patterns that emerge in criminological research. Moreover, the use of infographics aids data visualisation. In short, visual imagery will aid sense-making.

As will be seen in Chapter 5, each of the three design principles will be used in the development of the new model.

4.5   Testing and application

The testing and application of the new model, including the above design principles, will use the case study method. It is important to note that the development, testing and application of the new model will be performed simultaneously and iteratively, through discovery and reflection, as each part of the process influences the other. As Maxfield and Babbie (2014:40) point out, 'theory and observation go together in science, but sometimes theory precedes observation, and other times observation comes before theory'. As such, the rationale for the development, testing and application of the new model is akin to grounded theory, where the discovery of theory is through the analysis of data (Grounded Theory Institute 2011; Maxfield & Babbie 2014). In this thesis, however, while the theory has already been discovered (i.e. complexity), how to apply this theory using criminological frames of reference has not. Rather than begin with the development of the new model in isolation, data will be collected, sorted, analysed and interpreted simultaneously using the case study method in developing the new model. Accordingly, the development and refinement of the new model will be 'grounded' in data. The rationale being the combined challenge of how to collect and sort organised crime and terrorism data in a workable format to apply complexity to, then how to analyse and interpret the data, in a complexity informed way, using the proposed design principles. Similar to traditional grounded theory, it is an exploratory approach, in which 'understanding is itself in large part an emergent from the research process and theory' (Byrne & Callaghan 2014:199).

4.5.1   Case study rationale

According to Yin (1984:23), the case study research method is 'an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when

the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used'. Yin (1984:2) further notes that the case study method is suitable for 'studying complex social phenomena' as it 'allows investigators to retain holistic and meaningful characteristics of real-life events'. Researchers have often attempted to understand organisations by using case study designs. However, 'these designs are only as good as the theoretical model driving the research' (Anderson et al 2005:670). It can be argued that traditional case study designs 'have been driven by theoretical models that are not congruent with the nature' of the organisations that we study (Anderson et al 2005:670). As pointed out by Hall (2011:179), rich in-depth case studies are able to 'embed its subject within the local social, cultural, economic and political context. In doing so, it is able to reveal the spatial and temporal contingency of organised crime' and terrorism. Moreover, Uhl-Bien and Marion (2009:647) encourage complexity researchers 'to explore methodologies that allow us to gather rich, dynamic, contextual and longitudinal data'. Robinson (2014:75) notes that tests of complexity should be conducted using 'longitudinal data that are sensitive to trajectories' and 'reciprocal relationships and interactive effects'. Robinson (2014:75) also notes that a complexity approach is 'probabilistic' rather than 'deterministic' as trying to identify all individual factors in the social world is impossible. As Byrne & Callaghan (2014:199-202) puts it, in the social sciences, 'a very carefully constructed history' is required for complexity framing and the 'construction of very careful narratives' is fundamental. By studying 'evidence about past and present events we can begin to draw a range of both linear and non-linear inferences about future events' (Leary & Thomas 2011). Young (1992) also observes, 'all social occasions are interactively rich beyond the capacity of the fastest computer, the largest data base, the most extensive library to record and retrieve'. And within a single case study, 'we can look at large numbers of intervening variables' (George & Bennett 2005:21). As suggested by Hobbs and Antonopoulos (2014:102), perhaps 'historical/archival studies offer the [best] opportunity to analyse with the benefit of hindsight and with minimal personal risk' in researching criminal organisations.

Based on the literature, in this thesis, the case study method offers an approach that:

i) is suitable for studying complex social phenomena based on real-life

events;

ii)   complements the development of a new model congruent with the nature of the phenomena under study;

iii)   allows the subject to be studied within context, including social, cultural, economic and political; and

iv)   provides the opportunity to perform an in-depth analysis of a large number of variables that are rich, dynamic and contextual in nature.

Moreover, in the selected case study, as will be discussed next, while the availability of longitudinal data is limited, long-term historical data that is rich, dynamic and contextual in nature, and also sensitive to trajectories, is available.

4.5.2   Case study selection

Based on the literature review, there are few publicly available organised crime and/or terrorism case studies with an appropriate and suitable level of detail for the purposes of this research. In general, for any particular organised crime and/or terrorist group, open source information is a high-level summary of the group and its activities with a significant lack of detail. Where details are provided, it is usually with a focus on only one or two parts of the group or its activities, with limited information on any overlap or interconnections between organised crime and terrorism. Moreover, research papers, such as those issued by the Australian Institute of Criminology under the topic 'organised and transnational crime', tend to be topical and thematic papers such as people trafficking or drugs trafficking rather than research on a particular group itself (Australian Institute of Criminology 2016). The lack of detail is not surprising, given the covert and clandestine nature of these groups. The media is also a source of information, however, the degree of reliability is questionable. As Allum and Gilmour (2011:10) observe, 'often, there exists very little data which could help form the basis of an in-depth analysis' of a criminal group. Moreover, 'we must not forget that getting primary data is difficult and dangerous' (Allum & Gilmour 2011:10). Notwithstanding, there is a plethora of open source information on infamous organised crime and/or terrorist individuals and groups that have gained public notoriety over the years. Examples of case studies considered, include specific groups and individuals within the infamous Italian Mafia, the Russian Mafia, the Japanese Yakuza, the Chinese Triads, the Mexican Cartels and Colombian Cartels. Moreover, two case studies, rather than one case study, was

also considered, with the second focussing on terrorism, such as Al-Qaeda and more recently ISIS. However, as carefully constructed histories and narratives is fundamental to complexity framing, as highlighted by George and Bennett (2005), within a single in-depth case study, a larger number of intervening variables may be studied. As such, in this thesis, a single in-depth case study lends itself well to the development of a new model.

Accordingly, the selected case study concerns a single in-depth study of one of the most infamous criminals in history – Pablo Emilio Escobar Gaviria ('Escobar') and the Colombian Medellín Cartel – and is selected over others for three reasons:

i)   the depth and breadth of open source information, including a recent resurgence of interest in the case, including primary and secondary source information in English, without the need for translation;

ii)   the historical nature of the case to leverage archival research and the opportunity to analyse with the benefit of hindsight; and

iii)   more importantly, the involvement of both organised crime and terrorism activities, involving the crime-terror nexus, and the formation of a number of allegiances and alliances central to the case study, including the terrorist group, *Los Extraditables* (The Extraditables).

4.5.3   Case study design

In this thesis, the concepts of construct validity, reliability and external validity are specifically considered in the light of the case study method. As Yin (1984) points out, a properly designed case study seeks to ensure construct validity, reliability and external validity. According to Yin (1984), in case studies, construct validity is when the measure being utilised is appropriate for the concept being studied. To improve the construct validity, an attempt will be made to corroborate each piece of data collected with two other pieces of data to increase accuracy and reduce bias. Furthermore, reliability in case studies refers to the ability of the study to be replicated with consistent results (Yin 1984). Reliability can be improved by ensuring all procedures are carefully documented and by maintaining a complete and accurate record of all materials collected (Yin 1984). To increase the reliability of this study, all procedures will be carefully documented and a complete and accurate record of all materials collected and analysed will be created. Lastly, in case study design, external validity refers to the ability to generalise a study's

findings to a larger population (Yin 1984). External validity will be secured through ensuring the case study design supports the generalisation of the new model, both specifically to the study of organised crime, terrorism, and the crime-terror nexus, and to criminological problems more generally.

In the case study method, it is not practical to include everything, so boundaries must be set. Boundaries define not only what is included and excluded, but also which issues are more central and which are marginal (Bammer 2013). Due to the history and volume of information available for the selected case study, boundaries will be carefully constructed, placed and clearly documented, including a chronology of key events considered during the period. As noted above, as complexity insights can be gleaned by studying behaviour *at* and *across* the case study boundary as well as *within,* the collection of source material will take this into account, i.e. source data will also be considered at and across the boundaries set. It is important to note, however, that no attempt will be made to comprehensively and exhaustively cover and analyse all past and current events surrounding the case. As complexity studies change in a complex system, the selected case study will be framed within a definitive time period, and also within key contextual variables, just before and during the case study period, comprising specific events and/or conditions, including historical, geographical, social, economic, political and media settings. As will be discussed in Chapters 6 and 7, the complex system under study will be the Medellín Cartel and as the creator and ultimate boss of the Medellín Cartel, will be framed by Escobar's life and the operational period of the Medellín Cartel.

Cilliers (2000:28) suggests that because complex systems are open, it is difficult to determine boundaries and limits. However, Cilliers (2000:28) clarifies that 'this does not imply that there is no point in developing formal models of complex systems', as we can still 'develop models on the basis of certain assumptions and limitations, just as with any scientific model'. After all, 'complex systems have structure' (Cilliers 2000:28). Moreover, in developing the new model, consideration will also be placed on saturation points, at both a conceptual and descriptive level of qualitative data (Glaser & Strauss 1967; Maxfield & Babbie 2014). Specifically, in this thesis, an attempt will be made to ensure that each of the analytical categories and descriptive levels of data in the design of the new model are sufficiently dense to offer the most explanatory power and that new

data is not being uncovered to generate new leads (Glaser & Strauss 1967; Maxfield & Babbie 2014). Ultimately, when using source data, this thesis will aim to critically assess the source material through the eyes of the writer when discerning the facts of an event, especially where family or associates of Escobar are concerned. For example, when considering the facts of a specific terrorist incident, from the point of view of Escobar's family, certain facts may become blurred in an attempt to weaken or soften the incident. Conversely, from the point of view of the US or Colombian governments, certain facts may become embellished in an attempt to strengthen or toughen the incident.

4.6 Source data

A fundamental aspect of complexity is that it provides a holistic view, including points of view by 'others', and locates the subject of study within context. Moreover, by reshaping new and existing data using complexity informed thinking, this thesis aims to change the way we think about complex phenomena. In doing so, it aims to provide fresh and novel insights into the phenomena under study. In other words, it is less about the data and more to do with how we see and interpret the data, from a variety of perspectives, through a complexity lens. Accordingly, while primary sources are used in this thesis, secondary sources are also used due to the i) difficulty and danger of obtaining information directly from former members of the Medellín Cartel and/or former associates and/or family members of Escobar; and ii) difficulties in gaining access and/or timely access to former/retired US and/or Colombian government and/or law enforcement officials from the time of the case study. Furthermore, by accessing secondary sources, it allows the case study to benefit from a wide range of rich in-depth source material, with minimal personal risk or access barriers. As will be described in the next chapter, in this thesis, 'data' primarily comprises 'narrative' accounts from a variety of perspectives, together with other information, such as demographic statistics.

4.6.1 Primary sources

Primary source information relevant to Escobar and the Medellín Cartel was identified and retrieved from archival research, government reports and presidential speeches.

Archival research

Archival research based on original documents held by the US National Security Archive based at George Washington University proved to be a key and valuable source of information. This archive includes declassified US government documents and is accessible online (US National Security Archive 2016). Of particular note, is a lawsuit under the US Freedom of Information Act to declassify a collection of documents relevant to Escobar and the Medellín Cartel; this lawsuit was ultimately successful and a range of documents were declassified and released to the archive in 2008 (US National Security Archive 2008). As summarised in Table 4.1 below, based on key word searches, a total of 315 documents were identified and retrieved from the archive for examination. It should be noted that the online search function only provides a simple word match; however, this did not impede the research based on the relatively small number of documents located, i.e. hundreds, not thousands.

Table 4.1: Summary of key word searches in archival research of primary sources

	Key search terms (and variations thereof)	No. of documents
1.	Pablo Escobar	110
2.	Medellín Cartel	60
3.	Cali Cartel	35
4.	*Los Pepes*	33
5.	*Sicarios*	20
6.	Castaño brothers	17
7.	Jose Gacha Rodriguez	17
8.	Ochoa brothers (Juan, Jorge & Fabio)	15
9.	*Los Extraditables*	5
10.	Death to kidnappers (MAS)	3
	Total	**315**

Source: Author's summary of key word searches

On review of these documents, while most were duplicates containing more than one search term, each document was reviewed to ensure it was not a new source. It was found that the majority of documents were released in 2008 as a result of the law suit and mostly dated between the period 1990 to 1994. As will be seen in Chapters 6 and 7, this time period is not surprising given the period is towards the

end of the demise of Escobar and the Medellín Cartel. As such, this was a period of escalated violence in Colombia, where the Colombian government, supported by the US, increased its activities to ultimately bring down Escobar and the Medellín Cartel. On review of the 315 documents, nine documents (as detailed in Appendix 1) were selected to form part of the case study source data set as discussed in subsequent chapters. These documents include declassified intelligence reports and assessments from various US agencies, including the US Central Intelligence Agency ('CIA') and the DEA, together with declassified cables between the US Embassy in Bogota to the US Secretary of State in Washington.

Other sources

Other primary source information, as also detailed in Appendix 1, was identified and collected from open sources containing unclassified government reports and transcripts of public presidential speeches.

4.6.2 Secondary sources

Secondary source information was primarily identified and collected from first-hand personal accounts by a selection of actors from existing interviews and/or documentaries, together with accounts provided by investigative journalists. Moreover, investigative journalist accounts often included analysis of restricted access and/or classified information; for example, c. 350 interviews were conducted by Strong (1995) in his book *Whitewash: Pablo Escobar and the Cocaine Wars* and more than a thousand pages of classified cables from the US embassy in Bogota to Washington, court records and police files were analysed by Bowden (2002) in his book *Killing Pablo: The Hunt for the World's Greatest Outlaw*. As summarised in Table 4.2 below, based on detail contained in Appendix 1, sources comprised contemporary accounts from open source transcripts and/or video recordings of interviews given at the time, together with information contained in documentaries, books, journal papers, scholarly databases and media articles.

Table 4.2: Summary of secondary sources

	Source	No. of documents
1.	Interviews: First-hand accounts (most with transcript)	8
2.	Documentaries: Televised first-hand accounts (most with transcript)	7
3.	Books: First-hand accounts and/or autobiographies	8
4.	Books: Investigative journalists based on extensive research and accounts	6
5.	Books: Scholars with expertise in the drug trade and/or Colombia	5
6.	Scholarly databases	5
7.	Media articles, mostly containing interview extracts	7
	Total	**46**

Source: Author's summary of research as detailed in Appendix 1

4.6.3 Spanish

It is important to note Spanish in this thesis. Where Spanish to English translations are relied upon, the source of the translation will be provided. Furthermore, Spanish words used directly in the text of this thesis, will also be translated to English when first used, with the translation placed in parenthesis. Where Spanish words are subsequently retained and used in the text due to their nuanced meaning, these words will also be included in the Spanish to English translation table at the beginning of this thesis.

In Spanish name conventions, an individual usually has four names: a first and second name (similar to English) followed by two surnames – the first being the father's and the second being the mother's. In Spanish, common practice is to use the first name and father's surname only, with the full name being used in legal documents. For example, Escobar's full name is Pablo Emilio Escobar Gaviria. In this thesis, the full name of an individual will be used when first introduced, and thereafter by just their father's surname, for example, Escobar. Where an individual shares the same surname as another individual, either their first name and father's surname will be used or alternatively just their mother's surname. Members of Escobar's family with the same surname will be referred to by their relationship with Escobar and their first name, for example, Roberto, Escobar's brother.

4.7   Limitations

In data collection, limitations in triangulation techniques to improve accuracy and reduce bias are acknowledged given the limited use of this technique in this thesis. As von Lampe (2016:53) points out, 'while the combination of different data sources promises a more complete and more accurate picture, it is not always easy to triangulate evidence'.   Furthermore, limitations in accessing primary source data due to personal risk and access barriers are also acknowledged, together with inherent limitations in using secondary sources, including filtered analysis of primary sources in investigative journalist accounts.   As Kenney (2007:17) points out, the significant effort required to acquire organised crime and terrorism data, 'let alone analyse valid and reliable data' is challenging.   In considering the limitations in the conceptual design using metaphors rather than mathematics, Byrne and Callaghan (2014:6) argue, 'metaphors are what we live by'. They further quote two mathematicians who propose 'mathematical descriptions of nature are not fundamental truths about the world, but models' (Cohen & Stewart 1995:410). They further note that 'there are good models and bad models and indifferent models, and what model you use depends on the purposes for which you use it and the range of phenomena which you want to understand' (Cohen & Stewart 1995:410). To this, Byrne and Callaghan (2014:6) argue that 'a model is a metaphor' and 'any description of reality is metaphorical'. According to Cilliers (2000:30), a limitation in modelling the social world is that it 'will never be sufficient', however, it does not mean it 'is unnecessary', as it will provide 'vital information', just not 'all the information'. Moreover, 'as far as complex systems are concerned, our knowledge will always be contextually and historically framed' and hence there will always be inherent limitations (Cilliers 2002:78). As Leary and Thomas (2011:68) point out, although the world is a complex non-linear place, given static and deterministic values, linear systems still play an important role. Essentially, 'neither complex nor linear systems provide the answer and neither should be treated as exclusive' – we need both (Leary & Thomas 2011:68). In summary, despite the acknowledged limitations, the potential and intrinsic value of the new research methodology and model is considered to be of value to both scholars and practitioners alike.

PART 3: NEW MODEL & APPLICATION
Chapter 5: New complexity model

'Logic will get you from A to B. Imagination will take you everywhere'

Albert Einstein, physicist (1879-1955)

Chapter 5 contains the design of the new complexity model to apply complexity in a criminological context and to the study of organised crime, terrorism and the crime-terror nexus. It draws upon the literature review in Chapters 2 and 3 using the approach described in Chapter 4.

5.1 Model overview

As explained in Chapter 3, complexity aims to improve our understanding of a complex phenomenon, where the unit of study is a complex system. As also described in Chapter 4, the new complexity model is ontological and conceptual in design and includes three design principles: i) theory-driven; ii) analytical tool; and iii) visualisation. The new model also adopts a rack-focus approach. As discussed in Chapter 3, a rack-focus approach allows the same phenomena to be considered at the same time from different focal lengths (Coda & Lawton 2016). While the reality has not changed, one image can come into focus while another moves out of focus allowing a shift in attention. Adopting this approach, the new model comprises two distinct yet complementary components: one at the macro-level and one at the micro-level.

5.1.1 Macro-level: System dynamics

The macro-level component studies the dynamics of a complex system and is called 'system dynamics'. As explained in Chapter 3, at a macro-level, applying complexity to criminological problems may be described as a theory of the varying degrees of interconnectedness of the whole 'eco-system' in which crime occurs, rather than the differences between those who commit crime and those who do not commit crime at any given point in time (Young 1991). Moreover, in

complexity informed thinking, one should focus one's attention on the varying degrees of interconnectedness of the system under study and the changing interactions and correlations. In criminology, this component may help to better understand and identify the nature and strength of the system under study, including why and how the system evolved or evolves, together with co-evolution of surrounding complex systems. In turn, this may help to better determine the drivers and vulnerabilities in the system and identify or design better strategies and measures impacting the outcomes or desired outcomes of the system under study.

As explained in Chapter 4, a criminal group, such as an organised crime group and/or terrorist group may be described as a complex system. A criminal group comprises a number of interacting, self-organising, dynamic and emergent properties, including individuals, and also interacts with other groups, individuals and its environment, all of which are mutually influencing. As such, this component may help to better understand and identify the nature and strength of the criminal group and its members as a whole, including why and how the criminal group evolved or evolves, together with co-evolution of surrounding complex systems, such as allegiances and alliances. In turn, this may help to better determine the drivers and vulnerabilities of the criminal group, and identify or design better strategies and measures impacting the outcomes or desired outcomes of the criminal group, such as disruption.

5.1.2   Micro-level: Actor behaviour

Shifting our attention to the micro-level, this component studies the behaviours of actors in a system and is called 'actor behaviour'. At a micro-level, applying complexity to criminological problems may help to provide insights about past and present behaviour, and foresight about future behaviour. As noted in Chapter 3, as human beings, we are also complex systems. Understanding what guides the attitudes and behaviours of actors can also make inferences about the system as a whole and its self-organising and emergent behaviour. Moreover, paying attention to behaviours provides some sense of predictability associated with the actors in the system. Depending on the context of the actors and system under study, strategies and measures may be identified or designed that changed or change desired outcomes of the behaviours of actors within a system. In a criminal group, this component may help to better understand and identify actor behaviour,

including drivers and vulnerabilities, and the impact on the system itself. In turn, this may help to identify or design better strategies and measures that achieved or achieve specific outcomes of the criminal group, such as disruption and removal of key actors.

5.1.3 Set of four steps

To operationalise the new model, a set of four steps has been developed using the case study method and are applicable at both levels. As described in Chapter 4, the case study must be framed within a definitive time period, together with contextual variables comprising specific events and/or conditions. In the following sections, each of the four steps is described in turn, together with illustrative examples, followed by a summary of the overall new complexity model.

5.2 Step 1: Data sets

Step one of the new model is to generate three data sets for the complex system under study: i) source data set; ii) actor data set; and iii) complex data set. To begin, an overview of step one is provided, followed by illustrative examples of each of the three data sets in turn, together with explanations of the criminological and complexity concepts used in generating the data sets. Of note, given the nature of the micro and macro-level components, the micro-level data sets are essentially a subset of the macro-level data sets, but at a more detailed scale of the individual actors involved.

5.2.1 Overview

In short, a source data set is first generated for the complex system under study using criminological frames of reference. Next, an actor data set is identified and generated from the source data set, to help understand the variety of perspectives of the complex system under study. Finally, a complex data set is generated from the source and actor data sets, using a complexity concept called 'fractal fragments' and complexity prompts. Fractal fragments, wherever possible, are selected from a variety of perspectives based on the actor data set and will be used in steps three and four to inform the case study analysis.

5.2.2　Source data set

Within a defined time period and contextual variables, a source data set is first generated for the complex system under study using criminological frames of reference. In this thesis, the complex system under study is a criminal group. As depicted in Figure 5.1 below, the source data set of a criminal group may be determined by reference to Levi's (2007) six procedural steps and von Lampe's (2003) three core elements of a criminal group as described in Chapter 2.

As complex systems are dynamic, Levi's (2007) procedural steps are important to generate a source data set over time, as these steps are repeated over time, but not necessarily in the same order as the criminal group evolves. For example, at a point in time, a group may have enough equipment or transportation, but not enough people. Moreover, each of von Lampe's (2003) core elements may play a role in Levi's (2007) six procedural steps.

Figure 5.1: Source data set of a criminal group

	Core elements of a criminal group (von Lampe 2003)		
Procedural steps of a criminal group (Levi 2007)	1. Actors	2. Activities	3. Structures
1. Obtain finance for crime			
2. Find people willing & technically/socially competent			
3. Obtain equipment & transportation		**Source data set**	
4. Convert crime product into money & useable assets		**of a criminal group**	
5. Find people & places to transmit, store & conceal proceeds			
6. Neutralise law enforcement by technical skill, corruption & legal action			

Source: Author's synthesis based on Levi (2007) and von Lampe (2003)

Taking the first procedural step, 'to obtain finance for crime', you will need actors to obtain the finance and you may need a criminal activity, such as car theft or kidnapping, to obtain the initial finance. Furthermore, these initial steps may depend on existing structures and relationships in place within a defined time period and contextual variables in how the group operates. For example, in the

locality of an intended car theft, the media may be running focus stories on recent car thefts, which in turn may provide the general public living in the area a heightened sense of awareness to secure their vehicles and/or report any suspicions. Another example is the government's implementation of a new neighbourhood watch scheme or surveillance cameras in the area. All these factors may impact the operations of a criminal group. Based on Levi's (2007) procedures and von Lampe's (2003) core elements, it is reasonable that a source data set of a criminal group may be generated using these elements as a component guide.

As explained in Chapter 4, in this thesis, 'data' primarily comprises 'narrative' accounts, from both primary and secondary sources. Using Levi's (2007) procedures and von Lampe's (2003) core elements as a component guide, based on this thesis's case study, Appendix 1 provides a worked example of the sources generating the source data set of a criminal group (i.e. Medellín Cartel). Based on criminological study more generally, a source data set is illustrated in Figure 5.2 below.

Figure 5.2: Source data set illustrative example

	Criminological frames of reference
Criminological frames of reference	**Source data set** using primary and secondary sources 'narrative' accounts

Source: Author's illustration

5.2.3   Actor data set

Next, an actor data set is identified and generated from the source data set, to help understand the variety of perspectives of the complex system under study. An actor data set comprises groups of actors with types of actors in each group. As illustrated in Table 5.1 below, an actor set may include a group of actors called 'state authorities'. In this actor group, types of actors may include the government, politicians, law enforcement, the military, the judiciary and other state agencies.

Table 5.1: Actor group within an actor data set illustrative example

	Actor group: state authorities
1.	Actor type 1: Government
2.	Actor type 2: Politicians
3.	Actor type 3: Law enforcement
4.	Actor type 4: Military
5.	Actor type 5: The Judiciary
6.	Actor type 6: Other state agencies

Source: Author's illustration

Based on this thesis's case study, Appendix 2 provides a worked example of the actor data set at both the macro-level of a criminal group (i.e. Medellín Cartel) and at the micro-level of a key actor (i.e. Escobar).

5.2.4   Complex data set

A complex data set is finally generated from the source data set and actor data set, using a complexity concept called 'fractal fragments' and complexity prompts. Fractal fragments, wherever possible, are selected from a variety of perspectives using the actor data set and in the words of the actors themselves; for example, from primary source documents and secondary source interview and documentary transcripts. A fractal fragment is explained next, followed by complexity prompts, together with an illustrative example of a complex data set.

Fractal Fragments

As described in Chapter 3, the concept of a fractal is both mathematical and conceptual in nature. It may be defined as a fraction of a dimension which exhibits self-similarity and is useful for identifying patterns and structures that are easy to see at one scale, but not at another; for example micro and macro-levels, or in one portion of a study, but not in another. In nature, for example, fractals may be seen in a snowflake or fern. In Kuhn's (2009) work, a concept called 'fractal fragment' is introduced in applying complexity in organisational studies. Kuhn (2009) defines a fractal fragment as short stories or narrative accounts compiled from documents or through interviews with individuals about their experiences. Essentially, Kuhn (2009:87) argues that 'through taking a fractal approach, we can study and make sense of small portions of the organisation without artificially

simplifying these'. As Kuhn (2009:14) puts it, 'examining one fractal component at one scale enables you to thereby manage what would otherwise be overwhelming detail'. In other words, fractal fragments allow you to better manage large amounts of data, as they may contain information at all levels of the complex system under study, from the local to the global. In turn, this allows the generalisation of the study of one fractal fragment about the complex system as a whole, or sectors across it, from which the fractal fragment is derived. In this thesis for example, feelings and attitudes of individuals within a criminal group will be replicated throughout the group. Equally, in the study of an individual actor within the criminal group, fractal fragments of self-similarity over the life and history of the individual, may allow the generalisation of certain events, feelings and attitudes in the group itself. Beyond the group, similarities may exist in similar industries or in this case, organised crime and terrorism. Fractal fragments also differentiate between the life experiences of individuals of a particular event, compared with the cold hard facts of the event. To better explain the use of fractal fragments, Figure 5.3 below provides an illustrative example.

Figure 5.3: Fractal fragments illustrative example

Short narratives: descriptions, stories or accounts

text text text text text text text text

text text text text text text text text
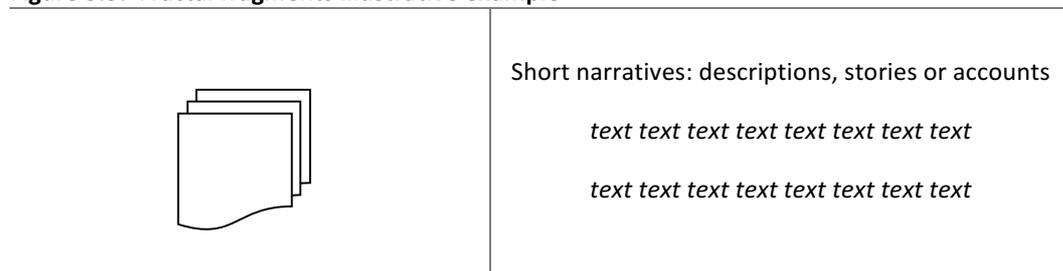
Source: Author's illustration based on Kuhn's (2009) fractal fragment

Essentially, fractal fragments may also be described as a 'postmodern technique', where the method of analysis is centred 'on the nature and dynamics of language' (White et al 2012:250).

Complexity prompts

Building on this technique and drawing on complexity literature, including the work of Wolf-Branigin (2013), to better enable a complexity mind-set, a set of complexity prompts is offered for use in criminology as summarised in Table 5.2 below.

Table 5.2: Set of complexity prompts for use in criminology

	Complexity concept	Prompt for social (including criminological) phenomena
1.	**Sensitivity to initial conditions** One slight change in a variable can give rise to a significantly different outcome.	**Prompt**: a slight change has resulted in a significantly different outcome. **Interpretation**: this may provide insights into how to detect and either encourage or prevent these changes depending on the nature of the system, outcomes and policy implications. It is also useful for discerning the background of actors.
2.	**Bifurcation** Considered metaphorically as a choice of two paths or a fork in the evolution of a system.	**Prompt:** choices have been made that has resulted in different outcomes. **Interpretation:** identification of such points may lead to insights into the development of a system and where critical parameters bifurcate. In turn, this may provide useful information into changes or parameter settings in a system to influence outcomes and policy implications.
3.	**Attractors** An attractor is like a magnet influencing and shaping actor behaviour.	**Prompt**: actors exhibit patterned and structured behaviour. **Interpretation**: identification of such patterns and structures may lead to insights into the nature, vulnerabilities and drivers of actor behaviour.
4.	**Fractals** A fraction of a dimension which exhibits self-similarity.	**Prompt**: self-similarity exists in the data set. **Interpretation**: useful for identifying patterns and structures in the data set that are easy to see at one scale, but not at another; for example micro and macro-levels, or in one portion of a study, but not in another.
5.	**Interconnectivity** Measure of the degree, state or quality of the interconnection in a system.	**Prompt**: actors interact to accomplish a shared need such as a task, goal, objective or vision. **Interpretation**: identification of the drivers and conditions that promote actors to interact may provide insights on what enriches these interactions and thus information on how to change these depending on the system under study and desired outcomes.
6.	**Feedback** Repetition or iteration, that can be direct or indirect, and positive (enhancing, stimulating) or negative (detracting, inhibiting).	**Prompt**: identified feedback loops either amplify or constrain criminal behaviour. **Interpretation**: this may provide useful insights into where and how to break the cycles and provide the basis for new ways of thinking about policy in these areas. It also helps to delineate how information flows and decisions are made.

	Complexity concept	Prompt for social (including criminological) phenomena
7.	**Self-organisation** A system spontaneously self-organises from a disordered to an ordered and much stronger system, to cope with changes in the environment.	**Prompt**: organised tendencies occur to cope with change. **Interpretation**: this may provide useful insights into how to prevent or encourage a stronger system evolving through earlier action or intervention.
8.	**Dissipation** Structures that form momentarily and appear stable, but are quick to dissipate at the slightest perturbation.	**Prompt**: structures in the data quickly collapse. **Interpretation**: this may provide useful insights into why and how these structures dissipate, together with lessons learned from such phenomenon.
9.	**Emergence** The whole is greater than the sum of its parts.	**Prompt**: new outcomes emerge in the data, including unexpected events, innovation and learning. **Interpretation**: this may provide useful insights into how and why a system evolves and the outcomes of certain phenomenon.
10.	**Co-evolution** The outcome when two or more complex systems reciprocally affect each other's evolution.	**Prompt**: more than one system is apparent in the data. **Interpretation**: this may be useful for identifying dependencies on how a system evolves and operates including boundaries at a nexus point. Co-evolution may also help to determine allegiances and alliance formation.

Source: Author's prompts based on complexity literature

As seen in Table 5.2 above, the complexity prompts aim to assist the criminologist, in a complexity informed criminology, in the consideration and interpretation of data.

Complex data set

Drawing on the complexity concepts of fractal fragments and complexity prompts, a complex data set is finally generated from the source and actor data sets. An illustrative example of a complex data set is depicted in Figure 5.4 below. In this example, fractal fragments are generated from the source data set based on an actor data set comprising five groups of actors labelled A to E.

Figure 5.4: Complex data set illustrative example

	Criminological frames of reference				
Criminological frames of reference	A	B	C	D	E
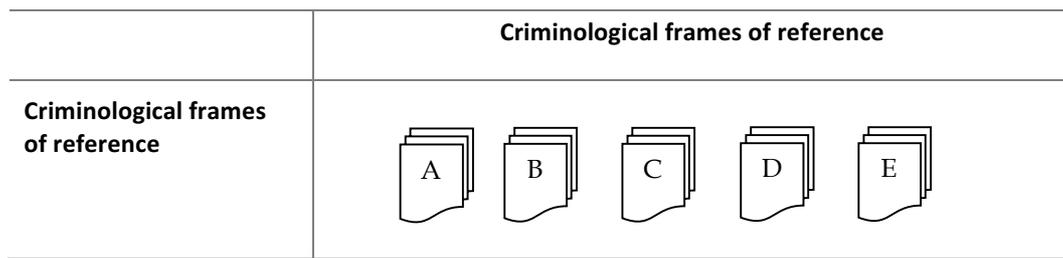
Source: Author's illustration

Based on this thesis's case study, Appendix 3 provides a worked example of the composition of a complex data set (i.e. Escobar and the Medellín Cartel) by fractal fragments and types of actors. In identifying, extracting and storing fractal fragments by actor type from the source data set, several methods may be used depending on the format of the source material. For example, if the format is electronic, extracts may be copied into the data store (e.g. a database or a simple file) under relevant analytical categories for the case study selected. Alternatively, where the format is not electronic, such as a hard copy book or journal, extracts may be either scanned in or typed in manually into the data store. As will be seen in Chapters 6 and 7, in this thesis, for clarity and ease of reference to inform the case study analysis, the fractal fragments will also be placed directly in the body of the text, indented and sequentially numbered, under relevant analytical headings.

5.3   Step 2: Contextual variables

Step two of the new model is to identify and analyse contextual variables from the data sets generated in step one, using complexity prompts. A fundamental aspect of complexity is that it provides a holistic view and locates the subject of study within its contextual setting comprising specific events and/or conditions. As Thoumi (2003:76) points out, 'the evolutionary processes that generate an environment where crime can thrive take time to develop. Conversely, reversing those processes is also likely to require time'. In the new complexity model, six distinct categories of contextual variables are offered for use in criminology as summarised in Table 5.3 below. Of note, von Lampe's (2003) environmental factors, impacting a criminal group, of society (including the economy), the government and the media are all considered within these new categories.

Table 5.3: Set of contextual variables for use in criminology

	Variable	Description
1.	Historical	Specific events and/or conditions of influence at a given time and/or place in history.
2.	Geographical	The landscape and terrain of the geographical localities and countries involved.
3.	Society	Society and culture.
4.	Economy	The impact of the economy.
5.	Political	Political consideration, including the government and state actors, such as law enforcement, the military, the judiciary and legislation.
6.	Media	All forms of media, including social media, both local and global.

Source: Author's contextual variables

Furthermore, key historical factors impacting the context of 'a time and place', including specific events and/or conditions of influence and geographical factors are also considered. As Hall (2011) points out in scholarly work, specifically in the study of organised crime, the geography of organised crime is largely overlooked. Moreover, since both organised crime and terrorist groups seek similar operational environments, geographical factors often play a key role in the formation of allegiances and alliances between these groups (Joint Forces Staff College 2015).

Similar to step one, given the nature of the micro and macro-level components, the micro-level contextual variables are essentially a subset of the macro-level contextual variables, but at a more detailed scale of the individual actors involved.

5.4 Step 3: Complexity tool – fitness landscape

Step three of the new model applies a complexity tool to organise, shape and structure the information, together with criminological frames of reference and complexity prompts. At the macro-level, the new model uses the complexity tool of fitness landscapes and at the micro-level, it uses attractor sets as will be discussed later in section 5.5 below. To begin, an overview of step three at the macro-level is provided, followed by detailed explanations of the concepts used, together with the new analytical tool and visual imagery using illustrative examples.

5.4.1 Overview

In summary, from the analysis of the data sets and contextual variables generated in steps one and two, a fitness landscape is generated for the complex system under study, using the criminological concept of criminally exploitable ties and complexity prompts. The fitness landscape is populated in three forms: i) tabular and/or infographic; ii) graphic; and iii) visual.

5.4.2 Fitness landscape

As described in Chapter 3, complexity is a science of the whole and not of its parts. As also described earlier, Kauffman (1993) developed a fitness landscape tool to show how a complex system within its environment can be represented visually to help understand which of its elements are fitter; where fitness may be measured by the degree of interconnectivity. In a traditional landscape, individual elements may sit at different heights on a landscape with peaks and valleys to represent fitness probabilities, where height measures the level of fitness (Kauffman 1993). In criminology, these elements may be defined as actors and may be an individual or group of individuals. As argued by Gerrits and Marks (2014:1), fitness landscapes can aid 'sense-making' as they can 'represent a complex story about adaption and fitness in one coherent image' and help us understand aspects of a complex system 'in an accessible way'.

To understand how the fitness landscape concept is used in the new model, a recap from Chapter 3 on the terms interconnectivity and edge of chaos is first considered. For ease of reference and understanding in criminology, the words component, element or part, have been replaced with the word actor in recapping these terms and other terms used throughout the new model. Interconnectivity may be defined as the state or quality of connected actors in a complex system (Cilliers 1998). In other words, it is a measure of the degree of interconnection. In a complex system, actors interact and exchange information through relatively rich means creating connections among all actors in a system (Kauffman 1995; Cilliers 1998). The interactions do not have to be physical; they can also transfer information (Cilliers 1998). Any actor may influence, and is influenced by another actor or actors in the system. An important point is that each actor is ignorant of the system as a whole and only responds to its local interactions (Cilliers 1998). Complexity emerges as the result of local rich interconnectivity which give rise to

global structures and patterns of the system (Kauffman 1995; Cilliers 1998; Byrne & Callaghan 2014). In organisational studies, interconnectivity is associated with the concept of a 'shared need' where individuals interact to 'accomplish a task, goal, objective, [or] vision' (Uhl-Bien & Marion 2009:642). Simply put, a shared need starts with the 'what's in it for me question' (Uhl-Bien & Marion 2009:642). If a shared need 'is not felt', then 'individuals will not be motivated to engage' (Uhl-Bien & Marion 2009:642). Moreover, to promote greater creativity and adaptability, one needs to find whatever 'enriches the interactions' or relationships amongst individuals (Lewin & Regine 1999:203). The edge of chaos may be represented by a midpoint between order (determinism) and disorder (randomness), where you have enough structure and patterns in a complex system that it is not random, but also enough fluidity and emergent creativity that it's not deterministic – this edge is emergent complexity and is a place where innovation occurs (Kauffman 1995; Pycroft 2014). In the light of these terms, both Kauffman (1995) and Marion (1999) propose that optimal fitness in a system's fitness landscape exists on the edge of chaos where complex systems are moderately interconnected with some weak and strongly interconnected actors. Adapting Marion's (1999) argument from organisational studies, it can be argued that a criminal group's fitness is at the edge of chaos when the criminal group is sufficiently rigid to carry information about itself, co-ordinate activity, share resource and perform its core tasks adequately, but also sufficiently slack to allow it to use its information creatively, to explore new strategies for surviving and to change. It can be further argued that criminal groups that are too slack, 'cannot coordinate and differentiate', while those that are too rigid are 'either unstable or are frozen' (Marion 1999:163). As a consequence, a criminal group can adjust its fitness landscape or strength by adjusting its degree of interconnectivity. Adjustments may be made by changing the number of linkages or changing the nature of interactions among actors (Marion 1999). Moreover, 'for complex systems to survive, there must be a certain match between what the organisation does and how it functions and its wider environment or context' (Kuhn 2009:40). In other words, understanding a complex system's fitness landscape is critically important to how it survives and thrives. For example, in a criminal group, if one of the leaders is injured, the rest of the group will compensate. The injured leader affects all the others and this, in turn, allows the injured leader to recuperate. So, not only is the injured leader influencing the rest of the group, the group's

members' actions influence the injured leader and each other as well. It is this very knowledge of how a system, in this case a criminal group, can adjust its fitness landscape or strength to its environment, by adjusting its degree of interconnectivity, that may help to better understand and identify the nature and strength of a criminal group and its members as a whole. In turn, this may help to better determine the drivers and vulnerabilities of the criminal group and its members and design strategies to disrupt them by varying the degrees of interconnectedness of its whole 'eco-system'. Strategies may include the targeting and removal of strong interconnections (e.g. group leaders), weakening of moderate interconnections as these provide a system its core strength (e.g. foreign terrorist fighters) and diminishing weak connections by breaking the ties to the system (e.g. sympathisers through community education and integration initiatives of marginalised populations).

5.4.3 Criminally exploitable ties

In criminology, the concept of criminally exploitable ties may be used to ensure a more holistic set of actors is considered when populating a fitness landscape of the complex system under study. According to von Lampe (2016:10), as explained in Chapter 2, criminally exploitable ties provide a 'more complete picture'. Von Lampe (2016) offers a continuum of five categories of criminally exploitable ties as summarised in Table 5.4 below. Of note, in applying and testing the new model in Chapter 6, a new category 6 was identified by the author and is also included.

Table 5.4: Continuum of criminally exploitable ties of a criminal group

	Category	Status	Actors
1.	**Manifest**	Active	• Actual co-offenders and facilitators
2.	**Latent**	Dormant	• Available co-offenders and facilitators to be called upon in need
3.	**Potential**	Possible	• Possible co-offenders and facilitators based on convergence settings and matching dispositions
4.	**Contributory (unwitting)**	Active	• Actual unwitting accomplices who are not aware of the illegality of their role
5.	**Contributory (passive)**	Passive	• Passive influential bystanders who contribute to the outcome of a criminal endeavour by passively standing by without interfering
6.	**Contributory (consumers)**	Active	• Actual consumers and end-users of the illicit goods and services

Source: Adapted from von Lampe (2016) and extended by the author

As von Lampe (2016:123) further explains, an understanding of how these exploitable ties are formed underpins the 'level of resilience of criminal structures'. With potential ties, examples of convergence settings include criminal haunts such as drinking and gambling clubs, and prisons, where criminals with similar dispositions may potentially meet. Examples of those who passively stand by without interfering include those who are sympathetic due to some 'subcultural value system' or 'personal allegiance', to those who find it 'inconvenient or burdensome or risky' to intervene, and those who do 'not realise the illegality of the activities they observe' (von Lampe 2016:109). In particular, in relation to terrorism, organised crime and corruption, Holmes (2007:17) argues:

> Unless an attempt is made to understand how and why various criminals are sometimes embedded in communities whose members are aware of their neighbours' illegal activities but do not report them to the authorities, there will be less progress in combating these three types of behaviour than there could and should be.

Although von Lampe (2016) created the concept of criminally exploitable ties to explain organised crime, it may also be adopted to explain terrorism, notably sympathetic bystanders of similar ideological, religious or political beliefs. Other forms of crime, such as domestic violence, burglary or drugs may also be analysed using this concept to explain enablers or facilitators of criminal conduct, in particular individuals that fall into the 'contributory' category of other crimes, such as passive neighbours or bystanders who do not intervene or alert the police. The new category 6 represents an active contributory set of actors that are either consumers or end-users of the illicit goods and services offered, and in doing so, are themselves enabling or facilitating criminal conduct; for example, drug-users.

In consideration of the crime-terror nexus, Makarenko's (2011) crime-terror continuum categorised as three planes, could also be mapped to von Lampe's criminally exploitable ties to better understand the actor ties between the two groups. As described in Chapter 2, the three planes are i) operational nexus: where one group adopts the tactics of the other or where the functional merging of each group in terms of an ad-hoc alliance or integration occurs between the groups; ii) evolutionary nexus: where the tactics and motivation of one type of group turns into the other, i.e. a terrorist group may evolve into an organised crime group or vice-versa; and iii) conceptual nexus: where a hybrid group emerges and simultaneously displays ideological and economic motivations by engaging in acts

of both terrorism and organised crime. Based on these descriptions, it appears that Makarenko's operational nexus would appear in categories 1 to 6, the conceptual nexus in categories 1 and 2, and the evolutionary nexus in category 1 of Table 5.4 above.

5.4.4   Analytical tool

As explained in Chapter 3, complexity promotes patterned thinking and suggests the key to understanding complex systems is contained in the patterns of relationships and interactions amongst a system's actors. While it is difficult to predict the exact state and outcome of a complex system, it is generally possible to model its overall behaviour. As such, complexity lays emphasis not on the *disorder* of the system, but on the *order* or patterns inherent in the system. As an analytical tool, step three will provide a way to discern such patterns and provide a richer understanding and appreciation, as well as indicators, of particular events.

To begin, the concepts of fitness landscape and criminally exploitable ties are synthesised to generate the population of actors present in a fitness landscape of any given complex system. For the avoidance of doubt, this population of actors is not the same as the actor data set generated in step one, although they may share common actors. The actor data set in step one is to ensure a variety of perspectives are considered in the complex data set of which some will also form criminally exploitable ties. To generate the actor population, the information is categorised and structured by actor type and estimated volume, together with a measure of the actor's interconnectivity strength. In other words, how attached the actors are to the system under study as measured by the degree, state or quality of the actor's affinity. For social phenomena, this may be measured by the degree of a common goal and shared needs of the actors. In a criminal group, for example, their common goal may be illicit wealth and their shared needs operational. For optimal fitness, complex systems are moderately interconnected, with some weak and strongly interconnected actors. The resulting information may be populated in tabular and/or infographic form. An illustrative example of an organised crime group's fitness landscape, whose principal activity is car theft, is generated in tabular form in Table 5.5 below.

Table 5.5: Tabular representation of a criminal group's fitness landscape

Actor category	Actor type	Number actors	Percentage of total	Interconnectivity band
1. Manifest	• Leader	• 1	• 1%	• Strong
	• Gang members	• 10	• 10%	• Strong
	• Lawyer	• 1	• 1%	• Moderate-strong
	• Accountant	• 1	• 1%	• Moderate
2. Latent	• Lawyer	• 1	• 1%	• Moderate
	• Drivers	• 5	• 5%	• Moderate
	• Forgers	• 2	• 2%	• Weak-moderate
3. Potential	• Perpetrators	• 9	• 9%	• Weak
4. Contributory (unwitting)	• Transporters	• 5	• 5%	• Weak
5. Contributory (passive)	• Neighbours	• 30	• 30%	• Weak
6. Contributory (consumers)	• Buyers of stolen cars and parts	• 35	• 35%	• Weak
Total	**Population**	**100**	**100.0%**	

Source: Author's illustration

Based on an analysis of Table 5.5 above, in this population of criminally exploitable ties, the organised crime group has 11% strong, 1% moderate-strong, 7% moderate, 2% weak-moderate, and 79% weak interconnections in its fitness landscape. To better discern the shape of the group's fitness landscape, the information in Table 5.5 may also be depicted graphically as in Figure 5.5 below, where the x-axis represents the interconnectivity strength and the y-axis represents the population of actors in a system. The graphical representation helps to better visualise the percentage and types of actors contained in the fitness landscape.

Figure 5.5: Graphical representation of a criminal group's fitness landscape
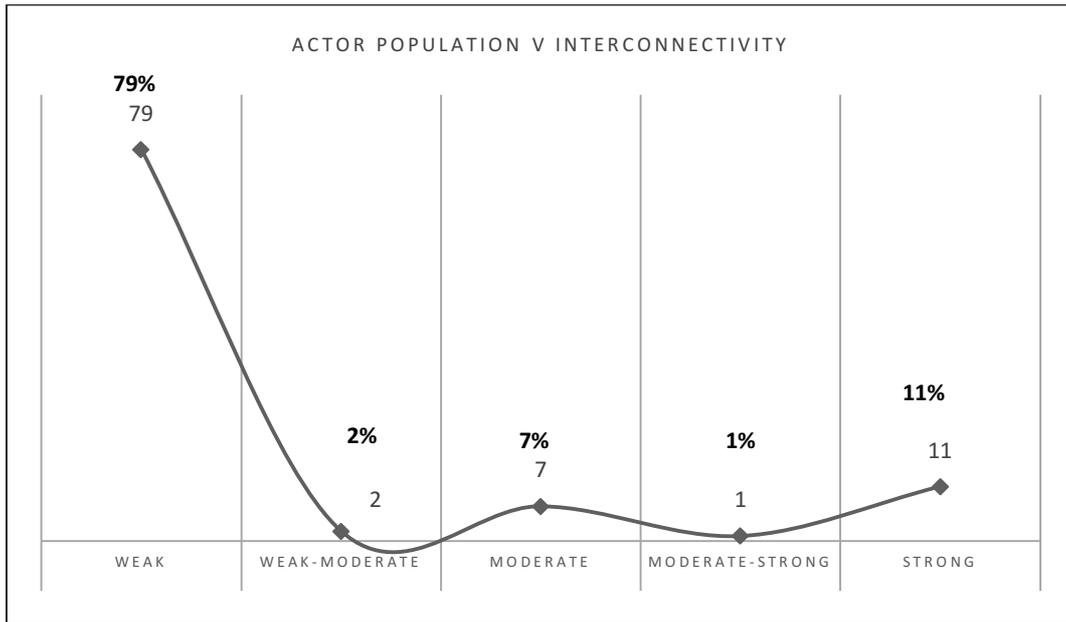
Source: Illustrative example based on information in Table 5.5

Moreover, on further analysis, the composition of each interconnectivity band (shaded from dark-light; strong-weak) by actor category, may also be depicted graphically as in Figure 5.6 below.

Figure 5.6: Interconnectivity composition of a criminal group's fitness landscape
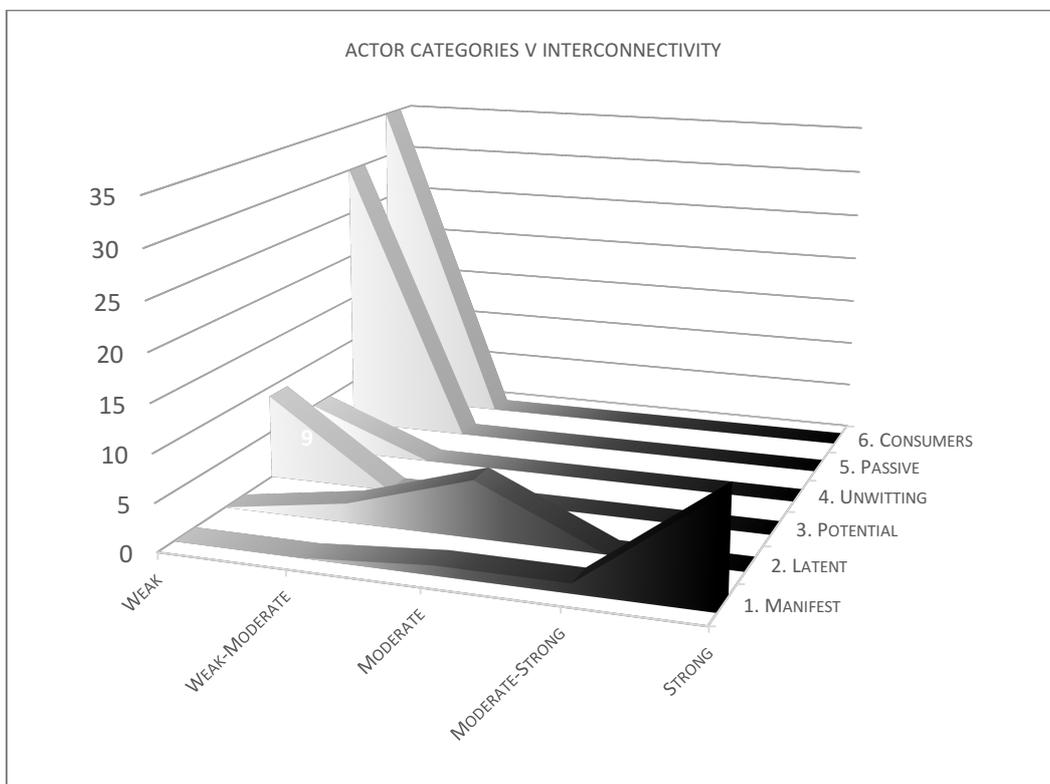
Source: Illustrative example based on information in Table 5.5

As depicted in Figure 5.6 above, the strong and moderate-strong interconnectivity bands of the criminal group are comprised solely from its manifest category of criminally exploitable ties. This is not surprising given that the core criminal group, including its leader and gang members, sit in this category. What is surprising however, is the significance of the contributory categories 5 and 6 of criminally exploitable ties, comprising a large proportion of the weak interconnectivity band. For this criminal group, Figure 5.6 helps to better identify and understand key vulnerabilities in the group and individual members.

5.4.5 Visual imagery

To complement the graphical representations in Figures 5.5 and 5.6 above, a visual representation using a new fitness landscape metaphor, to better visualise and understand the diverse set of criminally exploitable ties is considered. As noted in Chapter 4, visual imagery allows the reader to better visualise and grasp the complexity concepts being used to frame the new approach and aid sense-making. As noted earlier, there are a number of descriptive metaphors in complexity and landscapes is one such metaphor. As depicted earlier, a traditional fitness landscape may be represented by a terrain of peaks and valleys. However, to better grasp some of the underlying concepts of complexity, a new fitness landscape metaphor is offered in the way of urban geographies with buildings, rather than terrains, and is included as a contrast in Figure 5.7 below.

Figure 5.7: Traditional v new imagery of a fitness landscape

Traditional   *New*
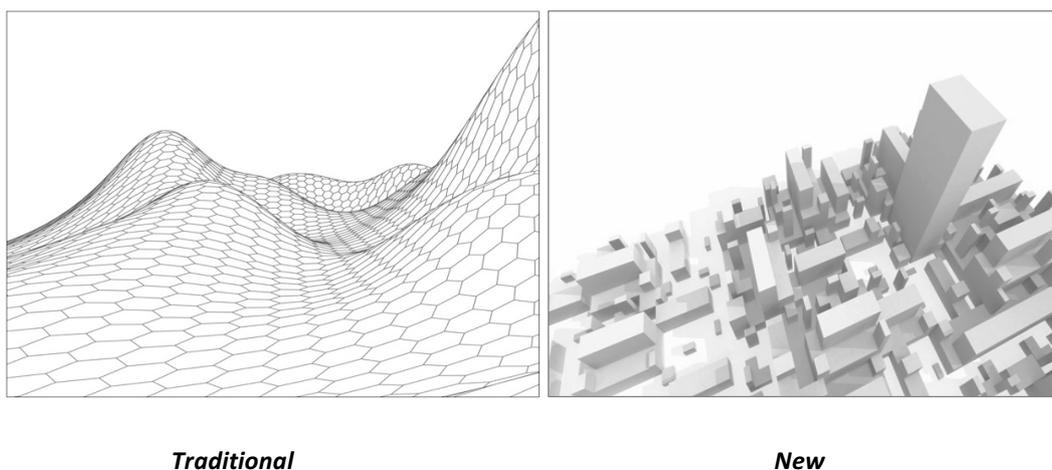
Source: Standard and author's new imagery (using licensed images)

As seen in Figure 5.7 above, building imagery in urban geographies suggests buildings can be built at different heights, knocked down, weakened or simply

replaced as a city expands or contracts. If you think about the fitness of an actor in a particular system, an actor can be represented by a simple building. If the actor is fitter than the others, its building will be taller and the fittest actor will have the tallest building. The landscape overall will represent an urban geography where a particular system can be thought of as a town or city of buildings within the landscape. As this landscape represents fitness probabilities of where buildings may be located, and at what height, it also represents wider complexity concepts, such as feedback from neighbouring buildings, and co-evolution of new towns or cities across boundaries. To provide a clear breakdown of the new metaphor, Figure 5.8 below depicts some of the key concepts and new imagery side-by-side for a criminal group.

Figure 5.8: Visual imagery of a criminal group's fitness landscape

	Complexity concept	Visual imagery
1.	**Actor** An actor (an individual or group of individuals) is represented by a single building.	
2.	**Interconnectivity** The measure of the degree, state or quality of interconnected actors correlaties to the height of the building (actor) - e.g. a gang member's building will be taller than a group of drivers.	
3.	**System fitness landscape** A system, such as a criminal group, is represented by a collection of buildings in a town or city. The imagery highlights the differing heights of buildings (actors) depicting the overall fitness landscape. The tallest building would be the leader.	
4.	**Global fitness landscape** On a global scale, the world is depicted as an urban geography where there are a multitude of interconnecting criminal groups (towns and cities) and actors (buildings), although in reality, interconnections are not geographically bound.	
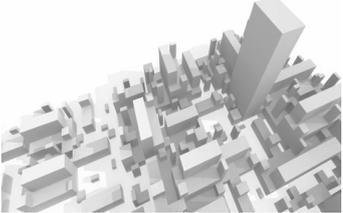
Source: Author's new imagery (using licensed images)

Using this new imagery, information contained in Table 5.5 above may be visualised as a city skyline in an urban landscape as depicted in Figure 5.9 below. The square shaped buildings represent the interconnectivity strength of the actors in order of strength (shaded from dark-light; strong-weak) and the round shaped silos in front of each building represent the volume of actors in each building (also labelled numerically). The tallest building represents the leader and the next tallest represents the gang members' actor group, and so on, until the shortest buildings, which represent the contributory categories.

Figure 5.9: Visual imagery of illustrative criminal group's fitness landscape
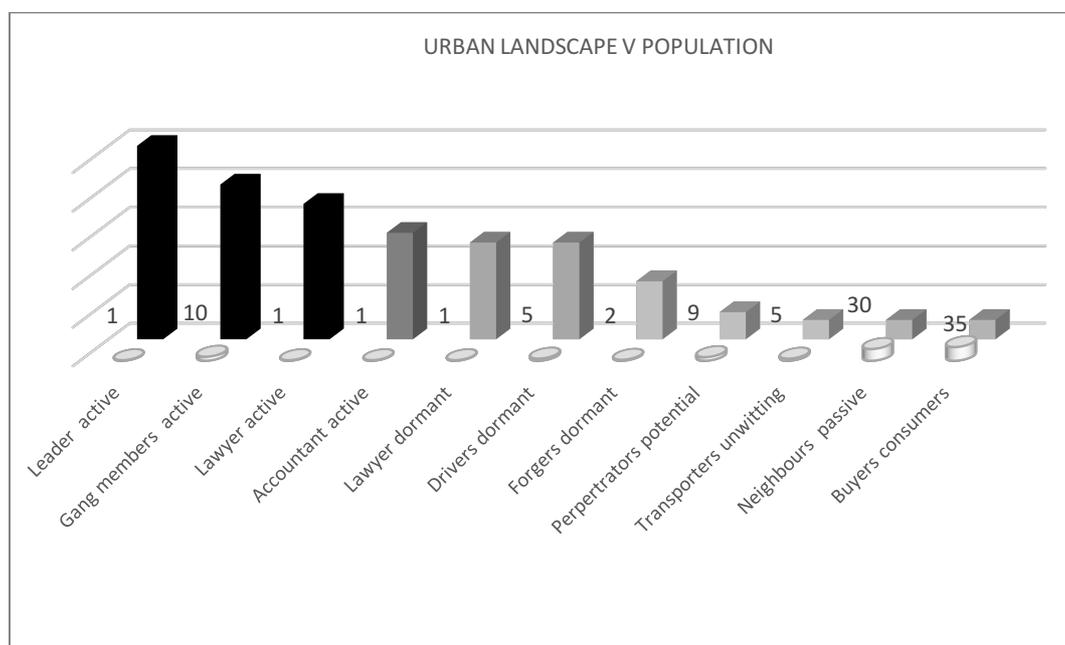
Source: Illustrative example based on information in Table 5.5

As seen in Figure 5.9 above, the visual imagery helps to promote a patterned style of thinking into how the criminal group is shaped and influenced, based on its extended criminally exploitable ties, and helps to better identify opportunities to change, influence and/or disrupt the criminal group as will be seen in step four.

5.5   Step 3: Complexity tool – attractor set

Similar to the macro-level, at the micro-level an overview of step three is provided, followed by detailed explanations of the concepts used, together with the new analytical tool and visual imagery using illustrative examples.

5.5.1 Overview

In summary, from the analysis of the data sets and contextual variables generated in steps one and two, attractor sets are generated for individual actors and the complex system itself, using a concept to map attractors to criminological study and complexity prompts.

5.5.2 Attractors

As explained in Chapter 3, an attractor is a mathematical principle and a location to where a complex system tends to move. It can be best described as a magnet attracting behaviours, thus producing patterns and structures and creating an order within the disorder. If one can identify attractors in the complex data set, then one can better understand the behaviour of actors in the system and the system itself, including vulnerabilities, and hence its use in criminology. Moreover, as an analytical tool, it is important to note that attractors depend on the frequency, regularity, intensity and priority of an actor's exposure. In other words, in a criminal context, the more times an actor is exposed (frequency), the more consistently an actor is exposed (regularity), the earlier an actor is exposed (priority) and the stronger the factor (intensity), then the more likely antisocial or criminal behaviour will occur.

5.5.3 Mapping

In criminological study, as explained in Chapter 3, Young (1997b) suggests that the life of any individual or group may be mapped to four attractors and that each form of crime entails some combination of the four. The four attractors are power attractors, and are economic, social, moral and physical. In this thesis, for ease of reference, the four attractors are coined an 'attractor set'. Attractors can also shape the behaviour of others and a description of each is summarised in Table 5.6 below:

Table 5.6: Mapping of an attractor set to individual characteristics

	Attractor	Individual power characteristic
1.	**Economic**	From one's income and wealth
2.	**Social**	From social relationships, be it family, friends, colleagues, recreation or the community
3.	**Moral**	From shared values, such as religion or ethics
4.	**Physical**	From the use or threat of violence

Source: Summary of Young's (1997b) descriptions

Moreover, in organised crime, Young (1997b) argues that economic power is the key attractor. In contrast, one can argue that moral power is the key attractor in terrorism and in the crime-terror nexus, any one of the four attractors could be key. As a methodology to use attractors in research, Young (1997b:95) also offers a five step approach summarised as follows:

i) locate the attractors hidden in complex data sets;

ii) determine how many attractors exist in the data set;

iii) find the change points(s) at which new attractors are produced;

iv) identify the key parameters which drive the system into ever more uncertainty (for purposes of social control); and

v) determine which setting of those key parameters is acceptable to the whole society (for purposes of social policy).

Although Young does not offer any workable examples, the approach by Young appears promising. In this new complexity model, Young's first two steps are encompassed here in step three and Young's last three steps are encompassed in step four.

5.5.4 Analytical tool

As an analytical tool, in locating attractors, the aim is to identify the values, motivators and issues of concern that guide and shape actor behaviours. At the micro-level of an individual actor, in developing an analytical tool to better organise, shape and structure information, Table 5.6 above may be utilised. Furthermore, as an individual actor also influences and shapes those around them, as well as the system itself, it would also appear reasonable to map the characteristics of a criminal group to Young's (1997b) attractors. Drawing on Canada's Criminal Intelligence Directorate's set of 14 characteristics of a criminal group as described in Chapter 2, together with their descriptions, these characteristics may be mapped to the attractor set as depicted in Table 5.7 below (Richards 1999). As argued by Young (1997b), Table 5.7 also confirms the economic attractor as being key in organised crime.

Table 5.7: Mapping of an attractor set to criminal group characteristics

Attractor	Ref	Criminal group	
		Characteristic	Description
Economic	1.	Corruption	The use of illicit influence, exploitation of weaknesses, and the blackmail of public and prominent figures.
	2.	Diversity	In illicit activities, to further insulate the organisation from dependence on one criminal activity.
	3.	Infiltration	Continued effort to gain a foothold in legitimate institutions to further profit or gain a level of protection from detection.
	4.	Insulation	Protection of the organisation's leaders by separating them from the soldiers, cell from cell, and function from function.
	5.	Monopoly	Control over certain criminal activities within a geographic area with no tolerance for competition.
	6.	Sophistication	In the use of advanced communication systems, financial controls, and operations.
	7.	Mobility	A disregard for national and jurisdictional boundaries.
Economic, Social & Moral	8.	Motivation	Organised crime: power and influence resulting from material and social gains. Terrorists: changes in society resulting from ideological, political or religious beliefs.
Moral	9.	Continuity	Like a corporation, the organisation survives the individuals who created and run it.
	10.	Subversion	Of society's institutions and legal and moral value systems.
Moral & Social	11.	History	Has allowed entrenchment and refinement of criminal activities and practices.
	12.	Bonding	Individual to individual, and individual to organisation, for solidarity and protection, often through complex initiation rites.
Physical	13.	Violence	Used without hesitation to further the criminal aims of the organisation.
	14.	Discipline	The enforcement of obedience to the organisation through fear and violence.

Source: Author's synthesis and mapping

Based on the analyses of the data sets and contextual variables generated in steps one and two, together with complexity prompts, the attractor sets of individual actors and the system itself, may be located using the analytical mappings set out in Tables 5.6 and 5.7 above. Throughout the process of locating the attractor sets, a change from 'close' reading to 'broad picture' reading and back again should be utilised to ensure all attractors are captured. An illustrative example of the new analytical tool, mapping power characteristics to the attractor set, including reference to supporting fractal fragments, is depicted in Table 5.8 below.

Table 5.8: Attractor sets: individual actor and criminal group

	Power characteristics	
Attractor	**Individual actor**	**Criminal group**
1. Economic		
2. Social		
3. Moral		
4. Physical		
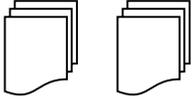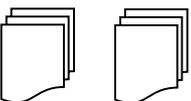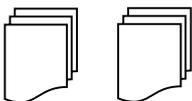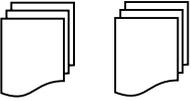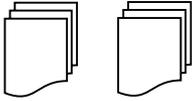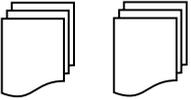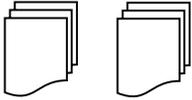
Source: Author's illustration

5.5.5 Illustrative worked example

An illustrative worked example is drawn from the research of the European Falcone organised crime research programme as discussed in Chapter 2. The research was based on questionnaires and interviews with members of key agencies in European states, including access to closed police investigation files (van de Bunt & van der Schoot 2003a; Levi & Maguire 2004). In this example, the overarching criminal activity is car theft. The facts of the case are sourced from Levi and Maguire (2004:430) and may be further summarised as follows:

- A car theft was brought to the attention of the UK authorities by German

police officers, when a stolen Mercedes car (German owned) was located on a dockside on the English south coast using a satellite tracking device.

- Upon investigation, the UK police located several additional vehicles inside shipping containers.

- It transpired that these vehicles had been stolen by an organised crime group – using both UK and German offenders – and were all destined to be shipped out for sale in Nigeria.

- The UK and German offenders each had specific roles to play.

- The UK offenders committed identity theft and credit card fraud. They used the true names and addresses of innocent individuals to fraudulently apply for American Express credit cards and redirected the mailing of the credit cards to addresses accessible by the criminals.

- Armed with the fraudulently obtained credit cards, and false passports to match the names on the cards, some of the UK criminals then presented themselves as tourists at a car rental organisation in Germany and hired the vehicles.

- The UK criminals ('the couriers') passed the hired vehicles on to the German criminals ('the drivers') who delivered them to more German criminals ('the fixers').

- The German fixers arranged for false number plates to be fixed to the cars and for another set of drivers ('fixer drivers') to take the cars to the docks and by ferry to England, delivering them eventually to a shipping company.

- A corrupt shipping clerk provided the necessary documentation.

- Innocent parties included the ferry, shipping company, container company and some truck drivers who were to deliver the cars in containers to the docks for the voyage to Nigeria.

- The UK and German police were only able to arrest the shipping clerk and the drivers who worked for the German fixers.

- These offenders refused to name (or else they genuinely did not know) any of the other members of the organised crime group.

In this example, it is important to recognise that the facts form part of a much larger and complex organised crime group and operation. The facts as presented may be reanalysed and shaped into fractal fragments based on the 11 actors involved. For

ease of reference, each actor has been assigned a letter A to K. The new analytical tool to identify attractors in a data set, together with the fractal fragments supporting the analysis, is summarised in Table 5.9 below.

Table 5.9: Illustrative case example: attractor set and fractal fragment analysis

Attractor	Actor	Characteristic	Fractal fragment
Economic	A	Corruption Sophistication	**UK forgers**: corrupt, committed forgery in the UK (counterfeited UK passports), not arrested, contact with UK couriers, ability to counterfeit documents.
Economic	B	Corruption Mobility Diversity	**UK couriers**: corrupt, committed identify theft and credit card fraud in the UK, illegal entry into the UK with a false passport, received and couriered stolen goods in Germany (Mercedes Benz/other vehicles), not arrested, contact with forgers, German car rental company and German drivers, ability to obtain credit card by deception, posed as tourists with fraudulent documentation (passport and AMEX credit card).
Economic	C	Licit world	**German car rental company**: innocent party, owner of stolen goods (Mercedes Benz/other vehicles), contact with UK couriers.
Economic	D	Corruption Mobility	**German drivers**: corrupt, couriered stolen goods (Mercedes Benz/other vehicles) in Germany, not arrested, contact with UK couriers and German fixers.
Economic	E	Corruption	**German fixers**: corrupt, handled stolen goods (Mercedes Benz/other vehicles) in Germany, not arrested, contact with German drivers and German fixer drivers, access to false number plates.
Economic Moral/ Social Violence	F	Corruption Mobility Bonding Discipline	**German fixer drivers**: corrupt, couriered stolen goods (Mercedes Benz/other vehicles) in Germany and UK, arrested (known to the UK and German police forces), contact with German fixers, ferry, shipping clerk and shipping company, refused to name other members of the organised crime group (either through close bonds, obedience to the organisation through fear and violence or genuine ignorance).
Economic	G	Licit world	**UK or German Ferry company**: innocent party, handled stolen goods (Mercedes Benz/other vehicles) from Germany to the UK, contact through German fixer drivers using route/mode of transport.

Economic	H	Corruption	**UK shipping clerk**: corrupt, works for an innocent party (infiltration of shipping company), aided and abetted crime of stolen goods (Mercedes Benz/other vehicles) in the UK (provided necessary documentation), arrested (known to the UK and German police forces), contact with German fixer drivers, refused to name other members of the organised crime group (either through close bonds, obedience through fear and violence or genuinely does not know).
Moral/		Infiltration	
Social		Bonding	
Violence		Discipline	
Economic	I	Licit world	**UK shipping company**: innocent party, handled stolen goods (Mercedes Benz/other vehicles) in the UK and voyage to Nigeria, contact through shipping clerk in the UK.
Economic	J	Licit world	**UK container company**: innocent party, handled stolen goods (Mercedes Benz/other vehicles) in the UK and voyage to Nigeria, contact through shipping company and shipping clerk.
Economic	K	Licit world	**UK truck drivers**: innocent party, handled stolen goods, (Mercedes Benz/other vehicles) in the UK, contact through container company.

Source: Author's analysis based on illustrative example case facts

Based on the partial analysis in Table 5.9 above, it is already apparent that a number of interconnected actors and crime events form this group's overall criminal activity of car theft. If there was more information in the case facts or more details surrounding the time of the case, and contextual variables, this would enable a fuller analysis of attractors and change points impacting on criminal motivation and opportunities. For example, the current life circumstances of the criminal actors to offend and the environment in which they live in; the level of security and monitoring of imports and exports at the UK, German and Nigerian borders for criminal opportunities and ease of activities, including relevant European Union legislation and transnational agreements at the time of the case; and any relevant media 'noise' during the period (i.e. cross-border car theft and identity crime). Nevertheless, based on the partial analysis available, a key observation is readily apparent – the nexus of the illicit and licit worlds. As depicted in the fractal fragments, the licit world is a necessity for this organised crime group to operate and carry out its activity of car theft.

5.5.6 Visual imagery

Using the design principle of visualisation and further developing the new landscape imagery introduced at the macro-level in section 5.4.5 above, Figure 5.10 below depicts how a building or actor in a fitness landscape may be analysed using fractal fragments and attractors.

Figure 5.10: Visual imagery of attractor analysis using fractal fragments

	Complexity concept	Visual imagery
1.	**Fractal fragment** A fractal fragment is a short narrative account where self-similarity and scaling is in place.	
2.	**Fractal fragment analysis** Analysis of the source data set using complexity prompts reveals the fractal fragments.	
3.	**Attractor** An attractor is like a magnet influencing and shaping actor and system behaviour, thus creating patterns and structures in the data.	

Source: Author's new imagery (using licensed images)

The new visual imagery depicts how a fractal fragment represents a much smaller piece of a larger data set with self-similarity and scaling in place and how these pieces may be further categorised and analysed. Furthermore, it is important to recognise that each actor in the system, and the system itself, can also act as attractors in and of themselves, as there is a scaling in place. As depicted in Figure 5.10 above, the attractor imagery depicts the patterned and structured behaviour in each actor and the system itself, leading to opportunities in step four to change, influence and/or disrupt those behaviours and break or change the patterns.

5.6   Step 4: Insights

Step four of the new model draws insights by essentially combining steps one to three of the model. As Maxfield and Babbie (2014:294) point out, 'interpretation is distinguished from analysis because analysis is more systematic and deliberate, whereas interpretation is more speculative and casual'. In other words, interpretation 'is trickier' and is 'where researchers connect their findings to the larger theoretical body of knowledge' (Maxfield & Babbie 2014:294). As complexity studies change in complex systems, insights are drawn based on chronological time periods. Time periods should be selected dependent on the complex system under study; for example, in studying a complex system in hindsight, such as the demise of a criminal group, the time periods may be split between its rise, height, fall and demise as illustrated in Figure 5.11 below, together with key events during each time period.

Figure 5.11: Chronology of key events of a complex system

	1. Rise	2. Height	3. Fall	4. Demise
	Time period 1	Time period 2	Time period 3	Time period 4
Key events	• Key event • Key event • Key event • Key event	• Key event • Key event • Key event • Key event	• Key event • Key event • Key event • Key event	• Key event • Key event • Key event • Key event

Source: Author's illustration

5.6.1   Macro-level

At the macro-level, insights are drawn to better understand the nature and strength of the complex system under study, and why and how it evolved or evolves, including interconnections at and across its system boundaries with other complex systems, such as allegiances and alliances. As explained earlier, it is important to recognise that a complex system may adjust its level of fitness, by adjusting the degree of its interconnectivity, and adjustments may be made by changing the number and strength of actors in the system. Using this knowledge, in hindsight, strategies and measures may be identified that influenced, changed and/or disrupted the fitness landscape of the system under study resulting in actual outcomes of the system. Equally, in prediction, strategies and measures

may be designed to influence, change and/or disrupt the fitness landscape of a system to achieve future desired outcomes.

To better understand and visualise insights, based on the illustrative example of a criminal group in step three, Figure 5.12 below uses the new visual imagery to draw insights into the strategies and measures that may be used to change, influence and/or disrupt the group.

Figure 5.12: Visual imagery of strategies to change a criminal group's fitness landscape

Complexity fitness strategy	Visual imagery
1. Strong interconnections **Target and remove** strong interconnections to weaken and de-stabilise the system. For example leaders may be imprisoned. In the city, the building is targeted and permanently removed.	
2. Moderate interconnections **Weaken** the strength of moderate interconnections as these provide the system its core strength. For example, weakening the affinity of a lawyer by offering them immunity if they become an informant. The building is weakened and the height of the building is lowered.	
3. Weak interconnections **Break and diminish** weak interconnections to prevent adaption and emergence of the system. For example, engage passive neighbours to assist law enforcement or focus on end-buyers of stolen cars. The building is temporarily removed from the city but could be rebuilt.	
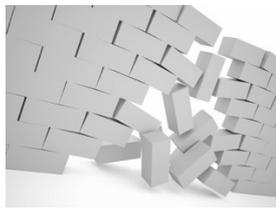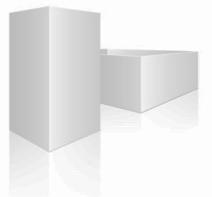
Source: Illustrative example using author's new imagery (using licensed images)

As depicted in Figure 5.12 above, based on the analysis of the fitness landscape in step three, one of the leaders from the manifest category 2, may be targeted for arrest and removed from the criminal group. Next, the lawyer, also from category 2, may be targeted as an informant to weaken their interconnectivity to the criminal group. Furthermore, the passive neighbours from contributory passive

category 5 may have their ties diminished or even broken, by implementing neighbourhood watch schemes or surveillance cameras to assist law enforcement and perhaps collect evidence of the criminal group's activities. In most cases, it is evidence of the crime that often eludes law enforcement such as the infamous Al Capone who was finally charged for tax evasion rather than his underlying criminal activities. Finally, in the contributory consumer category 6, law enforcement may focus on the end-buyers of the stolen cars. With category 6, it is important to recognise, that without this category, the criminal group would not exist, or at least not be involved in the same activities. Moreover, depending on the complex system under study and desired outcomes, it is important to note that strategies and measures may change. For example, in a criminal group, you would want to remove the strongest actors such as its leaders, but in the study of the criminal justice system for example, you may not want to remove the strongest actors, but you may want to change or influence their affinities to the system, depending on what you are trying to achieve. Accordingly, instead of targeting and removing the strongest actors, you may wish to enhance or weaken their strength.

5.6.2   Micro-level

At the micro-level, using the same chronological time periods as at the macro-level, insights are drawn to better understand what guided or guides actor behaviour, including drivers and vulnerabilities, and in turn make inferences about the system as a whole. In hindsight, strategies and measures may be identified that changed, influenced and/or disrupted actor behaviours resulting in actual outcomes of the system. Equally, in prediction, strategies and measures may also be designed to change, influence and/or disrupt actor behaviours to achieve future desired outcomes. As explained in Chapter 3, when considering change points and key parameters to counteract certain behaviours, these will be more effective if exposure is frequent, regular and begins as early as possible. Similar to the macro-level, to better understand and visualise insights, Figure 5.13 below uses the new visual imagery to depict strategies and measures to change, influence and/or disrupt actor behaviour.

Figure 5.13: Visual imagery of strategies to change actor behaviour

	Complexity concept	Visual imagery
1.	**Attractor analysis** Attractors identified in the data set may be analysed to identify opportunities to change or break the patterns of behaviour.	
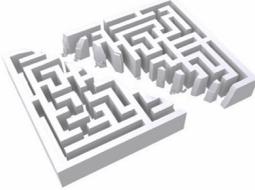
Source: Author's new imagery (using licensed images)

As depicted in Figure 5.13 above, the attractor analysis depicts opportunities to influence actor behaviours by either changing or breaking the patterns.

5.7   Overall model

To summarise the overall new complexity model, Figure 5.14 below depicts the new model diagrammatically.

Figure 5.14: Overview of the new complexity model
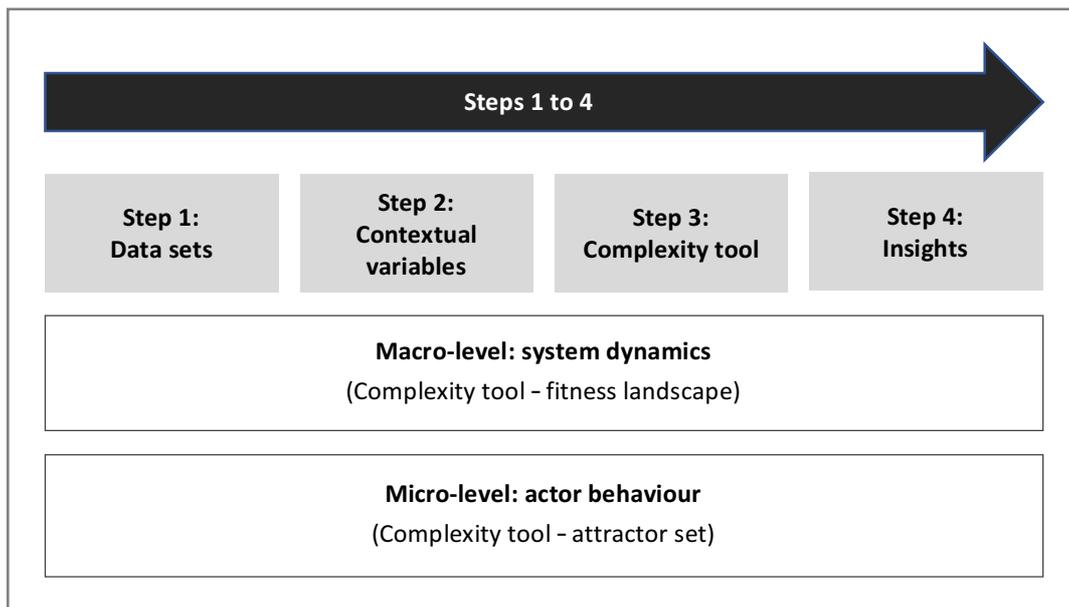
Source: Author's diagram

Overall, as a companion to the case study method, the new complexity model as depicted in Figure 5.14 above, offers the ability to explore the interconnectedness of the whole 'eco-system' in which crime occurs. By developing two complementary components, the new model also allows the study of a criminological phenomenon as an integrated whole.

Furthermore, Table 5.10 below sets out the four distinct steps, applicable and workable at each level.

Table 5.10: The four steps of the new complexity model

	Macro-level	Micro-level
1.	**Data sets**	
	Generate data sets (source data set, actor data set and complex data set) for the complex system under study, using criminological frames of reference and complexity prompts, including fractal fragments.	As a subset of the macro-level data sets, generate data sets for individual actors, using criminological frames of reference and complexity prompts, including fractal fragments.
2.	**Contextual variables**	
	Identify and analyse contextual variables from the output in step one using complexity prompts.	As a subset of the macro-level contextual variables, identify and analyse contextual variables for individual actors from the output of step one, using complexity prompts.
3.	**Complexity tool**	
	Populate the complex system's fitness landscape, from the output in steps one and two, together with criminological frames of reference and complexity prompts.	Populate individual actors and the complex system's attractor sets, from the output in steps one and two, together with criminological frames of reference and complexity prompts.
4.	**Insights**	
	Draw insights from steps one to three using a timeline, to better understand the nature and strength of the complex system, and why and how it evolved or evolves, including interconnections at and across its system boundaries with other complex systems, such as allegiances and alliances. Strategies and measures may be identified or designed, that changed or changes the fitness of the system, resulting in actual outcomes or desired outcomes of the system.	Draw insights from steps one to three using a timeline, to better understand what guided or guides actor behaviour, including drivers and vulnerabilities, and in turn make inferences about the system as a whole. Strategies and measures may be identified or designed, that changed or changes actor behaviour, resulting in actual outcomes or desired outcomes of the system.

Source: Author's steps

In applying the new model, the case study should be framed within a definitive time period, with contextual variables comprising specific events and/or conditions. Criminological frames of reference relevant to the phenomena being studied should also be used.   For example, in this thesis, step one involves Levi's (2007) six procedural steps and von Lampe's (2003) three core elements to inform the construct of the source data set of a criminal group. In step three, at the macro-level, the concept of criminally exploitable ties is used to ensure the identification

of a more complete set of actors. Also in step three, at the micro-level, the characteristics of a criminal group as developed by Canada's Criminal Intelligence Directorate (Richards 1999) are mapped using a concept (Young's 1997b) to map attractors to criminological study.

As a final point, as observed by Stroup (1997:140), like all 'new, developing theoretical and methodological innovations, creativity and determination are needed'. With innovation, there are usually two ingredients: the creation of new knowledge and the use of the new knowledge to create value. The aim of this chapter was to create new knowledge. The aim of the next two chapters is to create value by applying the new knowledge to the case study of Escobar and the Medellín Cartel.

Chapter 6: Case study macro-level: System dynamics

'Colombians say…that their history and relationships are complex'

Kirk (2003:295), human rights advocate

Chapter 6 sets out the macro-level findings of the application of the new complexity model as described in Chapter 5 to the in-depth case study of Escobar and the Medellín Cartel. It begins with an overview of the case study and complex system under study, the Medellín Cartel, together with the compilation of the macro-level data sets.   An analysis of the macro-level contextual variables, together with the construction of the Medellín Cartel's fitness landscape follows. Based on the data sets, contextual variables and resulting fitness landscape, using complexity prompts, insights are drawn to better understand the nature and strength of the Medellín Cartel, including its rise and fall, and why and how it evolved.

6.1   Case study and macro-level overview

6.1.1   Case study overview

Pablo Emilio Escobar Gaviria ('Escobar') died in 1993, over two decades ago, yet in recent years there has been a resurgence of interest in him and events surrounding his life, including numerous movies, network series, documentaries and books (see Appendix 1). Perhaps the rise and fall of Escobar and the so-called Medellín Cartel is perfect for a Hollywood script, or perhaps enough time has since passed for Colombia to simply reflect and remember. It was during the cocaine boom, in the late 1970s and early 1980s, that Escobar rose from being a petty thief to the boss of the Medellín Cartel and became one of the most powerful and richest men in Colombia. He came from virtually nothing to build an empire, albeit an illicit one, and control a country (Gugliotta & Leen 1989; Strong 1995; Clawson & Lee 1998; Bowden 2002). At the height of his empire, he was named in Forbes' international billionaires list, with an average estimated net wealth of US $3 billion for seven years running, from 1987 to the year of his death (Forbes n.d.). Unlike

most criminals, however, who like to remain in the shadows, Escobar not only desired illicit wealth, but he desired fame and power. Above all, he desired political power and the adoration of the Colombian people (Gugliotta & Leen 1989; Strong 1995; Clawson & Lee 1998; Bowden 2002). In 1982, Escobar ran for and won congressional office as an alternate, but shortly after, he was denounced by the Justice Minister Rodrigo Lara Bonilla ('Lara') as a drug trafficker and dismissed from government a year later. Escobar's decisive action in 1984 to have Lara assassinated started an open and violent conflict with the state. At this time, when terrorist tactics were not enough, some of the Medellín Cartel associates, together with other traffickers, created their own terrorist group *Los Extraditables* (The Extraditables) (Strong 1995; Bowden 2002). Allegiances and alliances also formed between Escobar and/or the Medellín Cartel with local paramilitary groups, guerrilla groups and other local Colombian traffickers and cartels, including the Cali Cartel, together with other international criminal groups and individuals based locally and overseas (Strong 1995; Bowden 2002). Escobar's penchant for violence, however, increasingly over time, began to alienate and eventually erode some of these allegiances and alliances, notably the Cali Cartel (Gugliotta & Leen 1989; Strong 1995; Clawson & Lee 1998; Bowden 2002). Before his death, Escobar was responsible for numerous terrorist acts, assassinations and kidnappings, including the murder of thousands of innocent civilians. In 1993, a decade of open cartel-state violence ended with Escobar's death. He was shot on a roof top in Medellín attempting to escape at the hands of state forces led by Colonel Hugo Martinez ('Colonel Martinez'). In the aftermath, the Medellín Cartel disbanded, with the Cali Cartel reaping the rewards, until its own demise a few years later. Following the demise of the two main cartels, criminals became less overt and the drug trade less organised and fractured, although the drug trade continued (Clawson & Lee 1998; Bowden 2002). More importantly, it signalled the end to Escobar's reign of terror and violence in Colombia, and the end to Medellín being the murder capital of the world (Bowden 2002).

In studying Escobar and the Medellín Cartel, the literature reveals a tendency to focus on one or more aspects of the drug trade, or criminal structures and/or activities, rather than a holistic study of the conditions that allowed them to emerge in the first place. One notable exception is by the economist Francisco Thoumi, who has studied the Andean drug trade in detail. While Thoumi (2003; 2014) considers a more holistic and multi-disciplinary approach to the problem,

including a study of the conditions that gave rise to the cartels, Thoumi does not offer any discussion on complexity, which would lend itself to his work.

Using the new complexity model as described in Chapter 5, this case study attempts to separate fact from Hollywood fiction and contribute to the answer on why and how Escobar and the Medellín Cartel evolved, including their nature and strength, and what shaped their behaviour. In doing so, the model attempts to look at Escobar and the Medellín Cartel differently and provide novel insights, by exploring the whole 'eco-system' that allowed Escobar and the Medellín Cartel to flourish, including the formation of allegiances and alliances, all of which played a role in their rise and fall.

6.1.2   Macro-level overview

At a macro-level, the Medellín Cartel as an organised crime group, is the complex system under study. Of note, as most authors agree, while the group is commonly referred to as the Medellín Cartel (and also referred to as such in this thesis for ease of reference), in reality, the group was not a cartel in the economic sense; it was more like a syndicate or collective of individuals and organisations, each with their own separate businesses and operations, that combined to promote a common interest and shared needs (Strong 1995; Clawson & Lee 1998; Bowden 2002; Thoumi 2003; 2014; Reuter 2014).

In this chapter, the macro-level steps will be applied to the Medellín Cartel to look at the dynamics of the system as a whole. In the next chapter, the micro-level steps will be applied to the behaviour of Escobar, as an individual actor in the system, and the behaviour of the Medellín Cartel as the system itself, together with a summary of the overall complexity model case study findings.

Of note, while it is acknowledged that a key focus of the case study surrounds organised crime, as will be seen later in this chapter, the case study also offers a rich source of material in terrorism and the crime-terror nexus to test and apply the new complexity model, given i) the presence of terrorism and the crime-terror nexus in the criminal structures and activities of Escobar and the Medellín Cartel; and ii) the formation of a number of allegiances and alliances, including a terrorist group and two vigilante groups, all of which play a central role in the rise and fall of the Medellín Cartel. To begin, the macro-level steps one to four are summarised and applied in sections 6.2 to 6.5 below:

1. **Data sets**: generate the macro-level data sets of the Medellín Cartel, using criminological frames of reference and complexity prompts, including fractal fragments.

2. **Contextual variables**: identify and analyse the macro-level contextual variables of the Medellín Cartel from the data sets, using complexity prompts.

3. **Fitness landscape**: populate the macro-level fitness landscape of the Medellín Cartel, from the analysis of the data sets and contextual variables, using the criminological concept of criminally exploitable ties and complexity prompts. Populate i) in tabular or infographic form; ii) graphically; and iii) visually as an urban landscape, to better visualise the shape and structure of the Medellín Cartel.

4. **Insights**: based on the macro-level resulting fitness landscape, data sets and contextual variables, using complexity prompts:
   - draw insights to better understand the nature and strength of the Medellín Cartel and why and how it evolved, including interconnections at and across the Medellín Cartel's system boundaries, comprising other complex systems, such as its allegiances and alliances; and
   - on reflection, identify the strategies and measures that changed, influenced and/or disrupted the weak, moderate and strong interconnections of the Medellín Cartel and its ultimate demise.

6.2   Step 1: Data sets – macro

Applying step one of the new complexity model, the source data set, actor data set and complex data set of the Medellín Cartel are generated using criminological frames of reference and complexity prompts, including fractal fragments.

6.2.1   Source data set – macro

As described in Chapter 4, as the creator and ultimate boss of the Medellín Cartel, the case study is framed by Escobar's life (1949-1993) and the operational period of the Medellín Cartel (late 1970s-1993) from the time of its creation (specific year not obtainable) to its ultimate demise. The case study is also framed within key contextual variables, just before and during the case study period, comprising specific events and/or conditions, including Colombia's history as a weak state, armed conflict and undeclared civil war. The source data set has been generated

using Levi's (2007) procedures and von Lampe's (2003) core elements of a criminal group as a component guide and complexity prompts. As summarised in Appendix 1, the macro-level source data set comprises both primary and secondary sources. Not surprisingly, the source data reveals a large number of variables and interconnected actor groups.

6.2.2 Actor data set – macro

From an analysis of the macro-level source data set, the source data reveals 20 actor groups within the macro-level actor data set as depicted in Table 6.1 below.

Table 6.1: Macro-level actor data set: Medellín Cartel

Actor groups
1. The Boss
2. The Leaders
3. The Key Associates
4. The Professionals
5. The Semi-Professionals
6. The Unskilled
7. The Growers
8. The Movers
9. The Dealers
10. The Consumers
11. The Locals
12. The Enablers
13. The Guerrillas
14. The Paramilitaries
15. The Terrorists
16. The International Criminals
17. The Competitors
18. The Colombian State Authorities
19. The US State Authorities
20. The Media

Source: Source data in Appendix 1

As depicted in Table 6.1 above, the actor data set comprises a variety of 'others', from dealers to users, from traffickers to state officials, all with a variety of perspectives. As expected, and summarised in Appendix 2, each actor group contains multiple types of actors resulting in hundreds of perspectives to choose from.

6.2.3   Complex data set – macro

Based on an analysis of the source data set, 150 fractal fragments (i.e. short narratives: either descriptions, stories or accounts) have been identified in generating the complex data set to inform the case study analysis. Wherever possible, fractal fragments were selected in the words of the actors themselves; for example, from primary source documents and secondary source interview and documentary transcripts. A summary of the composition of the complex data set is included in Appendix 3. The composition highlights the number of fractal fragments selected across the types of actors in the actor data set and the selection is distributed across a variety of actors. As noted in Chapter 5, for clarity and ease of reference to inform the case study analysis, each of the 150 fractal fragments has been extracted from its data store (simple file containing analytical categories) and placed directly in the body of the text of this thesis, indented and sequentially numbered, under relevant analytical headings.

6.3   Step 2: Contextual variables – macro

Applying step two of the new complexity model, contextual variables are identified and analysed within a historical, geographical, social, economic, political and media setting, using complexity prompts.

6.3.1   A time and place – macro

The Medellín Cartel leaders, including Escobar, were all born during the same era between the late 1940s and early 1950s, and lived in and around Medellín (Gugliotta & Leen 1989; Strong 1995; Bowden 2002). In Colombia, while its deep-rooted problems go back to earlier colonial times, one of its contributing factors to the difficult conditions of state rule, even today, is its geography (Clawson & Lee 1998; Thoumi 2003). Colombia is dominated by the Andean mountain range, comprising three separate mountain chains and deep valleys, together with part of the Amazon rainforest, tropical grasslands and borders both the Caribbean and Pacific coastlines (Encyclopaedia Britannica 2016). It also borders five countries (Panama, Venezuela, Brazil, Peru and Ecuador) as depicted in Figure 6.1 below.

Along these porous borders, Colombia has a long history of smuggling goods, largely due to Colombia's high import taxes and import restrictions, but also due to its border setting (Mallory 2007; Roth 2010). According to Thoumi (2014:178),

over time 'contraband became an accepted business practice, and corruption was a common business instrument'.

Figure 6.1: Map of Colombia and surrounding countries

Source: Author's licensed image

In contrast to its borders, Colombia's main urban centres are located high up in the Andean highlands between its capital Bogota and the cities of Medellín and Cali. Although these three cities are only c. 300 kilometres apart, as depicted in Figure 6.1 above, the mountainous terrain means all-day road trips or for those who can afford it, air travel to reach each place (Encyclopaedia Britannica 2016). Historically, Thoumi (2014:178) observes:

> The country was formed as a collection of regions with little communication and trade exchanges among them. These isolated regions developed strong local identities and for a long time were highly self-sufficient…the central government was very poor and unable to develop the infrastructure to integrate the country. Urbanisation concentrated government expenditure in urban areas, a trend that accentuated the weak or non-existing state presence in large parts of the territory.
>
> *Fragment 1: Economics scholar*

Today, Colombia's divide between 'a modern, mainly urban country and an archaic, poor, conflict-ridden mainly rural one' still plays a deciding factor in its problems (Reid 2015).

6.3.2   *La Violencia* – **macro**

In 1948, a civil war broke out between Colombia's political parties. While sparked by the assassination of the leader of the Liberal Party, it was largely caused by the

failure of the state to address ongoing socio-economic inequalities (Bailey 1967). The civil war lasted ten years between 1948 and 1958, and was known as *La Violencia (*The Violence) due to the violent manner of the atrocities. Some techniques were so common, that they were given names, such as *picar para tamal (*slowly cutting up a living person's body*)*, *bocachiquiar* (hundreds of small puncture wounds until the victim slowly bled to death) and *corte de corbata* (the Colombian necktie where the victim's tongue was pulled through their sliced throat) (Bailey 1967). In the words of Strong (1995:10-11):

> Bodies were quartered, chopped up into bits and decapitated, the heads kicked around like footballs in village squares. Fingers and hands were cut off until a victim "sang" on his peers. Fathers were made to witness the multiple rape of wives and daughters. Men were castrated and their testicles stuffed in their mouths. Pregnant women had their foetuses removed and replaced by cockerels…corpses were hideously maimed through a variety of "cuts".

Fragment 2: Investigative journalist

According to Bowden (2002:14), these forms of atrocities and 'terror became art, a form of psychological warfare with a quasi-religious aesthetic. In Colombia, it wasn't enough to hurt or even kill your enemy; there was ritual to be observed'. Colombia's rivers literally ran red with blood during this period, and up to 300,000 people killed, up to 800,000 injured and another one million of Colombia's population displaced (Bailey 1967). Overall, some two million people were impacted by the decade-long violent conflict, with the majority of victims 'almost exclusively rural' (Thoumi 2014:178). What is more shocking, is that 'these were not crimes between strangers, but acts of astonishing violence between people who had known each other their whole lives' (Kirk 2003:35). As suggested by Strong (1995:11), it was 'during these years that Colombia gave birth to a culture of violence'. It was also during these years that many associates of the Medellín Cartel, including Escobar, were born and raised. Moreover, Bowden (2002:10) argues that this was also the time where 'the modern history of Colombia starts'.

As discussed earlier (Passerini & Bahr 1997), a general mood and collective behaviour is measured as a property of a group, not individuals. As a group, it can be argued that following *La Violencia,* Colombia's collective consciousness of values, morals, customs and behaviours changed. Moreover, the future of Colombia was left to some of the rural young men shaped by seeing their parents and loved ones tortured, their mothers and sisters raped and their homes destroyed. This was set against the backdrop of a weak and mistrusted state led

by Colombia's elite with the 'outright lack of its presence' in the form of police stations, courts, schools or hospitals in the rural poverty struck regions and widespread land expropriations (Thoumi 2014:179). As a result, in many rural regions, 'guerrilla organisations were welcome because they imposed order in the existing power vacuum' (Thoumi 2014:179). It was also a time where, 'honesty meant keeping your word, it did not mean keeping the law' (Strong 1995:14).

6.3.3   Society and the economy – macro

In the US, two social events significantly influenced the conditions that led to the rise of the Medellín Cartel. The first being the influx of Colombian immigrants during the 1960s and 1970s and the second being the explosion in the demand for cocaine during the 1970s and 1980s. A 1977 *Newsweek* magazine article best describes the early cocaine scene and social trend in the US (cited in MacQuarrie 2015:27):

> Cocaine's popularity has spread so vastly within the last few years that it has become the recreational drug of choice for countless Americans…Among hostesses in the smart sets of Los Angeles and New York, a little cocaine, like Dom Perignon and beluga caviar, is now de rigueur at dinners. Some party-givers pass it around along with canapes on silver trays.

Fragment 3: Consumers (in a media report)

In the documentaries *Cocaine Cowboys* (2006) and *Cocaine Cowboys Reloaded* (2014), together with the movie *Blow* (2001) based on a biography of George Jung's ('Jung') life, a key associate of the Medellín Cartel, the impact of the cocaine scene is not just read on a page, it comes to life in pictures vividly portraying the gravity of its excess. Cocaine became glamourous – something to be followed like a fashion – which in turn increased its demand and popularity in the US. In an interview, Jung comments on how society and the media had turned cocaine into a status drug and how initially the US government had turned a blind eye, due to it being used by the rich and famous (*Frontline* 2000c):

> I felt that there was nothing wrong with what I was doing because I was supplying a product to people that wanted it and it was accepted…I don't think anybody understood it or really knew what the hell was going on…I mean Madison Avenue promoted cocaine. The movie industry. The record industry. I mean, if you were well to do and you were a jet-setter, it was okay to snort cocaine. I mean Studio 54 in New York, everybody was snorting cocaine…The government allowed the media and the record industry and the movie industry to promote [cocaine] and nobody ever stood up. Nobody ever said no to this.

Fragment 4: Medellín Cartel associate

Similarly, in Colombia, in an interview with Juan David Ochoa Vásquez ('Juan Ochoa'), one of the Medellín Cartel leaders, Juan Ochoa notes that at the beginning of the drug trade (*Frontline* 2000e):

> It wasn't properly accepted, but nobody ever said anything about it. And since nothing dangerous or grave had happened, there were no repercussions in getting involved.

Fragment 5: Medellín Cartel leader

Later on, however, the change from the expensive form of cocaine to the relatively inexpensive form called crack, soon became popular amongst the poorer classes in the US. This not only impacted the addicts, but the people these addicts would steal from to sustain their addiction, causing an epidemic of violence and crime across the US cities linked to cocaine trafficking (Bowden 2002). As demand grew over time, it was the Colombian immigrants in city hubs like Miami, New York and Los Angeles, that allowed the Colombian traffickers to quickly develop their trusted networks, including distribution and money laundering. It was also the use of fellow nationals that reduced the risk of infiltration by US authorities (Thoumi 2014). In Colombia, as demand grew, society, including state officials, saw drug trafficking as a US consumer problem, not a Colombian producer problem. According to Lewis Tambs ('Tambs'), US Ambassador to Colombia in 1983-85 ('The Godfather of Cocaine' 1997):

> When I was ambassador down there, basically, the Colombians felt that it was not a Colombian problem. They didn't use it and, basically, it was going to the consumers in the US. They were making money. And it was a US problem, not a Colombian problem.

Fragment 6: US government official

In simple terms, if there had been no consumers, there would have been no demand. At the same time, socio-economic conditions in Colombia persisted and contributed to the rise of the Medellín Cartel. Where the social fabric was already stretched thin, 'these conditions furnish[ed] a ready recruitment pool for organised crime groups' (Roth 2010:411). Instead of focusing on the negatives, Colombian society focused on the positive economic benefits such as employment and business growth. After all, cocaine was a highly profitable business, largely due to its illegal status, the risk of smuggling it and its steady US demand (Thoumi 2003; Reuter 2014). Unfortunately, Colombian society did not foresee the grave consequences of the drug trade, such as the perpetual cycles of corruption and violence (Thoumi 2003). From increased employment and businesses that laundered the money, including the unprecedented rise of the national and state-

wide football teams from narco-dollars, to elite social clubs that opened their doors, and to corrupt state officials and officers who exchanged favours for cash, Colombian society had a comfortable relationship with the drug traffickers (Mallory 2007; *The Two Escobars* 2010). There was not only a nexus, but a blurring of lines between the licit and illicit worlds. Society had lost its moral compass. Essentially, at the beginning, at a social and economic level, both the US and Colombia turned a blind eye, and as a consequence, allowed the Medellín Cartel to emerge and flourish.

6.3.4 Politics – macro

In 1971, the US President Nixon first declared the US 'war on drugs', although at this time, his key concern was marijuana and the opium trade, not cocaine. It was not until the mid-late 1970s that cocaine started to become a US problem. It was also a time where counter-narcotics in cocaine was practically non-existent in Colombia and overseas, including the US (Kenney 2011; Porter 2015). This initial lack of law enforcement certainly contributed to the conditions that allowed the Medellín Cartel to emerge with exponential growth. It was not until 1980, to address its increasing cocaine problem, that the US Reagan administration overhauled the *Comprehensive Drug Abuse Act 1970* to strengthen its counter-narcotics efforts both domestically and overseas (Kenney 2011). In the words of US President Reagan at the time ('The Godfather of Cocaine' 1997):

> My very reason for being here this afternoon is not to announce another short-term government offensive, but to call instead for a national crusade against drugs, a sustained, relentless effort to rid America of this scourge by mobilising every segment of our society against drug abuse.

Fragment 7: US President

The US also significantly increased its law enforcement, but at a cost to its drug rehabilitation programs (Kenney 2011). Essentially, the Reagan administration had implemented a new strategy. It had largely passed on the responsibility and blame of the drug problem onto producing countries, including Colombia, pressuring them into implementing tough counter-narcotic efforts, even though these countries had weak state rule, a lack of law enforcement and limited budget (Kenney 2011). Although the US provided monetary aid, most of the cost still rested with the producing countries (Kenney 2011). It was not until the election of US President Bush in 1988, that finally put the US on a collision course with the

Medellín Cartel. In contrast, the Colombian government was well aware of the growing drug problem. However, it's key concern was widespread corruption, not the drug problem. In an interview with Colonel Martinez, even in the early 1970s (Streatfeild 2000):

> It started with the corruption, especially in the northern departments up by the coast. The army was sent in to fight drugs, but the corruption was so bad that you had generals in jail.

Fragment 8: Colombian law enforcement

Increasingly, wealthy traffickers were able to bribe politicians, the judicial and law enforcement agencies to a point where arrested traffickers rarely did time in jail. They were either released on legal technicalities or simply escaped (Strong 1995; Bowden 2002). For the handful of successful prosecutions, traffickers paid off other judges, together with the police, to release them or simply look the other way while they escaped (Strong 1995; Bowden 2002). In terms of legislation, it can be argued that three legal issues greatly influenced the conditions that led to the rise and fall of the Medellín Cartel: i) legalisation of cocaine; ii) extradition laws between Colombia and the US; and iii) money laundering legislation. Drawing on the complexity concept of sensitivity to initial conditions, otherwise known as chaos theory, a slight change in any one of these variables would greatly influence the conditions of the Medellín Cartel, and in the case of extradition laws, it did.

Legalisation of cocaine

Much has been written on legalising drugs such as cocaine and how this impacts the 'war on drugs'. In the words of Juan Ochoa, one of the Medellín Cartel leaders (interview in *Frontline* 2000e):

> They should also punish those who sell liquor, because it's just as or more dangerous than cocaine, but it's legal. It's just a manner of seeing things.

Fragment 9: Medellín Cartel leader

As some would argue, drug use and addiction is a health problem, not a criminal one. In turn, it should be treated as a health problem, not a police or military one. While the debate on legalisation continues, there is no doubt that cocaine's illicit nature created and still creates the initial opportunity for traffickers, such as the Medellín Cartel, to do business (Clawson & Lee 1998; Thoumi 2003). As Kauffman (1995:217) argues through a complexity lens, 'goods and services "live" in niches created by other goods and services' and it is the illicit nature of cocaine that

creates the niches of so many other illicit goods and services surrounding the drug trade.

Extradition

Throughout the operational period of the Medellín Cartel, the legal status of extradition was cyclically on and off Colombia's negotiating table in response to popular public opinion and/or pressure from the US. At any given point in time, the legal status of extradition played a pivotal role in the behaviour and actions of the Medellín Cartel and its leaders. Extradition was the one thing that all traffickers feared the most. A popular saying by the traffickers was 'better a grave in Colombia than a prison cell in the US' (Strong 1995; Bowden 2002; Escobar JP 2016). As put by Jorge Luis Ochoa Vásquez ('Jorge Ochoa') one of the Medellín Cartel leaders, extradition was feared (interview in *Frontline* 2000d):

> Because justice for a Colombian is different than the US and for an American...and the natural thing is that one should be judged in one's own country, not in a country that is not one's own.

Fragment 10: Medellín Cartel leader

Or, in other words, in Colombia, traffickers could easily bribe their way out of jail or at least serve minimal prison time. In the US, however, bribery was not an option and prison time usually meant life.

Money laundering

Money laundering is the process of converting 'dirty' money generated by a criminal activity to make it appear legitimate, in other words 'clean' money from a legitimate source (Lilley 2006; Levi 2014). During the Medellín Cartel's reign, authorities were initially unaware that millions of dollars were being laundered through the international banking system, including the US. This was due to an initial focus on the physical movement of drugs, not the money trail (Mazur 2009). However, that all changed by the mid-1980s as depicted in the 2016 movie *The Infiltrator* based on the 2009 book by Robert Mazur ('Mazur'), a US undercover special agent (Mazur 2009). In 1984, Mazur began five years undercover to infiltrate the criminal hierarchy of the Medellín Cartel and befriend the bankers and businessmen behind the Medellín Cartel's money laundering operation. In 1989, the operation culminated in one of the largest money laundering prosecutions at the time, eventually bringing down an entire global bank, the Bank

of Credit and Commerce International, which ceased operations in 1991, together with scores of Medellín Cartel associates (Mazur 2009). While money laundering legislation and banking regulations existed at the time, robust legislation and stringent regulatory oversight did not (Lilley 2006; Mazur 2009). Even today, despite the overhauling of legislation and regulatory oversight worldwide, bankers still provide unwittingly, or sometimes knowingly, a crucial role between the licit and illicit worlds. In Mazur's (2009:340-341) own words:

> The greatest weakness the drug trade has is banking relationships. Each dirty banker serves dozens of big-time traffickers, but those bankers don't have the stomach to sit in prison for life. That's the best weakness we can exploit and attack.

Fragment 11: US law enforcement

Moreover, during the same period, Colombia's own monetary policies, aimed at preventing flight capital overseas and strengthening its own international monetary reserves, unintentionally facilitated the laundering of illicit money (Thoumi 2003). Colombians overseas were allowed to deposit large amounts of money in Colombia with minimal control, and in turn, Colombian citizens were allowed to exchange large amounts of dollars in Colombia for pesos, no questions asked (Thoumi 2003). The real winner here was not the Colombian government, but traffickers like the Medellín Cartel whose illicit cash was allowed to enter the financial system with relative ease.

6.3.5 Media – macro

As noted earlier, in the freedom of the US press, the US media played a key role in promoting cocaine as a status drug of the rich and famous. In contrast, the US media also played a key role in promoting the subsequent discourse against drugs (Ronderos 2003:216):

> With spectacular and endless stories about drug seizures, drug barons, and countries with weak democracies where drugs, crime, and violence are the rule, the media persuade the public of the great danger posed by drugs not only to society but also to the US as a nation.

Fragment 12: Legal scholar

It was also through the US media that the Reagan and Bush administrations promoted their 'war on drugs' policies, with the official US discourse describing 'drug trafficking as a threat to national security' (Ronderos 2003:216).

In contrast, in Colombia (Encyclopedia Britannica 2016):

> The degree to which the press can exercise its rights has been somewhat dependent upon government in power, as well as the danger of retaliation from drug bands and guerrilla groups. Newspapers have traditionally been the most widely available source of political information and have been least controlled, while radio and television, regarded more as entertainment media, have received stricter government control.

Fragment 13: Encyclopedic document

Of note, traffickers, including the Medellín Cartel, through direct and indirect ownership of news outlets, greatly influenced the Colombian media and public opinion by downplaying their role in the drug trade, promoting their generous social causes and upholding the drug problem as a US consumer one (Escobar JP 2016).

6.3.6   Summary of macro-level contextual variables

In summary, it can be argued that in isolation each contextual variable provides favourable conditions for the emergence of the Medellín Cartel. Taking each variable in turn:

- **Time and place:** Colombia's geography of mountainous terrain and porous borders provided difficult conditions of state rule, even today, allowing the Medellín Cartel to take advantage of the lack of state governance and Colombia's long history of smuggling goods and corruption.

- **Historical event:** During *La Violencia,* it can be said that Colombia's culture of violence began, and it was also during these years, that many associates of the Medellín Cartel, including Escobar, were born and raised. It can also be argued that following *La Violencia,* Colombia's collective consciousness of values, morals, customs and behaviours changed, which greatly benefited the Medellín Cartel.

- **Society and the economy:** In the US, the explosion in the demand for cocaine during the 1970s and 1980s and the earlier influx of Colombian immigrants to subsequently set-up local distribution and money laundering networks were fundamental in the type of criminal activities the Medellín Cartel became involved in. At the same time, socio-economic conditions in Colombia persisted and instead of focusing on the negatives,

Colombian society initially focused on the positive economic benefits of cocaine, such as employment and business growth, which allowed the Medellín Cartel to flourish.

- **Politics**: In both Colombia and overseas, the initial lack of law enforcement over cocaine smuggling contributed to the exponential growth of the Medellín Cartel. Moreover, in terms of legislation, the three legal issues surrounding: i) legalisation of cocaine; ii) extradition laws between Colombia and the US; and iii) money laundering legislation, greatly influenced the conditions surrounding the Medellín Cartel.

- **Media**: The freedom of the US press, and in some respects, the lack of freedom of the Colombian press, dependant on who controlled the media outlets at the time, as well as the danger of retaliation from the traffickers, played a key role in either promoting, downplaying or vilifying the impact of cocaine and the role and activities of the drug traffickers, all of which influenced the initial conditions for the Medellín Cartel to emerge.

However, it can also be argued, that the sum of all variables provides more compelling evidence to support a complexity model of interconnected conditions influencing the Medellín Cartel. In short, prior to any in-depth analysis of Escobar and the Medellín Cartel, the above analysis demonstrates the perfect backdrop or 'perfect storm' of key historical, geographical, social, economic, political and media settings that allowed the Medellín Cartel to emerge and flourish in the first place and leave a path of destruction in its wake.

6.4   Step 3: Fitness landscape – macro

Applying step three of the new complexity model, the Medellín Cartel's fitness landscape is populated based on an analysis of the data sets and contextual variables, using the criminological concept of criminally exploitable ties, together with complexity prompts, to organise, shape and structure the information.

6.4.1   Fitness landscape overview

The ultimate aim of a fitness landscape is to better understand the nature and strength of the complex system under study, including its drivers and vulnerabilities. As noted earlier, the Medellín Cartel was not a cartel in the traditional sense, but a collective of individuals and organisations, each with their

own separate businesses and operations. Essentially, the Medellín Cartel came together geographically, in and around Medellín, to promote a common interest and shared needs based on the illicit drug trade (Thoumi 2003; Roth 2010; Kenney 2011; Reuter 2014). As such, the Medellín Cartel's common interest and goal-alignment was illicit wealth, and its shared needs, amongst others, were in the production and trafficking of cocaine.

Interconnectivity strength

As explained in Chapter 5, the interconnectivity strength of actors in a fitness landscape may be measured as a degree of goal alignment and shared needs. In determining interconnectivity strengths within the Medellín Cartel's fitness landscape, the role of the actor, together with factors such as socio-economic backgrounds, needs and desires, have been synthesised to provide interconnectivity assessments. Due to the degree of subjectivity involved, a sliding scale of five bands has been applied: weak – weak-moderate – moderate – moderate-strong – strong.

Actor population

In estimating the population and volume of actors in the Medellín Cartel, the exact size and structure of the Medellín Cartel remains uncertain. However, based on government intelligence, a number of scholarly attempts have been made to estimate the size and structure of the Colombian cocaine industry. One of the most notable and detailed attempts is by former CIA analyst, Sidney Zabludoff (Clawson & Lee 1998; Thoumi 2003; 2014). Zabludoff's 1994 report was based on extensive interviews with US law enforcement officials and intelligence experts, together with classified intelligence documents (Clawson & Lee 1998). Although his estimates are based on the totality of the Colombian cocaine industry, the fact that his research was at the time of two significant cartels – the Medellín and Cali Cartels – for the purposes of this thesis, it appears reasonable to simply halve the estimates. Of note, Zabludoff (cited in Clawson & Lee 1998:19) estimates that 10 core organisations comprising 500 top-level entrepreneurs dominated the cocaine business at the time. Given the fact that each of the Medellín and Cali Cartels comprised five leaders, each with their own distinct business operations, Zabludoff's estimates appear consistent with the assumption of halving his estimates between the two cartels. Based on Zabludoff's work (cited in Clawson

& Lee 1998:19-20) a range of manifest (active) and latent (dormant) actor types and volumes may be estimated, although not all actor categories comprising the Medellín Cartel's fitness landscape fall within his work. Actor types in the potential and contributory categories, together with certain actor types in the manifest category, have been estimated using other sources as indicated in the analysis below. Also of note, is that in the Medellín Cartel, certain actor types, such as professionals, may be categorised as both manifest (active) and latent (dormant) ties, as some will be actively involved (either full or part-time) and others as and when the need arises (i.e. inactive). As such, when the same actor type may be categorised in each category, a proportion is estimated in both.

Criminally exploitable ties

Based on an analysis of the complex data set using the six categories of criminally exploitable ties as described and explained in Chapter 5, Figure 6.2 below provides an infographic overview (one excluding and the other including category 6) of the composition of actor categories involved in the Medellín Cartel's fitness landscape.

Figure 6.2: Infographic: actor composition of the Medellín Cartel
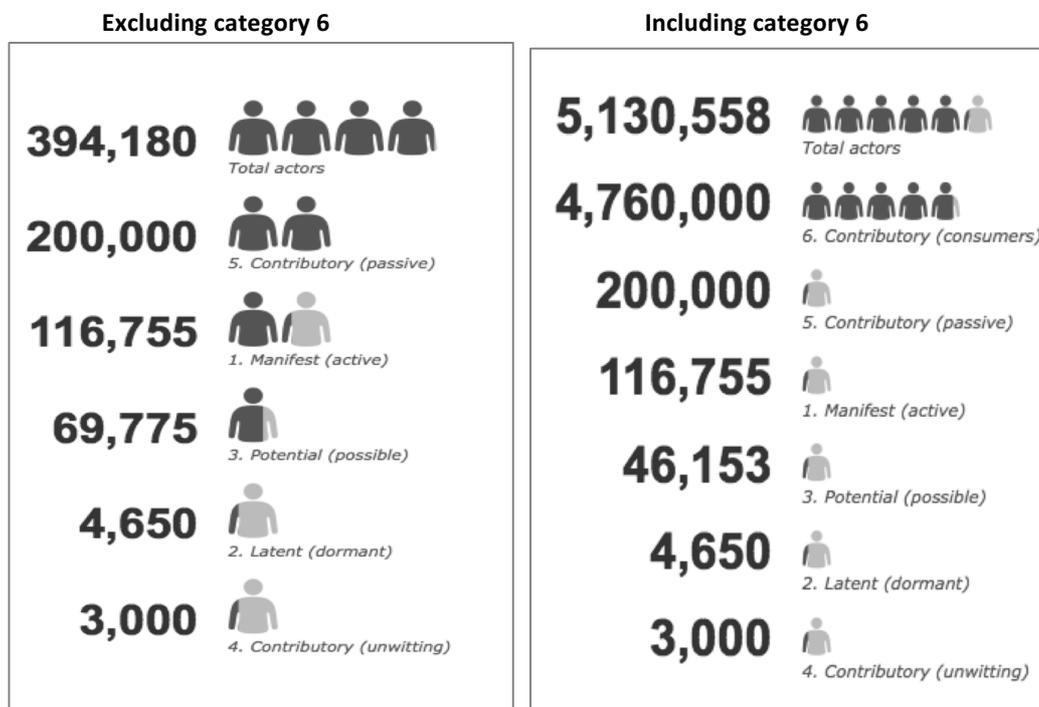
Source: Summary information from Figures 6.3 to 6.8 below based on the complex data set

As clearly depicted in Figure 6.2 above, the contributory actor categories 4 to 6 play an important role in the Medellín Cartel's fitness landscape. As noted in

Chapter 5, contributory actor categories are often overlooked in more traditional analysis of a criminal group. As also clearly evident in Figure 6.2, the volume of actors in category 6 is significant and completely overshadows the other actor volumes. As a result, two infographics, one excluding and the other including category 6, have been provided. As described in Chapter 5, this new category 6 represents an active contributory set of actors that are consumers of the illicit goods and services offered, and in doing so, are enabling or facilitating criminal conduct of the Medellín Cartel. Detailed analysis and discussion of category 6, together with categories 1 to 5 are considered in sections 6.4.2 to 6.4.7 below, including types of actors and interconnectivity strengths.

6.4.2   Category 1: Manifest (active) actors

Manifest criminally exploitable ties comprise active actors involved in the day-to-day running and operations of the Medellín Cartel. Based on an analysis of the complex data set, Figure 6.3 below depicts 12 types of actors in this category, with interconnectivity strengths ranging from strong-weak (shaded from dark-light).

Figure 6.3: Infographic 1: Manifest (active) actors of the Medellín Cartel

Source: Information based on the complex data set referenced in-text

1. **Boss: Escobar**

Starting at the top of the Medellín Cartel, Escobar was the boss or kingpin who led the collective, or in other words, the cartel. As pointed out by Clawson and Lee (1998:47), it was Escobar's 'vast sway over trafficking operations – that is, Escobar's mantle of leadership, his access to the means of violence, and his ruthless domination of smaller exporters [that] held the coalition together and established its identity'. Escobar was essentially 'the heart' of the Medellín Cartel and known as the 'boss of bosses' or simply *El Patron* (the Boss) (Strong 1995; Bowden 2002; Escobar JP 2016). Although Escobar is analysed in the next chapter, an overview of Escobar's background, goals and desires in forming the Medellín Cartel is also considered here for the purposes of establishing his role in the fitness landscape. Unlike the way he liked to portray himself from humble beginnings, especially in

the media and later political spotlight, Escobar was raised in a lower to middle class family by Colombian standards, where his father was a farmer and his mother a school teacher (Strong 1995; Bowden 2002). According to Escobar's brother, Roberto de Jesús Escobar Gaviria ('Roberto'), also a key associate of the Medellín Cartel, Escobar knew what he wanted from an early age (Escobar R 2010:11):

> Even as a very young boy he would tell our mother, "Wait until I grow up, mommy. I'm going to give you everything. Just wait until I grow up." And as he got older he decided, "When I'm twenty-two years old I want to have a million dollars…". And his other great ambition was equally improbable. He intended to become the president of Colombia.

Fragment 14: Medellín Cartel associate & Escobar's brother

Although Escobar did not have a million dollars by the age of 22, he soon surpassed his goal and became a billionaire in his early 30s and one of the richest men in the world. Unlike many Colombians, Escobar had the opportunity to attend school and college, but soon dropped out and preferred life as a petty thief and an accomplished car thief (Strong 1995; Bowden 2002). Escobar soon 'realised that he had created an even more lucrative market. He started selling protection' (Bowden 2002). People paid him to prevent their vehicles from being stolen, so he began to make money on cars he stole as well as those he did not steal. He soon graduated in the world of crime and diversified his criminal activities under the influence of a number of mentors. Assassinations and kidnappings became his speciality, before he followed in his grandfather's footsteps, who had been a bootlegger in his time (Gugliotta & Leen 1989; Strong 1995; Bowden 2002). In a culture where 'risky and illicit business was the norm, and where police, customs and boat captains made a living out of bribery and extortion' it was contraband, not drugs that initially attracted Escobar's attention (Strong 1995:27). However, before long, Escobar went into business with his cousin, Gustavo de Jesús Gaviria Rivero ('Gustavo') and began his cocaine business in the early-mid 1970s. Escobar was the entrepreneur and Gustavo, his cousin, his right-hand man, the administrative brains behind the business (Strong 1995; Bowden 2002; Escobar R 2010; Escobar JP 2016). Eventually, Escobar wanted more and sought out the other Medellín entrepreneurs at the time. It was Escobar's vision of a bigger business, with shared risks, and bigger profits that attracted the attention of others (Strong 1995; Bowden 2002). In the beginning, Escobar's solitary goal of the Medellín Cartel was to be rich and share the operational risks in producing and trafficking

the cocaine. As the boss of the cartel, Escobar's interconnectivity strength is assessed as the strongest.

2. **Leaders: The Ochoa bothers and Gacha**

The leaders of the Medellín Cartel were the Ochoa brothers (Juan, Jorge and Fabio) and José Gonzalo Rodríguez Gacha ('Gacha': as not to confuse him with the Cali Cartel Rodríguez bothers). While each leader maintained their own personal trafficking businesses, including their own pilots, representatives abroad, cocaine packers and shipping routes, they 'all revolved around Escobar' (Clawson & Lee 1998:47). The Ochoa Brothers and Gacha were born during the same era as Escobar and all lived in and around Medellín. While the Ochoa's were an old and respected family from cattle and horse breeding, with an obsession for all things Spanish, the Ochoa brothers were 'not gentry' or rich (Gugliotta & Leen 1989:26). They were lower to middle class and in the mid-1960s, their father opened a family restaurant to make ends meet (Gugliotta & Leen 1989; Strong 1995). The whole family worked long hours and eventually Jorge Ochoa led his brothers into smuggling as he was tired of seeing his family work hard for little return and wanted a better life for his family. It was their uncle, an established smuggler, that introduced them to the cocaine world and his established smuggling routes. Adopting routes influenced by family ties, it was Jorge Ochoa who led and 'dominated the "Ochoa clan" from the beginning' (Gugliotta & Leen 1989:26). Although he dominated the clan, in the words of Gugliotta and Leen (1989:26):

> Yet he was an improbable criminal, quiet to the point of reclusiveness, mild-mannered, family-orientated, and temperate in his personal habits. Except for an occasional glass of white wine, he did not drink. He did not smoke. Cocaine was out the question. He did not permit the word to be uttered in his presence.

Fragment 15: Investigative journalists

Jorge Ochoa was only two months older than Escobar and they knew each other from childhood. Escobar also often dined in their family restaurant and knew the entire family (Gugliotta & Leen 1989). As Escobar looked to expand his routes, the Ochoa brothers certainly held some key cards. Together with the Ochoa brothers, Gacha was the other leader of the Medellín Cartel. Little is known about his background, except that he was born to peasants and known as *El Mexicano* (the Mexican) for his love of all things Mexican (Gugliotta & Leen 1989). At the beginning of his career, Gacha worked in the emerald business as a gunman for an

emerald smuggler. According to Escobar's brother, Roberto (2010:53):

> Most people don't know that in Colombia there has always been more violence for the control of emeralds than there was for drugs. But killing in that business is very casual. Gacha became known in that business for having no fear of anyone and killing people to succeed. At one time he worked in a bar in Medellín that some members of Pablo's organisation like to go to. Even these people, very tough, were impressed by the Mexican.

Fragment 16: Medellín Cartel associate & Escobar's brother

Not surprisingly, Gacha soon met Escobar and formed a 'peasant' bond. Gacha also ran his own business, pioneering the cultivation and refinement of coca in Colombia itself, with the development of jungle plantations and large scale laboratories, adopting the Mexican trade routes used by the illegal emerald trade (Eddy et al 1988; Gugliotta & Leen 1989; Strong 1995; Bowden 2002). Similar to Escobar, the ultimate goal of the leaders was to be rich. More importantly, they all brought something different and valuable to the table. Collectively, their interconnectivity strength is assessed as strong.

3. **Key associates**

At the next level down, based on Zabludoff's estimates (cited in Clawson & Lee 1998:19), the Medellín Cartel had a small elite of c. 250 entrepreneurs or key associates who 'supervise[d] every aspect of the cocaine business, including movement of cocaine from source countries to consumer markets, overseas distribution, and recycling of narcotics proceeds'. The key associates were the most trusted of the Medellín Cartel and formed close bonds with the leaders – most were childhood friends. According to Escobar's brother, Roberto (Escobar R 2010:10):

> Many of the friends we made as children would end up in the business with us, among them Jorge Ochoa, who with his brothers built his own organisation…Vaca, the cow, my closest friend…our very close cousin Gustavo de Jesús Gaviria was the one who eventually started Pablo in the business and became his closest associate.

Fragment 17: Medellín Cartel associate & Escobar's brother

As well as their individual skill sets, most were hired based on trust, through a system where several people vouched for you and if you did not follow through, then you would not only pay with your own life, but with the lives of those who vouched for you (Eddy et al 1988; Gugliotta & Leen 1989; Strong 1995; Bowden 2002). This system was particularly effective for those overseas, with no ready-made family ties in place. Some of the key associates that played a part in the

evolution of the cartel included Fernando Galeano ('Galeano') and Kiko Moncado ('Moncado'), both Medellín based traffickers, and John Jairo Velásquez (also known as 'Popeye') who arranged security and was one of Escobar's leading assassins (Eddy et al 1988; Gugliotta & Leen 1989; Strong 1995; Bowden 2002). Others included family members, notably Gustavo, Escobar's cousin as mentioned earlier and Roberto, Escobar's brother, who was one of his accountants and also skilled in electronics. Of the key associates located overseas, Carlos Enrique Lehder Rivas ('Lehder') and Jung were instrumental to the cartel's success. Lehder pioneered smuggling routes by private aircraft and even bought his own Bahamian island, Norman's Cay, with a private landing strip for refuelling, only c. 300 kilometres from Miami (Eddy et al 1988; Gugliotta & Leen 1989; Strong 1995; Bowden 2002). According to those who knew Lehder, he was described as highly intelligent, yet obsessive. In an interview, Juan Ochoa describes him as 'a very adventurous, curious man. He was an adventurer' (*Frontline* 2000e). As for Jung, as well-documented in his biography turned into the 2001 movie *Blow,* he became a key distributor of cocaine in the US. While some of the key associates came from different socio-economic backgrounds, ultimately, they all wanted to be rich, whether through desire or adventure, and they all brought something different, but important to the cartel. As such their interconnectivity strength is assessed as strong.

4. **Professionals**

One of the most important actor types in any criminal organisation, including its fitness landscape, are the professionals. They are often the key link between the licit and illicit worlds and many turn into informants or become key witnesses in criminal trials – often the accountants and lawyers. Based on Zabludoff's estimates (cited in Clawson & Lee 1998:20), the Medellín Cartel had a group of c. 500 professionals, mostly freelancers. Given the extent of the Medellín Cartel's operations, it is reasonable to assume that c. 75% (375) of these freelancers were active full-time workers and the remaining 25% (125) dormant, as and when needs arise. Included in this well-documented population were pilots (mainly Americans), chemists (including specialists from Germany), financial advisors, accountants, lawyers, brokers and realtors, both in Colombia and overseas (Eddy et al 1988; Gugliotta & Leen 1989; Strong 1995; Bowden 2002). As with most professionals, these actors were not your typical low-life criminals or thugs, they

were experts in their field, from higher socio-economic backgrounds with higher levels of educational and professional training. They also often came across as personable, charming and articulate, which made it difficult to determine which side they were on. One such expert, and later turned DEA informant, was Adler Berriman "Barry" Seal ('Seal'), an American pilot. Seal had been passionate about flying since childhood and at the age of 26 became the youngest 747 pilot in the US. However, following a run-in with some federal agents, his career took a decisive change – smuggling for the Medellín Cartel. As a testament to his expertise (Eddy et al 1988:304-5):

> He raised to an art form the so-called "sea spray height" flying technique, keeping his aircraft so close to the water that spray from the waves misted the windshield. He also pioneered a new aerial smuggling route that avoided both the Bahamas and Florida by exploiting what he called the "lax radar coverage" over the Gulf of Mexico…since most of the flights were at night, Seal equipped himself and his pilots with powerful night-vision goggles, at $5,000 a pair, that magnified available light 50,000 times. He and his men air-dropped duffle bags full of cocaine at predetermined locations in Louisiana, where waiting helicopters took them on to their final destination.

Fragment 18: Investigative journalists

Other less known professionals were military advisers and instructors, especially those linked to other criminal groups, mostly overseas. Given the nature of some of the tactics employed by the Medellín Cartel, especially as the group evolved, a key military adviser was known to be Yair Klein ('Klein'). According to a declassified intelligence report (US Department of Defense 1991:10):

> Yair (Klein) – retired Israeli Army Colonel, Mercenary and expert in Military tactics. Klein sent advisors to the Medellín Cartel to train the cartel paramilitary forces and selected assassin team leaders on how to unleash waves of terrorism in Colombia…Klein also facilitated the transport of weapons and ammunition…which eventually surfaced in the possession of the Colombian cartels and Colombian guerrilla forces.

Fragment 19: US declassified government document

Given i) the freelance nature of these professionals; ii) the alternative means of illicit income from other hiring groups or even licit income from their own professions; and iii) their strong bargaining power if captured of turning informant or key witness for state authorities, their overall interconnectivity strength is assessed as moderate for manifest actors (given their often full or part-time relationship) and weak to moderate for latent actors (given the periodicity as and when needs arise).

5. **Assassins (*sicarios*)**

In Colombia, trained assassins or *sicarios* are best described in a US declassified government document (US Department of State 1993a):

> These young, lower-class killers can be hired by anyone from a jealous husband to Pablo Escobar to kill anyone from his wife's lover to a presidential candidate. True "hitmen", they are cold blooded murderers who will take on any contract if the price is right…The line between arch-enemy narco *sicarios* and guerrilla militiamen is a fine one. The two grow up and live in the same poor *Barrios*, and the acquisition of money is a driving force; both narco-traffickers and guerrilla groups pay a salary. Indeed, Colombian guerrilla groups earn a substantial portion of their livelihood from drugs. A Bogota newspaper columnist recently labelled all of Colombia's violent as "*sicarios*", no matter for whom they work. "Their profession is to kill. Their compensation is the money".

Fragment 20: US declassified government document

Essentially, in Medellín, assassination became such a lucrative business that 'an entire cottage industry' sprung up and became a 'sought-after skill' (MacQuarrie 2015:4). While Zabludoff's estimate of c. 500 Medellín Cartel professionals includes 'assassins', based on other sources, 'some 3,000 hired killers reportedly worked on the cartel's payroll' as *sicarios* (Clawson & Lee 1998:53*)*. In Medellín's city with an estimated population of c. 2 million in the 1980s, 3,000 appears to be a more realistic estimate than Zabludoff's few hundred (Mongabay 2016). Moreover, in a US declassified intelligence report, individual *sicario* gangs comprised c. 100 criminals each and there were numerous gangs in Medellín (US Department of Defense 1991). Based on this analysis, applying the same split between active and dormant actors as the professional freelancers, it is estimated that c. 75% (2,250) of *sicarios* were active with the remaining 25% (750) dormant. As for their interconnectivity strength, as pointed out by Strong (1995:155):

> The adolescent contract killers preferred to live one minute as a somebody than thirty years as a nobody; and when they died, to be wearing Nike running shoes [as their hero Pablo] astride a shiny Japanese motorbike, while their mothers cooed over a new refrigerator. Killing became a way of life, however short that life might be.

Fragment 21: Investigative journalist

Furthermore, most of them came from marginal sectors, with little to no education to enable viable alternatives and match the same pay as a *sicario,* and often started as minors. They also joined to feel a sense of belonging and part of a community, and idolised Escobar, as their families had already benefitted from his generous provision of housing and facilities in and around Medellín that the state could not afford (Strong 1995; Bowden 2002; Escobar R 2010; Escobar JP 2016). Due to the

lack of alternatives, their sense of belonging and devotion to Escobar, it is reasonable to assign a moderate to strong interconnectivity rating for manifest actors and a moderate rating for latent actors due to the periodicity of their relationship.

6. **Specialised employees**

Based on Zabludoff's estimates (cited in Clawson & Lee 1998:20), the Medellín Cartel employed specialised functions employing c. 2,500 plus specialised employees. Due to the need for secrecy and insulation, functions were kept separate from each other so that each function was unaware of the others business. As such, if one part of the business was discovered, the other parts would not be impacted. They included laboratory operations, transport, distribution, dealers, enforcement, administrative, accounting and money laundering operations (Clawson & Lee 1998; Reuter 2014; Thoumi 2014). Although these functions were specialised, not all employees were specialists. Each function was often led by one of the Medellín Cartel's key associates and also comprised professional operatives such as chemists, pilots and accountants. For example, in accounting (Escobar R 2010:80-81):

> To keep control of the money, we had ten offices all around Medellín with accountants working in each of them. Again, the locations were known only to Pablo and myself. The offices were in buildings and private homes. In buildings, they were disguised as real estate offices with different names for cover…Each office had a special purpose. At one office we would meet the people who hid money, in another we would meet our friends, and another was for the banks…I hired the ten accountants. Some of them were relatives; others were friends or strongly recommended professionals. Two of them were young and we paid their costs to go through school to study accounting and then we put them to work.

Fragment 22: Medellín Cartel associate & Escobar's brother

As most of the specialised employees were full-time, rather than freelancers, with socio-economic backgrounds lower than their professional counterparts and less opportunities for alternative high incomes, their interconnectivity strength is assessed as between moderate to strong.

7. **Semi-professionals and unskilled**

The next level estimated by Zabludoff (cited in Clawson & Lee 1998:20) are semi-professionals and unskilled workers, many working part-time. According to Zabludoff's estimates, the Medellín Cartel employed c. 5,000 of these workers. Semi-professionals included security, surveillance, radio and heavy equipment

operators, together with bodyguards, guards and drivers. Unskilled workers comprised runners (messengers), couriers, mules (to transport drugs), smurfs (to deposit cash below certain banking limits), together with general labourers. On analysing the Colombian class structure, the socio-economic drivers of some of these workers becomes apparent (Encyclopedia Britannica 2016):

> The vast majority of the population belongs to the "marginal" classes, who lack steady employment and must eke out a living by any possible means, and the lower classes, who are mainly physical labourers…At the middle and upper echelons of the social structure are those who have more highly skilled work, including the professions…Family ties are key in business and political life, and it is common to find young men or women following their fathers' footsteps.

Fragment 23: Encyclopedic document

Many of these workers had an elementary level of education and often worked out of necessity. However, as Strong (1995:156) highlights:

> Yet poverty and social hardship themselves were not the root causes of the problem. In an environment whose moral values had caved in to the primacy of money and power, pleading economic necessity was merely an excuse to commit a crime: a convenient lie arising mainly out of the envy generated by disparities in wealth levels which the cocaine trade had made glaringly apparent.

Fragment 24: Investigative journalist

According to one priest (cited in Strong 1995:68):

> Social, family, religious and civil values were simply cashed in…it had nothing to do with economic necessity, although there arose the idea that it was better to be rich for a short time than poorish forever. The mafia was fashionable.

Fragment 25: Colombian priest

In terms of interconnectivity strength, trust is a key currency of any criminal group, and largely implicit between family and friends, and those raised in the same poverty stricken neighbourhoods in and around Medellín. The rationale being, if the workers knew each other, it would be harder to betray each other. For the Medellín Cartel, recruitment at this level was primarily based on close family, friendship or neighbourhood ties, and not necessarily on a skill. Moreover, as everyone knew your family and friends, and more importantly where they lived, the threat of harming your family if you stepped out of line, mostly kept everyone in order (Strong 1995; Bowden 2002). Given that most of these employees were expendable, their interconnectivity strength is assessed as weak to moderate.

8. **Coca farmers & workers**

One of the largest actor types contributing to the fitness landscape of the Medellín Cartel are the agricultural workers, including coca growers, coca paste refiners and processors. Based on Zabludoff's estimates (cited in Clawson & Lee 1998:20), the Medellín Cartel employed up to c. 67,500 agricultural workers. Without coca, there was no cocaine, so the agricultural workers were vital to the Medellín Cartel's success. According to Escobar's brother, Roberto (Escobar R 2010:57):

> Pablo and his partners in Medellín built many laboratories hidden in the primitive areas of the Colombian jungle…some of these places grew to become small cities…[with] their own dining areas, a school for their children, medical attention, and even rooms to watch satellite television…as many as two hundred people lived [in each location]…a few of them farmers, but the others worked in the laboratory manufacturing, packaging, and transporting the cocaine…almost all of the workers were recruited from the poorest neighbourhoods of Medellín; they received a salary as well as shelter, food, and medical care.

Fragment 26: Medellín Cartel associate & Escobar's brother

Despite receiving a salary, as well as food, shelter and medical care, as Clawson and Lee (1998:131) put it:

> The coca farmers present quite a different problem from the drug lords. The major traffickers are a murderous lot who deserve little sympathy. The farmers on the other hand, are simple folks eking a living; they do not see and do not fully understand the evil effects of the drug produced from the crop…no one proposes jailing the farmers for growing a generally illegal crop.

Fragment 27: Economic & political scholars

Over the last two decades, there has been much debate and discussion on the viable licit alternatives open to farmers (Clawson & Lee 1998; Thoumi 2003; 2014). Given some of the alternatives, albeit less profitable, and the many actors involved, not just traffickers, but also guerrillas and paramilitaries, the interconnectivity strength to the Medellín Cartel is assessed as weak.

9. **State officials and/or officers**

As noted earlier, Colombia's historical and widespread problem of bribery and corruption, including state officials and/or officers, law enforcement, the military, the judiciary and politicians, provides the perfect backdrop for wealthy traffickers such as the Medellín Cartel to improve its fitness landscape. In an interview with Colonel Martinez, the extent of the problem in law enforcement is clearly depicted (Streatfeild 2000):

> There was just so much money. No one could even conceive of a $1 million bribe. At that time, the police salary was $250 a month. They would offer [an officer] $250,000, $300,000, $500,000 and of course he would turn out to be bribeable. Especially the ones who located the laboratories so that they wouldn't confiscate the drugs – or the police who found shipments. A lot of police started putting up their own roadblocks, knowing when the shipments would pass by. But they didn't confiscate anything – they just took the bribes.

Fragment 28: Colombian law enforcement

Another example involving the judiciary is provided in a declassified cable from the US Embassy in Bogota to the US Secretary of State in Washington (US Department of State 1990):

> Colombia's battered and decrepit criminal justice system suffered additional setbacks in the past week, with the escape from prison of a leading Medellín Cartel terrorist and the release by a judge of 15 persons suspected of ties to the drug mafia. Substantial sums of money allegedly changed hands in both incidents reflecting the justice system's extreme vulnerability to corruption and the need for comprehensive reforms.

Fragment 29: US declassified government document

In terms of the number of actors open to bribes, first, the number of actors within state agencies and officials needs to be estimated. Based on population estimates, wherever possible during the 1980s, the size of these agencies are c. 100,000 military, c. 50,000 law enforcement, c. 20,000 local government officials, c. 5,000 judiciary and c. 500 key members of the Senate, House of Representatives and Supreme Court (Encyclopedia 2016; Encyclopedia Britannica 2016; Encyclopedia of the Nations 2016). In total, the population size of state officials and/or officers may be estimated at c. 175,500. Given the extent of corruption in Colombia at the time, it is reasonable to estimate that at least 20% of this population (i.e. 1 in 5 people) accepted bribes and at least another 20% were open to bribes (i.e. potential actor category 3 below). This provides a manifest and potential actor population size of c. 35,100 in each category. Moreover, despite the supplementary and sometimes substantial income influencing some of their choices, many faced a difficult choice, due to Escobar's *plata o plomo* (silver or lead) policy, where the alternative was either a bullet in your head, or more commonly, the threat of a bullet in your loved ones, particularly close family members (Strong 1995; Bowden 2002). In the words of Tambs, US Ambassador to Colombia, 1983-85 intermixed with words of Jack Blum ('Blum'), US Senate investigator, 1987-89 ('The Godfather of Cocaine' 1997):

> When I was ambassador down there, a judge would be assigned a narcotics case. Within a very, very short time, a bright, young, well-dressed lawyer would show up with first of all, a briefcase in which he would lay a plain brown envelope on the judge's desk, right? They'd tell a man, "You have a choice. You can have lead, bullet in your head, or silver, some money as payoff. And it's your call. Then the bright young lawyer would reach in his briefcase and take out a photograph album. There'd be a photo album of everybody in their lives they considered to be near and dear. Shots of their children, children coming out of their home in the morning, going to school, playing in the playground, talking to their friends. So the implication was very clear.

Fragment 30: US government officials

Furthermore, the fact that most of these individuals had chosen a 'lawful' path, in itself, suggests most were faced with the difficult *plata o plomo* policy. As a result of these mixed motivations – supplementary income for some, and simply no choice for others – the interconnectivity strength is assessed as weak to moderate for the manifest active actor population and weak for the potential population.

10. **Paramilitaries**

On estimating the size of the cocaine industry in Colombia, the role played by the paramilitaries and guerrillas in supporting the cartels was overlooked in Zabludoff's estimates. At the time of the Medellín Cartel, a number of paramilitary groups existed (armed groups in opposition to the guerrillas) and played an important role in supporting the Medellín Cartel. In particular, the paramilitary brothers Fidel Antonio Castaño Gil ('Fidel Castaño') and his brother Carlos Castaño Gil ('Carlos Castaño'), became pivotal actors in both the rise and fall of the Medellín Cartel (Bowden 2002). Evidence supporting their role is provided in a US declassified intelligence document (US Department of State 1994):

> Sometime after the mid-1980s, Castaño began working with Medellín kingpin… [Gacha]…together, they formed a paramilitary force of approximately 200-300 well-armed men operating in the Magdalena Medio region. It is unclear which massacres Castaño ordered on his own and which may have been conducted jointly with [Gacha]. After [Gacha] was killed by Colombian police in December 1989, Castaño began working closely with Pablo Escobar and eventually became his military adviser.

Fragment 31: US declassified government document

According to Clawson and Lee (1998:53), 'as of mid-1989, some 11,000 paramilitary commandos operated in Colombia, many, though not all, under the sponsorship of the Medellín Cartel'. Assuming c. 50% of these paramilitaries were under the influence of the Medellín Cartel and a 50:50% split between active and dormant at any one time, c. 5,500 paramilitaries (2,725 active, 2,725 dormant) would have played a role in providing protection and security to the Medellín Cartel. Given

the paramilitaries' primary objective was fighting the guerrillas, it is reasonable to assign a weak interconnectivity rating to these actors.

11. **Guerrillas**

Similar to the paramilitaries, a number of guerrilla groups existed at the time, including the Revolutionary Armed Forces of Colombia ('FARC'), the National Liberation Army, the Popular Liberation Army and the 19th April Movement ('M19') (DEA 1994). These guerrilla groups were also labelled (and continue to be labelled by a variety of scholars) as rebels, insurgents and terrorist groups, by various governments, at various times, including Europe and the US (Hoffman 2006; Leech 2011; Martin 2016). Notwithstanding nomenclature, despite the fact that for most of the time the guerrillas and drug traffickers were seen as arch enemies, the primary goal of all guerrillas is a rebellion, and the illegal nature of both a rebellion and the drug trade may be seen as complementary (Leech 2011). As noted earlier by Gendron (2011:404), despite differing motivations, both groups 'are incompatible with the principles and values of civil society'. Moreover, it was natural that their paths converged as both guerrillas and traffickers sought similar operational environments and territories (Joint Forces Staff College 2015). In a CIA declassified intelligence document, the role of the guerrilla groups in the drug trade was described as (CIA 1992):

> Seeking larger profits from narcotics and diversifying their roles in the drug trade...by imposing 'war taxes' on coca growers and traffickers in their operational areas...Guerrillas guard coca fields and processing laboratories and protect drug transhipment operations by providing security at clandestine airstrips...In addition traffickers occasionally use the insurgents to attack their enemies – both government and rival traffickers...Colombian guerrillas have long used their drug ties to obtain arms and ammunition, either buying them directly from traffickers – who have extensive ties to private dealers – or receiving them in payment for protection of coca processing, storage, and transhipment sites.

> *Fragment 32: US declassified government document*

As argued by Bibes (2001:255), 'originally, the insurgent groups and organised criminals did not have any common interests, only a common enemy: the state'. Essentially guerrillas aim to undermine the state, whereas traffickers aim to exploit it. Despite their common enemy, the relationship between traffickers and guerrillas continued to be volatile and in particular (CIA 1992):

> Characterised by cooperation and friction...Although traffickers occasionally benefit from guerrilla protection, they resent the insurgents and sometimes have used force to resist their encroachment...however, we do not believe that the drug industry would be substantially disrupted in the short term by attacks against guerrillas [by the government].

> Indeed, many traffickers would probably welcome, and even assist, increased operations against insurgents.

Fragment 33: US declassified government document

Similarly, in a DEA declassified intelligence document, the DEA came to the same conclusion. The DEA concluded that the relationship was 'formed most commonly through ad hoc "alliances of convenience"' and is 'one of accommodation between traffickers and insurgents' where the insurgents will never be major players in Colombia's drug trade (DEA 1994:iii). Based on this analysis, given the scale of the Medellín Cartel's operations, it is reasonable to estimate that at least 20% of all guerrillas in Colombia at the time were involved in protection and security of the Medellín Cartel with an estimate of a 50:50% split between active and dormant at any one time. During the 1980s, it is estimated that c. 10,000 guerrillas were active in Colombia (DEA 1994:6). Based on this estimate, c. 2,000 guerrillas (1,000 active, 1,000 dormant) would have played a role in providing protection and security to the Medellín Cartel. In terms of interconnectivity strength, given i) the differing motivations and volatile relationship; and ii) the alternative, more traditional, revenue streams to fund ongoing insurgencies (i.e. kidnapping and extortion), it is reasonable to assign a weak interconnectivity rating to these actors.

12. **International criminals**

Although a number of overseas individuals, acting as professional freelancers as mentioned earlier, provided military advice to the Medellín Cartel, a number of primary and secondary sources mention allegiances and alliances with not just the individuals, but the criminal groups themselves, such as the well-known Spanish terrorist group ETA (Basque Fatherland and Liberty) (Clawson & Lee 1998; Bowden 2002). According to a 1991 US declassified intelligence report depicting over 100 profiles of criminals and terrorists, mostly linked to the Medellín Cartel, the following two profiles relate to the nexus between ETA and the Medellín Cartel (US Department of Defense 1991:9):

> Juan Maria (Oyarbide) – an ETA (Basque Fatherland and Liberty) terrorist who operates in Spain and presently is a consultant to the ELN (Colombian National Liberation Army) and to the Medellín Cartel…Manuel (Urrionnabaechea) – a Spanish terrorist belonging to the ETA movement who has collaborated on terrorist attacks carried out in Colombia. The ETA…advised the Medellín Cartel on carrying out terrorist actions.

Fragment 34: US declassified government document

Moreover, giving the extent of the Medellín Cartel's operations in Europe, as well as the US, it is not unreasonable to assume that a certain level of co-operation between the Medellín Cartel and other local international criminals and criminal groups occurred based on mutual alliances. In terms of numbers and interconnectivity strength, an estimate of c. 100 actors (50 active and 50 dormant) with a weak interconnectivity strength is assessed given the fluid nature of these relationships.

6.4.3 Category 2: Latent (dormant) actors

Latent criminally exploitable ties comprise dormant actors that may be called upon as and when the needs arise of the Medellín Cartel. Based on an analysis of the complex data set and estimates and discussion provided in section 6.4.2 above, Figure 6.4 below depicts five types of actors in this category, with interconnectivity strengths ranging from moderate-weak (shaded from dark-light).

Figure 6.4: Infographic 2: Latent (dormant) actors of the Medellín Cartel
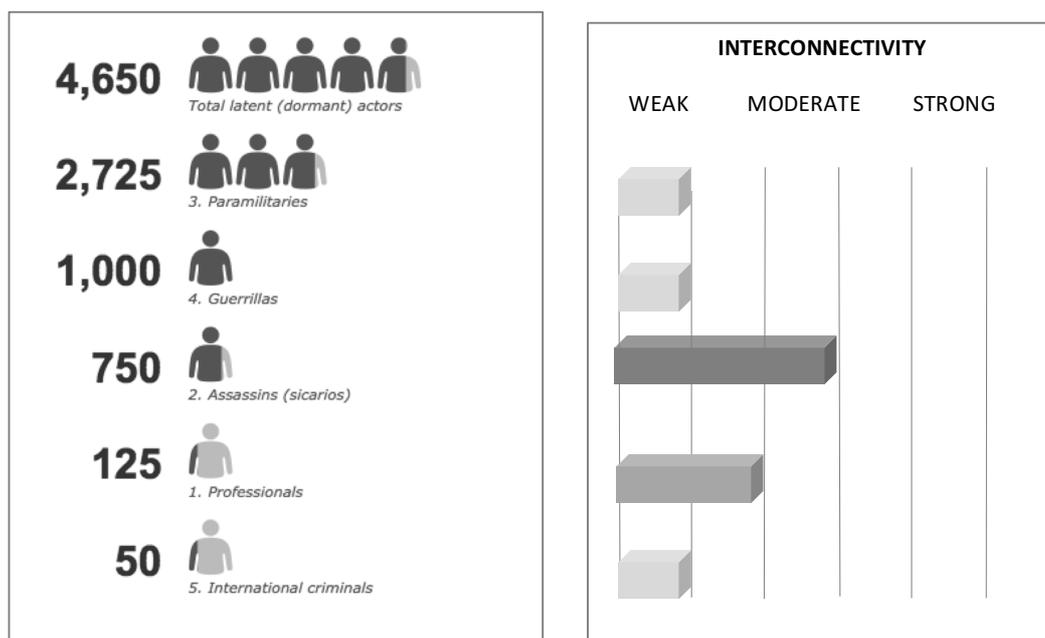
Source: Information based on the complex data set referenced in-text

6.4.4 Category 3: Potential (possible) actors

Potential criminally exploitable ties comprise possible actors that may become involved in the Medellín Cartel to enable or facilitate criminal conduct based on convergence settings and/or matching dispositions. As such, while some of these actors may already play a role in the Medellín Cartel (and already be included in

other volumes), some may also be in a position of being 'turned' as and when the need arises, and so a portion of potential actors has been estimated in this category. Based on an analysis of the complex data set, Figure 6.5 below depicts four types of settings open to opportunities, all with weak (shaded light) interconnectivity strengths.

Figure 6.5: Infographic 3: Potential (possible) actors of the Medellín Cartel
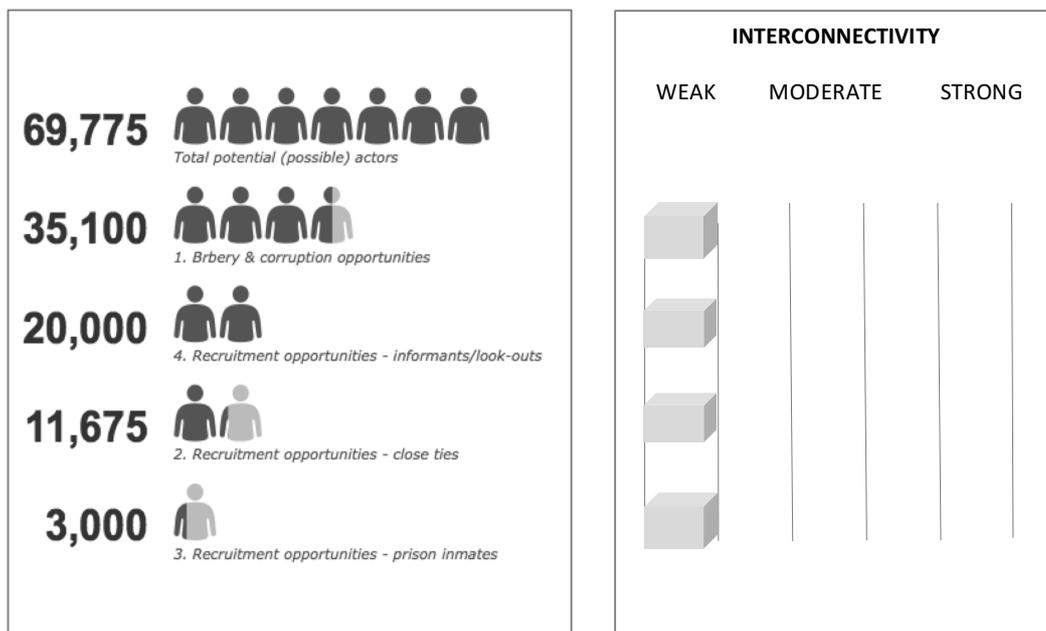
Source: Information based on the complex data set referenced in-text

The first setting, as described and estimated earlier in Section 6.4.2 above, are opportunities arising from bribery and corruption of state officials and/or officers with an estimate of 35,100 potential actors.

Recruitment opportunities

The next three settings are recruitment opportunities arising from close ties between family and friends and convergence settings. Convergence settings include criminal haunts, such as drinking and gambling clubs, and prisons, where like-minded criminals may meet. As mentioned earlier, it was in a drinking haunt that Gacha became known to Escobar. Moreover, it was in a prison that Jung first met Lehder. In an interview about his experience in Danbury prison located in the US, Jung commented (*Frontline* 2000c):

> I knew a lot of interesting people in Danbury. From bankers to lawyers to doctors to Indian chiefs. You could more or less learn anything you wanted to learn in there in reference to illicit activities. It was basically a school.

Fragment 35: Medellín Cartel associate

As noted earlier, Lehder was critical to the Medellín Cartel's initial success and he had learnt his trade in prison. Ironically, it was in an American prison. As Jung points out (interview in *Frontline* 2000c):

> Carlos never ceased, never stopped. He was like a student is, constantly pumping people's brains about money laundering, about this, about that. About automobiles, about airplanes, about boats. In fact there was a guy in there for smuggling boats and he spent hours and hours with him learning navigation, and there was a president of a bank in there and he pumped him constantly about the banking system in America and how one can launder money, and he kept files and files on everything...He was obsessed with it.

Fragment 36: Medellín Cartel associate

As well as criminal haunts, other convergence settings, include physical localities such as neighbourhoods and places of work. More importantly, a physical locality is open to opportunities in the role of informants or look-outs. For example, Escobar used a network of juvenile look-outs in Medellín to trace the whereabouts of the police at any given time (Bowden 2002). In terms of population sizes for recruitment opportunities, three estimates may be made: i) close ties; ii) prison inmates; and iii) informants/look-outs. Based on the total number of manifest actors (116,755) estimated in category 1 above, who may still have family and friends with similar dispositions that are not already involved in the Medellín Cartel, an estimate of 10% has been applied resulting in 11,675 potential actors with recruitment opportunities based on close ties. During the 1980s, it is estimated that Colombian prisons held c. 30,000 inmates (Encyclopedia of the Nations 2016). Based on a similar assumption of those not already involved, an estimate of 10% resulting in 3,000 potential actors with recruitment opportunities are based on prison ties. In terms of informants/look-outs based on physical locality, given the population of Medellín in the 1980s is estimated at c. 2 million people (Mongabay 2016) and most of the informants/look-outs would have been based in and around Medellín, taking an estimate of just 1% of this population results in 20,000 potential actors. Given that all these actors are potential, a weak interconnectivity rating has been applied.

6.4.5 Category 4: Contributory (unwitting) actors

Contributory criminally exploitable ties fall into three categories: i) unwitting accomplices (category 4); ii) passive bystanders (category 5); and iii) consumers (category 6). The first category comprises actors that may contribute to the criminal activities and endeavours of the Medellín Cartel, but the contribution is made unwittingly. Based on an analysis of the complex data set, Figure 6.6 below depicts three types of actors in this category, all with a weak (shaded light) interconnectivity strength.

Figure 6.6: Infographic 4: Contributory (unwitting) actors of the Medellín Cartel
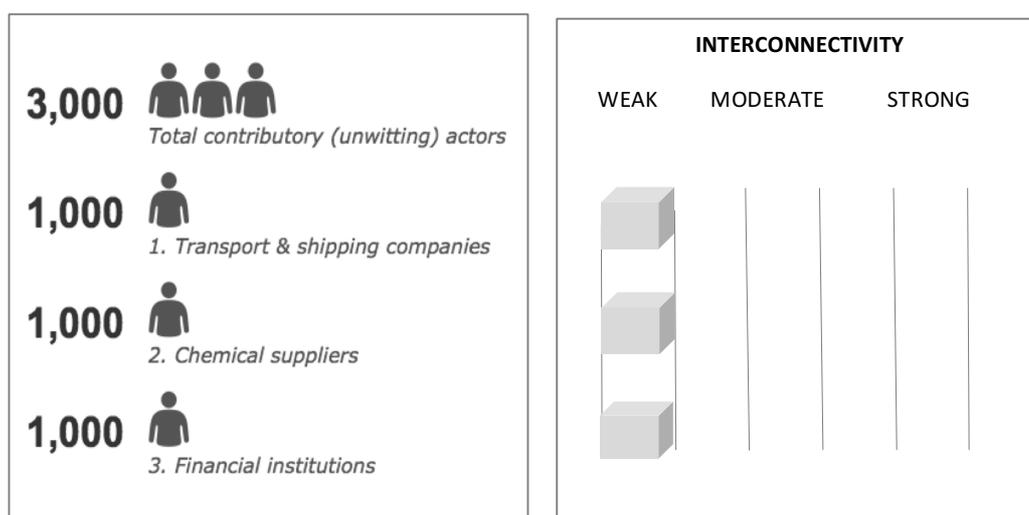
Source: Information based on the complex data set referenced in-text

On reviewing the complex data set, while a range of these actors certainly fell under unwitting accomplices of the Medellín Cartel, just as many, if not more, fell under witting accomplices, otherwise known as wilful blindness. However, for simplicity, numbers are estimated based on unwitting accomplices of illegal activities that are often difficult to detect. The three actor types are transport and shipping companies, chemical suppliers and financial institutions, including banks. Of the first, given some of the innovative methods used by the traffickers in concealing shipments, from the early basic false-bottomed containers to the more sophisticated concealments, it is not surprising that some of the transport and shipping companies were none the wiser. For example (Strong 1995:128):

> Cocaine [was] compressed and coloured to appear like coffee beans; mixed with cellulose in the manufacture of cardboard boxes; and combined with glass fibre and other substances to create hard material that can be moulded into any shape desired…agents seized dog kennels each of which could be ground down and treated with chemicals to extract cocaine.

Fragment 37: Investigative journalist

With chemical suppliers, wilful blindness is more likely. To process cocaine in its varying stages, a range of chemicals are needed. Like most chemicals, some have dual purposes, for example, ether is also a paint thinner and certain fertilisers can make explosives. According to the DEA (cited in Strong 1995:119):

> In the first half of the 1990s at least fifty chemical traders who had flirted with the cocaine business were murdered. However, some international companies lusted for the business, throwing ethics to the wind…Most of the cocaine chemicals came from the US. The main providers and importers were Shell and Exxon. Thereafter, acetone was imported almost exclusively from the US by Shell, mostly for a Cali cigarette filter manufacturer. Ether, meanwhile came to be imported to Colombia mainly from Germany and Holland.

Fragment 38: Investigative journalist

And finally, with financial institutions, while many bankers were certainly witting and fully aware of their actions as Mazur's 2009 *The Infiltrator* book suggests, many lower-level employees would not have been aware of the illicit source of the fund movements and transactions. In terms of providing estimates for the number of companies and employees involved in this category, while actual numbers are not easy to determine and may be significantly more, for illustrative purposes, an estimate of c. 1,000 individual actors in each type of industry has been provided, each with a weak interconnectivity strength.

6.4.6   Category 5: Contributory (passive) actors

In the second category of contributory criminally exploitable ties, actors comprise those that contribute to the criminal activities and endeavours of the Medellín Cartel through passively standing by without interfering. Based on an analysis of the complex data set, Figure 6.7 below depicts a single population of actors in this category, with a weak (shaded light) interconnectivity strength.

Figure 6.7: Infographic 5: Contributory (passive) actors of the Medellín Cartel
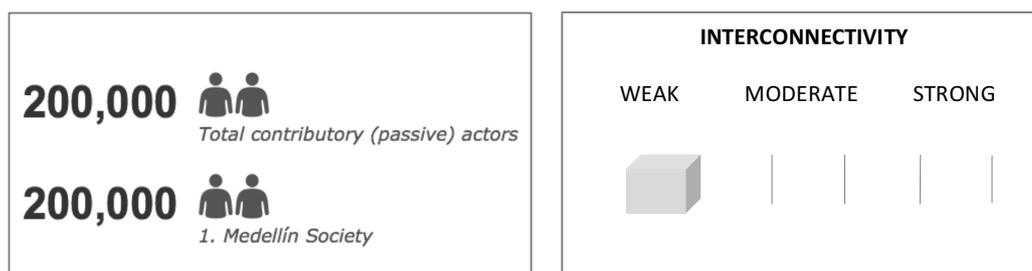
Source: Information based on the complex data set referenced in-text

The fact that there was a population of actors that passively stood by without intervening is not surprising. They were basically the people of Medellín, especially the poor. The poor stood by due to a sense of loyalty and personal allegiance, largely based on Escobar's generosity, despite some of his motives. According to many accounts, including his brother Roberto, as well as building an entire housing estate called *Barrio Pablo Escobar*, in and around Medellín (Escobar R 2010:84-85):

> Where the poor were involved, Pablo became the man of getting things done…Pablo built hospitals and equipped them, he built roads for small towns that before had been unreachable by car. He built hundreds of soccer fields…He fed the hungry, provided medical aid for the poor, he gave shelter to the homeless, jobs to the unemployed, and education to those who couldn't afford it and they loved him for it.

Fragment 39: Medellín Cartel associate & Escobar's brother

Essentially, Escobar had the population of Medellín in his back pocket and he knew it. Some in Medellín, however, did not realise or fully appreciate the illegality of his activities and the Medellín Cartel's, while others, including the middle to upper class, simply found it inconvenient, burdensome or risky to intervene and prevent and/or report the activities to the police. In the 1980s, the population of Medellín is estimated at c. 2 million people (Mongabay 2016). While it is difficult to estimate how many stood by, even if it was just 10% of the population, the estimated contributory passive actor population is c. 200,000, with an assigned weak interconnectivity strength. Of note, when considering the extent of the Medellín Cartel's operations, including overseas, notably Miami, other populations of passive actors may be considered. However, given the significance of the population of Medellín to the locality of the cartel itself and the challenge in determining estimates, other locations have not been considered.

6.4.7   Category 6: Contributory (consumers) actors

The third and final category of contributory criminally exploitable ties comprises actors that contribute to the criminal activities and endeavours of the Medellín Cartel through being consumers of the illicit products and services offered. Based on an analysis of the complex data set, Figure 6.8 below depicts two types of actors in this category, all with a weak (shaded light) interconnectivity strength.

Figure 6.8: Infographic 6: Contributory (consumers) actors of the Medellín Cartel
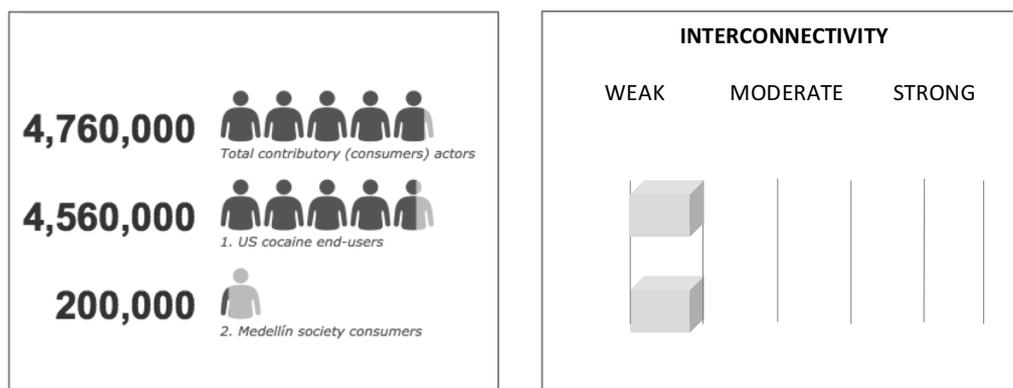
Source: Information based on the complex data set referenced in-text

As pointed out earlier, when it comes to appreciating the illegality of certain activities or services, certain communities do not see them in the same way, especially when the goods or services are in popular demand (Levi & Maguire 2004). As Strong (1995:56) notes, active business consumers of the Medellín Cartel's 'dirty money' contributed to their success:

> Hard-pressed businessmen were soft targets for the dollar-rich traffickers; however, although their loans were welcomed, the traffickers preferred to invest in real estate…businesses dealing in luxury goods and services thrived on the traffickers' custom and investment. Except for property, the mafia were most interested in a quick return on no-questions-asked deposits.

> *Fragment 40: Investigative journalist*

In Colombia, while the number of end-users of cocaine was relatively low, the recycling of dirty money through local businesses and the number of consumers of contraband supplied by the Medellín Cartel, given the state's high restrictions on imports, including luxury items for the wealthy, certainly contributed to the cartel's success. Based on c. 2 million estimate of the population in Medellín in the 1980s (Mongabay 2016), if just 10% of the population were consumers, the estimated contributory population is c. 200,000, with an interconnectivity rating assessed as weak. In the US, however, the number of end-users of cocaine was off

the charts. In 1985, at the height of the Medellín Cartel, the number of US cocaine users was estimated at c. 5.7 million users (US Office of National Drug Control Policy 1999). Despite some of this cocaine being sourced elsewhere, many estimates suggest that the Medellín Cartel was producing c. 80% of the world's supply ('Killing Pablo' 2003). Moreover, the Medellín Cartel also supplied cocaine to other places such as Europe, but for illustrative purposes, estimates have been limited to 80% of the US end-users, being 4,560,000, with an interconnectivity rating assessed as weak.

6.4.8   Graphical representation

As explained in Chapter 5, a graphical representation of a group's fitness landscape better discerns its overall shape, leading to a better understanding of the nature and strength of the criminal group, including its drivers and vulnerabilities.

For the Medellín Cartel, as category 6 completely overshadows the other categories, for the purposes of a graphical representation, category 6 has been excluded, but not disregarded. Based on the Medellín Cartel's actor population of 394,180, as depicted earlier in Figure 6.2 and its interconnectivity bands as analysed in Figures 6.3 to 6.7 above, Figure 6.9 below presents a graphical representation of the Medellín Cartel's fitness landscape by volume of actors.

Figure 6.9: Graphical representation: Medellín Cartel's fitness landscape
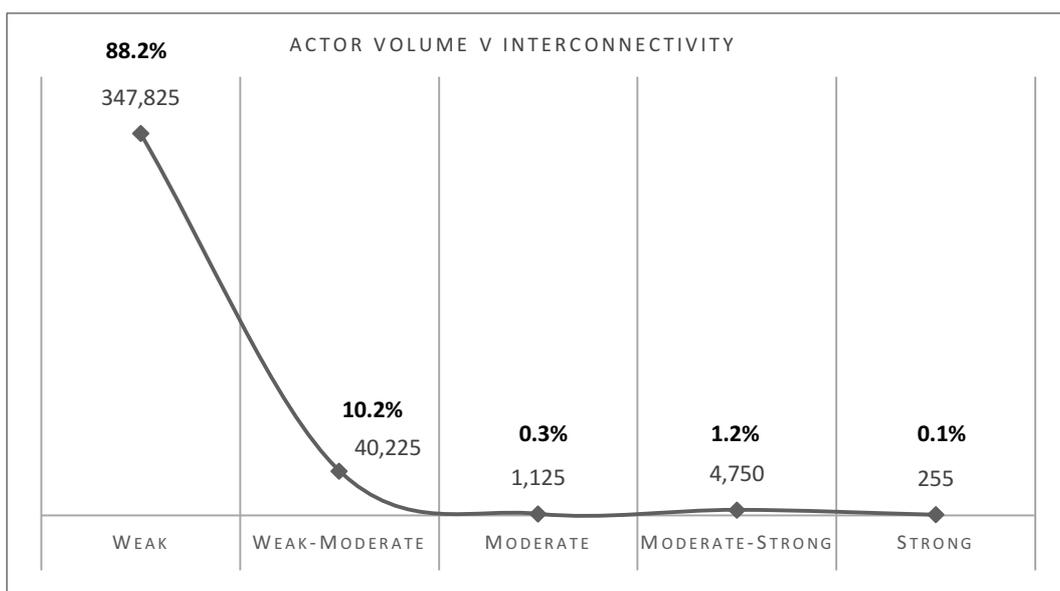
Source: Information based on Figures 6.2 to 6.7

As clearly depicted in Figure 6.9 above, the Medellín Cartel derives a significant portion of its strength (98.4%) from its weak (88.2%) and weak-moderate (10.2%) interconnected actors. On further analysis, the composition of each interconnectivity band (shaded from dark-light; strong-weak) by actor category, excluding category 6, is depicted in Figure 6.10 below.

Figure 6.10: Interconnectivity composition: Medellín Cartel's fitness landscape
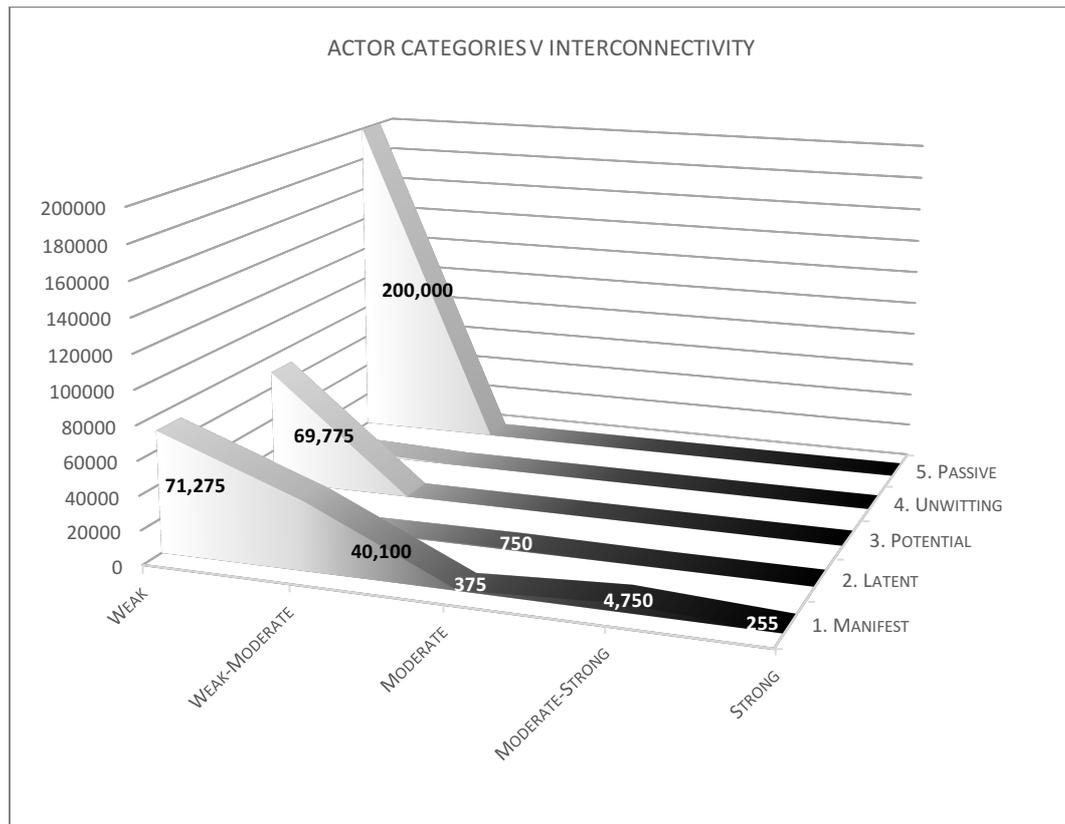
Source: Information based on Figures 6.2 to 6.7

As depicted in Figure 6.10 above, the moderate-strong and strong interconnectivity bands of the Medellín Cartel are comprised solely from its manifest category of criminally exploitable ties. This is not surprising given that the core group of the Medellín Cartel, including its leaders and key associates, sit in this category. What is surprising however, is the significance of the contributory categories 3 and 5 of criminally exploitable ties, comprising a large proportion of the weak interconnected actors of the Medellín Cartel, which would be even more significant if category 6 was included.

6.4.9   Visual representation

To complement the graphical representations in Figures 6.9 and 6.10 above, a visual representation, using the new building metaphor, to better visualise and understand the diverse set of criminally exploitable ties representing the interconnected actors in the Medellín Cartel's fitness landscape is considered and presented in Figure 6.11 below.

Figure 6.11: Visual representation: Medellín Cartel's fitness landscape
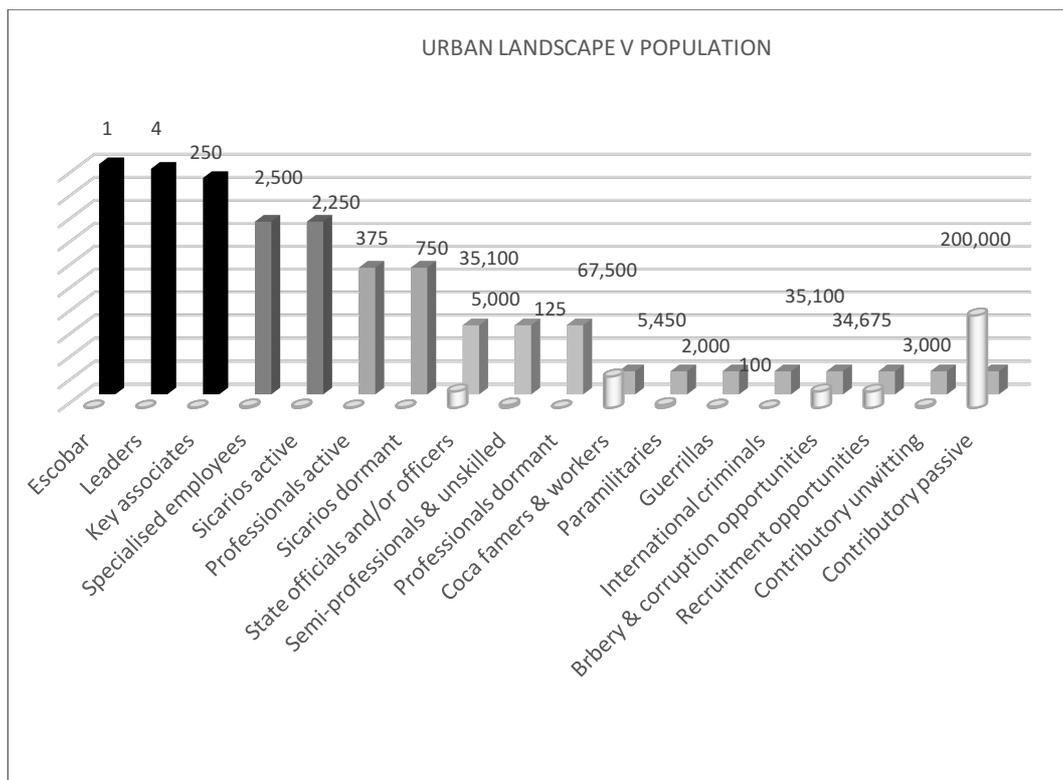
Source: Information based on Figures 6.2 to 6.7

As seen in Figure 6.11 above, the visual imagery of a city skyline helps to promote a patterned style of thinking into how the Medellín Cartel was shaped and influenced based on its extended criminally exploitable ties. The square shaped buildings represent the interconnectivity strength (shaded from dark-light; strong-weak) of the different types of actors in order of strength and the round shaped silos in front of each building represent the volume of actors in each building (also labelled numerically). Based on this analysis and resulting fitness landscape, the final step of the new complexity model is next applied.

6.5   Step 4: Insights – macro

Applying step four of the new complexity model, using complexity prompts, insights are drawn from the data sets, contextual variables and fitness landscape of the Medellín Cartel to better understand its nature and strength and why and how it evolved, including interconnections at and across its system boundaries with other complex systems such as its allegiances and alliances. On reflection, strategies and measures are also identified that changed, influenced and/or disrupted the weak, moderate and strong interconnections of the Medellín Cartel resulting in its ultimate demise.

6.5.1   Insights macro-level overview

As explained in Chapter 5, 'for complex systems to survive, there must be a certain match between what the organisation does and how it functions and its wider environment or context' (Kuhn 2009:40).   Moreover, understanding how criminally exploitable ties are formed and evolve underpins the 'level of resilience of criminal structures' (von Lampe 2016:123).   In other words, recognising the contextual variables out of which the Medellín Cartel emerged, is critically important to understanding its fitness landscape and why and how it emerged.

In studying the emergence of the Medellín Cartel, together with its nature and strength, four chronological time periods will be considered as summarised in Figure 6.12 below:

Figure 6.12: Chronology of key events of the Medellín Cartel

	1. Rise	2. Height	3. Fall	4. Demise
	late 1970s-early 1980s	1980s	late 1980s-early 1990s	early 1990s
Key events	• 1981: MAS vigilante group in alliance with other traffickers and paramilitaries	• 1982: Escobar wins alternate congress seat • 1984: Lara, Colombian Minister of Justice assassinated • 1984: *Los Extraditables* terrorist group • 1985: M19 guerrillas Palace of Justice attack	• 1988: The cartel wars • 1989: Galán, Colombian presidential candidate assassinated • 1989: Search Bloc 1 • 1989: The Avianca bombing • 1991: Escobar imprisoned – *La Catedral* • 1992: Escobar prison escape	• 1992: Escobar on the run • 1992: Search Bloc 2 resurrected • 1993: *Los Pepes* vigilante group • 1993: Escobar shot and killed
Violence	*Covert* violence	From mid-1980s *One war*: i. Cartel-State *Overt* violence	*Two wars*: i. Cartel-State (Search Bloc 1) ii. Escobar-Cali Cartel *Overt* violence	*Three wars*: i. Cartel-State (Search Bloc 2) ii. Escobar-Cali Cartel iii. *Los Pepes*-Escobar *Overt* violence

Source: Author's summary

In the macro-level case study analysis, while the central focus is the Medellín Cartel, Escobar, as the boss of the cartel, is also a key focal point due to his influence on the group. As offered earlier by Lewin and Regine (1999:198), in a complexity informed world 'managers and executives cannot *control* their organisations to the degree that the mechanistic perspective implies, but they can *influence* where their company is going, and how it evolves'. As also mentioned earlier, a central concept of complexity is that while it is difficult to predict the exact state and outcome of a complex system, such as the Medellín Cartel, it is generally possible to model its overall behaviour, by placing emphasis not on the *disorder* of the system, but on the *order* or patterns inherent in the system itself.

6.5.2 The rise of the Medellín Cartel – late 1970s to early 1980s

As explained in Chapter 2, for organised crime to flourish, it needs accomplices from the outside world, including members of society who demand the illegal

products and services in the first place, and enablers, notably professionals, who provide or facilitate the services in the licit environment (van de Bunt & van der Schoot 2003b). Based on the analysis of the Medellín Cartel's contextual variables and fitness landscape, one cannot overlook the significance of the legalisation of drugs debate and contributory role of the US end-users and other consumers (category 6 in the fitness landscape) of the Medellín Cartel's illicit goods and services. Without either, the Medellín Cartel may still have emerged, but certainly not to the same degree or extent, and certainly not in the same shape or form. Moreover, the role of enablers, such as the accountants, lawyers, chemists and pilots also formed important criminal ties within the Medellín Cartel's fitness landscape as will be discussed further below.

Operating model

The Medellín Cartel, as described earlier, comprised a collective of separate organisations and individuals, yet they all came together for a common purpose and shared needs creating a fitness landscape. The common purpose was the pursuit of material gain through illicit wealth and shared needs were based on operational risks and economies of scale in the drug trade. As Mallory (2007:52) puts it, 'this loosely knit group of drug dealers joined forces for the purpose of achieving common goals with fewer liabilities than operating individually'. The leaders of the Medellín Cartel, including its boss Escobar, were all contemporaries, learning their criminal trades at an early age, either through the family trade, with history repeating itself and amplifying criminal tendencies, or through mentors (Eddy et al 1988; Gugliotta & Leen 1989; Strong 1995; Bowden 2002). One notable difference, however, was the nature of their early trades. Both Escobar and Gacha had been trained as gunmen and their use of violence had been regular. In contrast, the Ochoa brothers had been trained in smuggling and had learnt the power of influence and discretion (Eddy et al 1988; Gugliotta & Leen 1989). Despite this difference, they were all entrepreneurs and more importantly, each had something different to offer. According to Jung (interview in *Frontline* 2000c):

> Basically Pablo was there for supplying [the cocaine]. Carlos and I were in the transporting and distribution of it. The Ochoas I think mainly were in the political aspect of it, taking care of the politicians and the other authorities as far as for protection or what have you. So that was basically the beginning of the influx of cocaine in the US…As the operation grew…I think Pablo was still known as the head of the cartel but I think in that sense he really became a figurehead. It all grew beyond his comprehension.

Fragment 41: Medellín Cartel associate

Together with its leaders, the key associates of the Medellín Cartel comprised like-minded individuals, mostly family and friends, or 'trusted' acquaintances (Escobar R 2010; Escobar JP 2016). As the business grew, the Medellín Cartel's inner and outer circle grew, constantly changing the shape of its fitness landscape to encompass new functions, specialised employees, innovations and trade routes as they methodically sought out or even engineered opportunities. As the Medellín Cartel always needed to stay one step ahead of the authorities, secrecy was a critical factor in its operations and success. As noted earlier, it capitalised on fellow Colombian immigrants in US city hubs to quickly develop trusted distribution and money laundering networks, avoiding infiltration by US local authorities. Moreover, as well as keeping certain parts of its business separate, it also used a range of methods, including outsourcing all, parts, or none of its business. As such, it developed multiple paths to achieving the same outcome, including its own fully serviced end-to-end cocaine business (Kenney 2007; Thoumi 2014). According to Juan Ochoa, one of the Medellín Cartel leaders, in response to how the business worked (interview in *Frontline* 2000e):

> I had several ways of doing this. One was to buy the cocaine and to send it the way I explained, and my partner would sell it there. The other way would be to have your own lab where you would process it. You'd have your own way of transporting it, a plane or a boat or something like that. You send it at your own cost. Another way, you'd end up having to subcontract with other people to do the different stages, like processing, transport, and the transfer of sales to the person that you had contracted in the US.

Fragment 42: Medellín Cartel leader

Through a complexity lens, the flexibility of outsourcing different aspects of the business and keeping certain parts separate enabled the Medellín Cartel to prepare for change, and adapt its fitness landscape at short notice, keeping it one step ahead, at least for most of the time, of the authorities. The business also grew exponentially against the exploitation of its contextual variables; for example, the Medellín Cartel exploited the growing popularity of the 'drug of choice' amongst the rich and famous as reported in the media. Moreover, the lack of law enforcement, both in Colombia and overseas, as no one was looking at the time,

also contributed to their early success (*Frontline* 2000c; 2000e; Kenney 2011). The Medellín Cartel also exploited the weak legal system, creating multiple shell companies and laundering of funds, making it difficult to track individual transactions and ownership of illicit funds and assets (Lilley 2006; Mazur 2009; Levi 2014). Moreover, it took full advantage of its contributory actors, both unwitting and wilful blindness, notably financial institutions, chemical suppliers and transport and shipping companies (Strong 1995; Mazur 2009). As the Medellín Cartel expanded, so did some of its shared goals and needs. In an interview with Colonel Martinez, Escobar became important for two reasons (Streatfeild 2000). First, he offered Medellín traffickers insurance on their drug shipments, and second, he managed the protection of the Medellín people. Essentially, Escobar was controlling and self-organising the security of the traffickers' shipments and the Medellín people, through his protection rackets. In relation to the first point, in the words of Colonel Martinez (interview in Streatfeild 2000):

> The drug traffic in Medellín was managed by so many people who would end up turning to Pablo Escobar for security. They would give him a percentage of each shipment. People who had no structure, who were not part of an organisation. The percentage was like a guarantee. If the shipment was not paid for, Escobar's organisation would make sure that it was paid. He would send over collectors to get the payment. All they had to do was say they were there in the name of Pablo Escobar for payment. At the start, no one paid much attention to it. These people soon learned. Their security was managed by Pablo Escobar.

Fragment 43: Colombian law enforcement

And to the second point:

> Not all the delinquents of Medellín were organised. Many groups in the *barrios* were small. They would be managed by Escobar. One group would be in charge of this, another one would be in charge of that. Each group in the *barrio* would select who it was best for whichever part of the business. People would go to Escobar if their car had been stolen or to try and get back kidnap victims, or to stop extortion: with just one or two calls he would know who was responsible, would order the car or the person to be returned and would call the people who had asked him for help and tell them that he was now in charge of the situation – he had recovered the car or the person but he had to pay a fee to the bandits – so the victims had to pay him instead. Then he would deliver some of the money to the criminals responsible and keep some for himself, for his role.

Fragment 44: Colombian law enforcement

Through a complexity lens, the more Escobar controlled and organised, the more he became an attractor himself. He formed a sense of order, amongst the chaos, in both the trafficking world and society at large. All roads or patterns led to Escobar. He essentially organised the local neighbourhoods and traffickers with his protection rackets and through Escobar they self-organised into much stronger

actors. As will be discussed later, Escobar provided a repeating pattern, an order within the disorder, by providing protection rackets throughout his criminal career.

Key exploitable ties

Another key factor in the Medellín Cartel's ascent came through its exploitation of Colombia's past, another contextual variable. Colombia's long history of corruption enabled the Medellín Cartel to extend its criminally exploitable ties to corrupt state officials and/or officers, including law enforcement, the military, the judiciary and politicians. As noted in its fitness landscape, the population of corrupt state officials and/or officers in both the manifest and potential categories of actors is extensive. Early on in 1976, Escobar learnt the power of corruption, when he was arrested for a relatively small cocaine seizure. Escobar tried to bribe the judiciary and officers involved, and when some of them did not take the bribe, he simply used his other power, violence, and had them killed (Eddy et al 1988; Gugliotta & Leen 1989). As Bowden (2002:24) points out:

> Pablo was establishing a pattern of dealing with the authorities that would become his trademark. It soon became known simply as *plata o plomo*. One either accepted Pablo's *plata* (silver) or his *plomo* (lead).
>
> *Fragment 45: Investigative journalist*

Essentially, Escobar was creating yet another pattern of behaviour, which the Medellín Cartel adopted. As noted in Chapter 2, 'although small organisations and even individuals may be socially dangerous…larger criminal organisations develop reputational benefits as well as economies of scale…creating a cumulatively greater social threat' (Levi & Maguire 2004:398). From Escobar's small beginnings, the rapidly rising Medellín Cartel certainly posed a greater threat. Moreover, due to the geographical expansion overseas, there were also 'more agencies interfacing with drugs' over time 'creating an increased potential for corruption' (Harman 2006a cited in Mallory 2007:59). This was certainly the case in Miami as depicted in the seminal book *Kings of Cocaine* (Gugliotta & Leen 1989). Police corruption relating to the Medellín Cartel, was no longer contained in Colombia, but also extended to the US.

For the Medellín Cartel to flourish, as noted earlier, it also needed enablers from the outside world to provide or facilitate certain services in the licit environment. It also needed roles that were similar to the legitimate business world. For

example, Carlos Toro ('Toro') worked for Lehder, one of the Medellín Cartel's key associates, as a public relations officer. As described in an interview (*Frontline* 2000a):

> I came in with a very specific job description. My job was to be the diplomat. My job was to be the public relations man. He knew I was good at it. He knew I spoke languages, and he knew I could go and hold the prime minister's hand and make him listen to us that we needed more cooperation…I started going to Nassau, meeting with attorneys, meeting with bankers, meeting with the prime minister's son…I took money [bribes] to politicians, took money to bankers, to attorneys to police.

> *Fragment 46: Medellín Cartel associate*

Moreover, as a former pilot of the Medellín Cartel, Fernando Arenas ('Arenas') highlights the lure of the criminal world to the professionals, and it is not just about the money (interview in *Frontline* 2000b):

> After a while, if you go back to your regular life, you miss that craziness…we feel a different kind of excitement during that kind of a trip flying and knowing that somebody could be down there and they're going to catch you…this is a crazy excitement that you look for after a while. And that's basically what happens. It's like an addiction to this stuff. I have seen so many people going back to this, not because of the money and not because they don't have enough money, but because they miss that part of life.

> *Fragment 47: Medellín Cartel associate*

Other examples include professional engineers (Escobar R 2010:60-68):

> Pablo was always searching for new methods of smuggling drugs into the U.S…the primary method of transport was by airplane…[then] Pablo said we should transport by submarine…we couldn't purchase a used submarine without drawing attention so we knew we had to manufacture them…we hired a Russian and English engineer to design this for us.

> *Fragment 48: Medellín Cartel associate & Escobar's brother*

Furthermore, within the Medellín Cartel's fitness landscape, its increasing network of local informants, as well as its own private army of *sicarios* recruited from the streets of Medellín, certainly provided the cartel with a core strength. According to Colonel Martinez (interview in Streatfeild 2000), 'people who were working in the drug trade were already delinquents, they were already criminals'. When you look at the profiles of the Medellín Cartel, this is certainly true. Moreover, the network of family and friends within the Medellín Cartel created interpersonal trust and loyalties, resulting in strong ties and less need for discipline. Many of the *barrios* (neighbourhoods) resonated with the Medellín Cartel's social support, motivated by frustrated socio-economic factors, not too dissimilar to Speckhard's (2016) characteristics of a terrorist group, where

unemployment, underemployment and frustrated aspirations can all lead to feelings of alienation and a longing for personal significance that a group may offer, especially for the *sicarios*. As noted earlier (Strong 1995:155), the *sicarios* or in other words, the 'adolescent contract killers, preferred to live one minute as a somebody than thirty years as a nobody'. They wanted to feel significant, and the Medellín Cartel provided that significance – it was not always about the money, although for most it was. All of the Medellín Cartel workers, at each and every level, earned higher than average wages in the equivalent 'legitimate' job or profession. Even the lowest paid workers earned more in one week than the equivalent monthly minimum wage (Clawson & Lee 1998; Thoumi 2003). Illicit wealth was always a key incentive. Through a complexity lens, the Medellín Cartel created ideal conditions to foster a personal criminal attachment to its fitness landscape, with both itself as a complex system, and the people within it. As a result, it provided the cartel with a core resilience with the already, and newly converted, delinquents and criminals of Medellín. As will be discussed later, it was a change in the Medellín Cartel's conditions, to foster personal criminal attachment, that contributed to the change in its fitness landscape, ultimately leading to its demise.

MAS, guerrillas and paramilitaries

As the wealth of the Medellín Cartel began to rise, the M-19 guerrilla movement soon adopted a new strategy of kidnapping wealthy traffickers to fund its cause. After a number of successful kidnappings, it was the kidnapping of the daughter of one of the Medellín Cartel leaders, Jorge Ochoa, that prompted a nation-wide meeting of all traffickers in November 1981 (Eddy et al 1988; Gugliotta & Leen 1989). As illegal non-state actors, the traffickers had no choice but to take matters into their own hands. At this meeting, the traffickers, including the Medellín and Cali Cartels, amongst others, formed an alliance called *Muerte A Secuestradores* ('MAS') (Death to Kidnappers), where each of the traffickers would contribute on a voluntary basis either money, arms or soldiers through their paramilitary connections. International criminals, some of them professionals, also played a role in either training or supporting the death squad (US Department of Defense 1991; Clawson & Lee 1998; Strong 1995). Shortly after, MAS waged a short-lived, but bloody and violent attack against M-19. Following a meeting of MAS and M-19 leaders, Ochoa's daughter was freed, amongst others and M-19 abandoned its

strategy of kidnapping traffickers (Eddy et al 1988; Gugliotta & Leen 1989). While the purpose of this group was short-lived, it brought together a range of autonomous complex actors, through their joint vulnerability to extortion, and shared need of ceasing the kidnappings and releasing the captives. As explained earlier (Kauffman 1993), complex systems must be sensitised to one another and feel some sense of common identity or common focus to form allegiances and alliances, and that is exactly what had happened. Although the goal of MAS was quickly achieved and the group soon dissipated, it also led to the co-evolution of broader co-operation between traffickers, realising that at certain times, it is better to work in cooperation rather than in competition with each other. As Escobar's brother, Roberto recounts (Escobar R 2010:54):

> Many of the M-19 were killed in the Colombian way of *La Violencia*, the most painful way imaginable, with limbs cut off, and within weeks Martha Ochoa was let free without harm. The success of this effort made the drug traffickers realise how much stronger they were working together than independently.

Fragment 49: Medellín Cartel associate & Escobar's brother

This co-operation, including an amicable division of US drug turfs, largely between the Medellín and Cali Cartels, held for a number of years (Eddy et al 1988; Gugliotta & Leen 1989). Through a complexity lens, each group of traffickers, or complex system, continued to maintain its own identity and focus on its own well-being, but certain parts changed to accommodate one another and compromises made. Another important outcome of MAS was the elevation of Escobar amongst his peers, not just the Medellín Cartel, but other traffickers. According to Morris Busby ('Busby'), US Ambassador to Colombia, 1991-94 ('The True Story of Killing Pablo' 2009):

> [Escobar] became the king of cocaine, the titular head of the Medellín Cartel. And the Medellín Cartel had the reputation, well-deserved in my opinion, of being one of the most ruthless, violent, murderous, criminal organisations in the world.

Fragment 50: US government official

Escobar's elevation was largely due to his insistence on the use of terrorist tactics and armed force against M-19 culminating in a quick success. At the time, if you wanted to survive in the underworld, you needed to be more feared than your rivals. In the case of Escobar, it was his intimidation and assumed leadership that cultivated his reputation of violence and influence amongst his peers (Bowden 2002). Of particular relevance, as noted earlier in Chapter 2, is that 'terrorist

groups may bring forth leaders' but 'the criminal underworld may produce people with the necessary operational and survival skills' (Bovenkerk & Chakra 2007:36). In Escobar's case, he was both a leader and had the necessary skills. While MAS in its original form soon dissipated, certain traffickers continued to contribute and form allegiances and alliances with paramilitaries to protect their lands and strengthen their own fitness landscapes, especially in guerrilla strongholds (Eddy et al 1988; Gugliotta & Leen 1989; Bowden 2002). It was during this time that the paramilitary brothers, Fidel and Carlos Castaño, became close allies of the Medellín Cartel and Escobar himself (Bowden 2002). As pointed out by General Miguel Maza Márquez ('General Maza'), former Chief of Colombia's Intelligence Agency, 1984-1991 ('The True Story of Killing Pablo' 2009):

> The paramilitaries were [essentially] an armed branch of the drug traffickers.

Fragment 51: Colombian law enforcement

Through a complexity lens, Escobar was simply outsourcing his own pattern of success – his protection rackets. As Colonel Martinez notes (interview in Streatfeild 2000):

> [Escobar] had always done this, and he kept on doing it…protection and that stuff…up until the end.

Fragment 52: Colombian law enforcement

Finally, another important outcome of MAS was Escobar's direct negotiations with the leaders of the guerrilla movement M-19. To Escobar, M-19 was resourceful and clever, and perhaps a useful ally one day, in strengthening the Medellín Cartel's fitness landscape. According to several accounts, there was a kind of mutual respect between Escobar and the M-19 leaders (Eddy et al 1988; Gugliotta & Leen 1989). This connection also perhaps planted a seed for Escobar's later logic – if M-19 could stand-up to the state, and MAS (i.e. the traffickers led by Escobar) could stand-up to M-19, then why should not the traffickers led by Escobar stand-up to the state itself? As history tells us below, the M-19 did become a useful ally and the traffickers led by Escobar did stand-up to the state.

6.5.3   The height of the Medellín Cartel – 1980s

At the height of the Medellín Cartel, its leaders, associates and of course Escobar, enjoyed a life of luxury and extravagance. They were fulfilling the Medellín Cartel's ultimate goal – illicit wealth beyond their wildest dreams. By now,

Escobar himself owned numerous properties, land, cars, planes, helicopters, priceless artwork and even built himself a zoo full of exotic animals (Eddy et al 1988; Gugliotta & Leen 1989; Strong 1995; Bowden 2002; Escobar JP 2016). The Medellín Cartel's operations were extensive, with multiple methods and channels for completing the same activity or task, allowing it to absorb operational shocks and setbacks, and more importantly, always staying one step ahead of the authorities (Kenney 2007). At this time, the Medellín Cartel was continually looking for new business and smuggling routes, including new deals, allegiances and alliances with the governments of Panama, Cuba and Nicaragua ('The Godfather of Cocaine' 1997). At the height of its success, the organisation became less directed and more enabled, allowing it to adjust the nature of its fitness landscape and interconnected actors to promote greater creativity and adaptability. Essentially, the Medellín Cartel was at its optimal fitness, at the 'edge of chaos', where its emergent order was richer, more creative and adaptable, with its diverse set of actors and core strength. Moreover, the emergent order was not imposed from above, but from the distributed influence throughout the Medellín Cartel. The ongoing alignment of the Medellín Cartel's core goal, combined with the lack of alternatives for most of its actors, contributed to its ongoing resilience. Its fitness landscape comprised a variety of strong and moderate, but primarily weak interconnections, reflecting the fluidity of its strength. As identified earlier, some of its core groups of actors, in terms of high volumes, participated in non-violent activities, such as agricultural workers and contributory passive assistance from local communities, including informants and operatives. These high volume actor groups, while weakly interconnected, greatly enabled the cartel's operational and logistical support, including the provision of sanctuary when operatives were on the run.

Escobar's political ambition

Despite the success and wealth of the Medellín Cartel, Escobar wanted something that money could not buy, and certainly did not align with the goals or shared needs of the Medellín Cartel. On reflection of many, including Escobar's own family, former traffickers and state actors, what Escobar wanted certainly contributed to the beginning of the end of the Medellín Cartel (Eddy et al 1988; Gugliotta & Leen 1989; Strong 1995; Bowden 2002; Escobar R 2010; Escobar JP 2016). As noted earlier, through a complexity lens, if a shared need is not felt, then

individuals will not be as motivated to engage with the group. What Escobar wanted was political power and social legitimacy through the respect of the people (Eddy et al 1988; Gugliotta & Leen 1989; Strong 1995; Bowden 2002). What this meant, was placing himself in the spotlight which 'normal' or 'ordinary' criminals avoid – they prefer to remain in the shadows – but not Escobar. Although money does not buy respect, he certainly tried. In the early 1980s, Escobar began engaging in social causes in the poor *barrios* of Medellín, including the building of housing, infrastructure and facilities, but also a deep and personal engagement with the people through organising scores of neighbourhood committees and events (Eddy et al 1988; Gugliotta & Leen 1989; Strong 1995; Bowden 2002). Whatever his motives, he certainly helped the people and they loved him for it. Having built a power base for himself in the *barrios* of Medellín, Escobar decided to run as an alternate candidate in the congressional elections. At the centre of his campaign was the people, the marginalised, but his key political objective was a cause to himself, changing extradition laws (Bowden 2002). In one sense, the Medellín Cartel and Escobar were no strangers to politics or politicians, as most had been in their pockets for some time. In the words of a former Medellín Cartel trafficker ('The Godfather of Cocaine' 1997):

> There was a basic competitive nature amongst all of the heads of the cartel, not only in how much coke they could ship, but it was a game between them as to who could buy the most and the heaviest-duty politicians.

Fragment 53: Medellín Cartel associate

In 1982, Escobar won his alternate seat in congress, however, his political career was short-lived. It was cut short by the Justice Minister Lara, who publically denounced Escobar as a trafficker. Escobar was deeply humiliated and a year later, in 1983, removed from congress. Although there were many behind closed doors who knew the true nature of Escobar's illicit wealth, it was the first time that someone had publicly announced it (Gugliotta & Leen 1989; Strong 1995; Bowden 2002). In 1984, Lara continued his crackdown on traffickers, and in March 1984, the state police had a major success in the seizure of Tranquilandia, a cocaine processing laboratory in the middle of the Amazon jungle. At the time, it was the largest find in history, seizing 14 metric tons of cocaine worth over US $1 billion, together with numerous aircraft (Bowden 2002). However, as Jorge Ochoa, one of the Medellín Cartel's leaders points out (interview in *Frontline* 2000d):

> In 1984, the police took over Tranquilandia. A lot of people were working there…We could have defended Tranquilandia at the moment with violence. But we said "No, no, there should be no violence." So police took over the place…I don't think it affected the traffic much. There were many other labs all over the country, in many places…

Fragment 54: Medellín Cartel leader

Although Jorge Ochoa's comments were mainly directed at distancing himself and his brothers from Escobar's violence, his comments also highlight the Medellín Cartel's resilience to withstanding significant attacks on its operations. Given it was the mid-1980s, at the height of the Medellín Cartel's success (Forbes n.d.), through a complexity lens, the Medellín Cartel as a complex system, easily demonstrated its resilience, through surviving attacks on its constituent parts.

Lara assassination

Despite the Medellín Cartel's ongoing resilience, Escobar was upset by the attack on Tranquilandia and still humiliated from Lara's denunciation, so he responded in his signature style. A month later, in April 1984, he had Lara assassinated (Strong 1995; Bowden 2002). At Lara's funeral, President Betancur, the Colombian President at the time, announced the one thing that traffickers feared the most – he would restore Colombia's extradition law (Bowden 2002). Soon after, leaders of the Medellín Cartel, including Escobar, fled the country to Panama, then Nicaragua, before returning to Colombia to resume their fight against the state (Strong 1995; Bowden 2002).

Los Extraditables

In 1984, given the cyclical change in the contextual variable of extradition laws, as Escobar no longer held political office, a new political strategy and alliance was formed to fight extradition. The alliance was once again between the traffickers, including the Medellín and Cali Cartels, and called *Los Extraditables* (The Extraditables). According to the Terrorism Research and Analysis Consortium (TRAC) research database (TRAC 2016), *Los Extraditables* was:

An organisation created by Colombian drug lords in the early 1980s for the purpose of persuading the Colombian government into banning extradition. Initially the group's purpose was to publish newspaper ads in which they defended their position and to influence political parties to speak in favour of their goals. However, over time their actions escalated into a war between the state and the mafia, with violent acts of terrorism committed against politicians and members of law enforcement. Its members were largely drawn from the Medellín Cartel and others linked to the drug trafficking racket.

Fragment 55: Scholar research database

Based on numerous sources, *Los Extraditables* was led by Escobar and Gacha, both from the Medellín Cartel, and it was essentially a separate terrorist group to serve the collective interests of the cartels and other traffickers (Strong 1995; Bowden 2002). Its political objective was to overturn Colombia's 1979 Extradition Treaty, first through intimidation and corruption, then increasingly through violence. It launched its first public letter on 15 November 1984 to protest the arrest of Jorge Ochoa in Spain. On its letterhead and many more to follow, was the motto, 'better a grave in Colombia than a prison cell in the US' (Strong 1995; Bowden 2002; Escobar JP 2016). As history tells us, both Escobar and Gacha did in fact end-up having their graves in Colombia, while many other traffickers ended up in a prison cell in the US.

Through a complexity lens, based on Makarenko's (2011) crime-terror continuum, instead of the Medellín Cartel simply adopting the tactics or turning into the other, a separate terrorist group evolved to serve the broader interests of the cartels and traffickers, and in turn strengthen their fitness landscapes. Based on the different types of terrorism offered by Martin (2016), *Los Extraditables* fits into criminal terrorism, and more specifically into narco-terrorism, as it was created through politically inspired violence to change extradition laws. Although the group in and of itself did not make any profit, similar to some of the paramilitary groups being seen as a security arm of the traffickers, *Los Extraditables* may also be seen as a terrorist arm. In the formation of *Los Extraditables,* the Medellín Cartel also learnt from the co-evolution and dissipation of MAS. Unlike MAS, *Los Extraditables* had clear leadership from the start, rather than assumed, as Escobar's reputation had already been firmly established (Gugliotta & Leen 1989; Strong 1995; Bowden 2002). *Los Extraditables* was also fully funded, as now there was a compulsory 'war tax' to pay, to fund the activities, compared to the voluntary contribution of MAS. Finally, it was also more organised and disciplined, with only its key leaders making political decisions (Gugliotta & Leen 1989; Strong 1995; Bowden 2002;

Escobar R 2010). As argued by Bibes (2001:255), 'criminal organisations [become] more political in nature, because to protect their long-term positions, they must have political influence'. However, as both of its leaders were violent in nature, the group quickly favoured political violence, rather than political influence; this included selective political assassinations and kidnappings, to less discriminate targets impacting civilian populations, such as car bombings in populated areas, and symbolic targets, such as blowing up buildings (Gugliotta & Leen 1989; Strong 1995; Bowden 2002). Through a complexity lens, given this change in political violence, as will be seen later, complex systems that are no longer sensitised to one another to form allegiances and alliances will become strained. As noted in Chapter 3, given the nature of complex alliances, this does not mean that all the parts are reading from the same page (Kauffman 1993). According to the Ochoa brothers (interviews in *Frontline* 2000d; 2000e):

> The violence was generated by Pablo Escobar…we were never in agreement with those terrorist acts…It wouldn't point to him personally, but "*The Extraditables*" terrorist group was Pablo Escobar.

Fragment 56: Medellín Cartel leaders

As highlighted in Chapter 2, 'when it comes to a criminological theorising about organised or professional crime, what remains constant is the deployment of organised violence and the pursuit of illicit wealth' (Sheptycki 2008:26). In Escobar's case, as well as the pursuit of illicit wealth, he deployed a special brand of organised violence, which influenced the violent nature of *Los Extraditables* killing thousands of innocent victims. According to Steve Murphy ('Murphy'), former DEA special agent based in Medellín 1991-94 ('The True Story of Killing Pablo' 2009):

> This wasn't a normal criminal…Pablo Escobar rates right up there with Adolf Hitler. This is a man that's responsible for thousands and thousands of deaths of innocent people.

Fragment 57: US law enforcement

As will be discussed in the next section, it was during the latter part of the 1980s and early 1990s, that Escobar and the *Los Extraditables* drew upon Colombia's violent past and contextual variable, to reap the most damage in their time.

M19 Palace of Justice attack

In 1985, shortly after the formation of *Los Extraditables*, Escobar exploited his earlier connection with the guerrilla group M-19 and allegedly paid them in arms and money to invade Colombia's Palace of Justice (Eddy et al 1988; Gugliotta & Leen 1989; Strong 1995; Bowden 2002). This was despite the fact that, as mentioned in Chapter 2, 'organised criminals, in most cases, will not want to be associated with extremists for fear of coming under additional scrutiny' (UK National Crime Agency 2015:3). However, in Escobar's case, he was no 'ordinary' criminal and already under extreme scrutiny. Moreover, through a crime-terror nexus lens, given the nature of both Escobar and the M-19, it is difficult to determine who is the criminal and who is the terrorist in this alliance. According to most accounts, Escobar's objective was two-fold – the kidnapping of the entire supreme court and the destruction of all the evidence against the Medellín Cartel and other traffickers supporting extradition cases ((Eddy et al 1988; Gugliotta & Leen 1989; Strong 1995; Bowden 2002). The attack also happened to be on the same day the supreme court was to have ruled on Colombia's extradition law. During the attack, 11 of Colombia's 24 supreme judges were murdered and nearly 100 people killed. More importantly, 6,000 case files of evidence had been destroyed (Strong 1995). Through a complexity lens, forming an early ally of the guerrilla movement M-19 certainly influenced and shaped the Medellín Cartel. However, this event also brought the Medellín Cartel and Escobar to the attention of the world's press through their reported connections to the M-19. Despite the media attention, the Medellín Cartel simply continued their lucrative cocaine business, amidst the carnage that followed (Strong 1995).

6.5.4   The fall of the Medellín Cartel – late 1980s to early 1990s

The Cartel wars

As mentioned earlier, complex systems must be sensitised to one another to form allegiances and alliances, otherwise these relationships will become strained. As also mentioned earlier, one notable difference in the backgrounds of Escobar and Gacha, compared to the Ochoa brothers, was the use of violence. Similar to the Ochoa brothers, the Cali Cartel, notably the Rodríguez brothers, also preferred the use of influence and discretion instead of violence (Gugliotta & Leen 1989; Strong 1995). Compared to the Medellín Cartel, known for its violence, the Cali Cartel's

nickname was 'Cali's Gentlemen', in recognition of their higher socio-economic background and respectable business-like manner (Rempel 2011; Chepesiuk 2013). As such, the two groups of brothers from each cartel formed an early affinity, as evidenced by joint business ventures and investments between them, including co-ownership of a bank, the First Inter-America's Bank, and even vacationing together (Chepesiuk 2013). Unlike Escobar, the two groups of brothers also shared a similar view on politics and preferred to remain in the shadows. Of note, while both sets of brothers distanced themselves from Escobar's *Los Extraditables's* political violence and terrorist acts, they also supported and benefited from the group's activities (*Frontline* 2000d; 2000e; Chepesiuk 2013). This is similar to today's organised criminals, where criminals like to distance themselves from terrorists and terrorist groups, for fear of coming under additional scrutiny, while also benefiting from the activities between them (UK National Crime Agency 2015).

Moreover, according to a number of sources, while Gilberto Rodríguez, the eldest and most influential brother of the Cali Cartel, was jailed in Spain in the mid-1980s, Escobar 'stole' some of the Rodríguez smuggling routes and US markets, imposing a tax on other traffickers to use them (Chepesiuk 2007). While Gacha and many traffickers agreed to Escobar's terms, the Ochoa brothers, and other traffickers based in Cali, did not. Along with some other disagreements at the time, the 'Escobar v Cali' war of the cartels began (Chepesiuk 2013). Notably, it is largely referred to as Escobar's war and not the Medellín Cartel's war, due to a mix in loyalties of the Ochoa brothers, eventually causing a rift in the Medellín Cartel (Strong 1995; Rempel 2011; Chepesiuk 2013).

The war of the cartels began in January 1988, with the Cali Cartel bombing a building where Escobar's family lived. In retaliation, Escobar bombed a chain of pharmacies owned by the Rodríguez brothers throughout Colombia (Strong 1995; Chepesiuk 2007; 2013). According to William Rodríguez, the son of Miguel Rodríguez of the Cali Cartel, in his 2014 autobiography called *Yo soy el hijo del cartel de Cali* (*I am the Son of the Cali Cartel*), with quotes translated into English by journalist Silva-Warren (2014):

> There are no excuses for that war. Situations were presented at a historic moment in the country where a man named Pablo Escobar wanted supreme *power* and even wanted to be president. He completely lost his sanity and turned the entire world into his military objective. Pablo Escobar blew up more than 50 local pharmacies and killed many of our

employees. We were fighting against the greatest Latin American criminal in history. When you are in a war and conflict, unfortunately, there are casualties on both sides [*emphasis* added].

Fragment 58: Cali Cartel, William Rodríguez, son of Miguel Rodríguez

On numerous occasions, the Ochoa brothers tried to mediate between Escobar and the Rodríguez brothers (Gugliotta & Leen 1989). As Juan Ochoa himself comments (interview in *Frontline* 2000e):

My brother Jorge was closer to Pablo. He tried to intervene so that things would be done in a non-violent manner. But Pablo didn't accept that very much. My brother and I were not very close to him. My brother simply tried to mediate when there was a war with the ones in Cali, so the war would finish and there would be no more violence or any more of that.

Fragment 59: Medellín Cartel leader

Unfortunately, the mediation did not have the desired outcome and the violent 'Escobar v Cali' war continued. At the same time, Escobar was also continuing a violent war against the state in the name of *Los Extraditables*. It is ironic that, at the same time, the Cali Cartel was benefiting from one war, Escobar's *Los Extraditables,* whilst also engaging in its own gang war with Escobar. As noted earlier, 'unlike terrorist organisations…conventional criminal groups may have competition…[involving]…aggressive efforts to maintain "market share" and so called "gang wars"' (Grabosky & Stohl 2010:111). Through a complexity lens, as *Los Extraditables* was a narco-terrorist group, the Cali Cartel were more than happy to reap the rewards of its alliance and 'co-operation', whilst continuing its war of 'competition' for market share. The cartel war also caused a major rift, not only between the two cartels, but also between the Medellín Cartel's own associates. Over time, the Ochoa brothers formed closer ties to the Rodríguez brothers, and so they became less connected to the Medellín Cartel, and some of their key associates also weakened their ties. Essentially, certain associates of the Medellín Cartel started to feel the lack of a shared need with Escobar's wars of competition and ongoing violence with the state.

The violence

As noted earlier, it was during the latter part of the 1980s and early 1990s, that *Los Extraditables* reaped the most damage, and took its violence to new extremes, killing thousands of innocent victims (*The Godfather of Cocaine* 1997; *The True Story of Killing Pablo* 2002; *Killing Pablo* 2003). This period was terrorism at its worst and

played out in Colombia's cities. There were numerous terrorist acts, including countless car bombs of both state and civilian targets, kidnappings of the political elite and assassinations of over 500 policemen, 40 judges, an attorney general, the director of a major newspaper and a leading presidential candidate (Gugliotta & Leen 1989; Strong 1995; Clawson & Lee 1998; Bowden 2002). In particular, the random bombings of civilian targets, including banks, offices, hotels and shopping malls, greatly influenced the mood of the people and made them feel very unsafe and fearful (Clawson & Lee 1998). According to Blum, US Senate investigator, 1987-89 ('The Godfather of Cocaine' 1997):

> I don't think I've ever been in a place where so many people are so heavily armed and so quick to show you that they're heavily armed…Violence was a trademark of the Medellín Cartel and extraordinary violence was their special trademark.

Fragment 60: US government official

As also noted earlier, with the common characteristic of violence, it is important to distinguish between organised crime and terrorism. While organised criminals use violence, the motivation is different (i.e. for material gain) and the victim of violence is usually the target (Hoffman 2006; Aly 2015; Martin 2016). In contrast, the victims are not usually the target in terrorism, as the motivation and target is usually symbolic (e.g. a building) to change 'the system' and the victims are usually innocent bystanders, mostly civilians (Hoffman 2006; Martin 2016). As described above, given *Los Extraditables* was a narco-terrorist group, it targeted both. Through a complexity lens, as argued earlier, 'if violence works fractally…the more intense the large-scale violence around us, the more intense and prevalent violence should become at the interpersonal level through the social system' (Pepinsky 1997:103-104). Drawing on Colombia's history and culture of violence, it is worth repeating and expanding on an earlier point (Franks 2006:34):

> A culture of violence can be propagated and prolonged by the continuity provided by historical and cultural memory. Societies can be sensitised to accept different levels of violence depending on their history and experience. Some environments are therefore more conductive then others…[including] South America…where a culture of violence tends to perpetuate itself.

Fragment 61: Peace & conflict studies scholar

According to Strong (1995:142), it was the close 'bond between peasant sons' – Escobar and Gacha – that also perpetuated the violence as the leaders of *Los Extraditables*. This bond 'was at the heart of the terrorist machine [*Los Extraditables*]

taking on the Colombian state' (Stong 1995:142). Equally, at the same time, replacing Pepinsky's argument of violence with the word 'fear', it can also be argued that if fear works fractally, then the more intense the large-scale fear around us, the more intense and prevalent fear should become at the interpersonal level through the social system. As there is a parallel and scaling in place with complexity, both individuals and society at large were living in fear of perpetual violence and the violence itself.

Galán's assassination

In August 1989, the leading presidential candidate, Luis Carlos Galán Sarmiento ('Galán') was assassinated. Like Lara before him, Galán was a vocal supporter of extradition and had made it a centre piece of his campaign. He was also a fierce anti-corruption crusader and skilled campaigner. The only thing he had in common with Escobar, was his magnetic personality ('The True Story of Killing Pablo' 2009). Following Galán's assassination, the Colombian president at the time, now President Barco, immediately declared war on the Medellín Cartel. He also announced that despite the ongoing legal status of extradition law, he would conduct extraditions by executive order (Strong 1995; Bowden 2002). Unlike Lara, the murder of Galán was a key turning point for the Colombian people. For the first time, society as a collective started to rebel against the Medellín Cartel and Escobar, as depicted in the words of Galán's sons while discussing their father's assassination (interview in *Sins of My Father* 2009):

> He denounced the infiltration of drugs money…He didn't do it because he was a moralist or because he deemed drugs or a joint immoral, he did not do it because of that. He considered the *corruptive power* of drug money immoral… Galán's goal was to change the mind-set of Colombia's people and in doing so, I think the country remembers Galán because of that, because he somehow *brought about a change* in the way people thought and caused an impact in Colombia's *collective consciousness* [*emphasis* added].

> *Fragment 62: Assassinated Colombian Presidential Candidate's sons*

Through a complexity lens, this change in moral collective consciousness, combined with the ongoing exhaustive violence, certainly weakened and diminished some of the Medellín Cartel's criminally exploitable ties and even broke some of them completely. The impact on the Medellín Cartel was substantial. Galán's assassination had influenced some of the larger populated groups of the Medellín Cartel, including its marginalised workers and contributory passive supporters. As with most criminal groups, the Medellín

Cartel emerged from the disenfranchised and marginalised population to provide a means for these individuals to achieve their goals. Weakening or diminishing ties of passive supporters is especially important as passive support creates an atmosphere of anonymity by which a cartel flourishes. With a change in interconnectivity of these actor groups and the resulting fitness landscape, the Medellín Cartel became weaker and more vulnerable to disruption and attacks on its constituent parts.

Search Bloc 1

In Colombia, outraged by Galán's assassination and the Medellín Cartel's exhaustive violence, often in the name of *Los Extraditables*, it had become clear that for the 'Colombian state to survive in any form that resembled a democracy', the Medellín Cartel and Escobar had to be eliminated as they could no longer co-exist with the state (MacQuarrie 2015:31). In response, the Colombian government created a special elite unit of police and soldiers called *Bloque de Busqueda* (Search Bloc) with the sole aim of capturing Escobar ('The True Story of Killing Pablo' 2009). Colombia was aided by some of the US top-secret special army units; notably, its counter-terrorism unit Delta Force and its secret surveillance unit Centra Spike. Whoever was going to be in-charge of the Search Bloc would immediately become Escobar's number one enemy and target for assassination – it was a job that nobody wanted (Strong 1995; Bowden 2002). According to Colonel Martinez, the one who landed the job (interview in Streatfeild 2000):

> When Galán and Franklin [a senior police officer] were killed, that was the day that the Search Bloc was created, with the sole purpose of getting Escobar. It wasn't a definitive group regarding who would integrate it within the state. It started off as a reaction – this group had to be made up of a different group to that operating in Medellín...all together we had some 150 men. This eventually went up to about 600.

> *Fragment 63: Colombian law enforcement*

Moreover, Colonel Martinez had only accepted the job on the condition that he would be periodically rotated out of the 'hot seat' every few weeks. However, as Colonel Martinez notes, 'there was never a change in personnel. I remained on duty the entire time' ('The True Story of Killing Pablo' 2009). In the words of the Colonel's right-hand man ('The True Story of Killing Pablo' 2009):

> We were chasing after the most dangerous criminal organisation in the world, backed by more than a thousand men in uniform from a combination of various Colombian armed forces. As soon as the Search Bloc was formed, Pablo Escobar announced that he was going to kill 60 members of the Search Bloc in the first month. And then he proceeded to

make good on his word…In the first few weeks of the Search Bloc's efforts, scores of the [Search Bloc's] men were killed.

Fragment 64: Colombian law enforcement

As a result, the state considered disbanding the Search Bloc a number of times, but Colonel Martinez asked for and received more men and continued his mission (Bowden 2002). Eventually, the Search Bloc began to make some important in-roads and started arresting or killing some of Escobar's inner circle, including one of the Medellín Cartel's leaders, Gacha (in December 1989) and Escobar's cousin and brains behind the Medellín Cartel, Gustavo (in August 1990), both killed in a shoot-out (Strong 1995; Bowden 2002). When Gacha was killed, the leadership of *Los Extraditables* fell solely to Escobar, and consequently, the activities of *Los Extraditables* became even more violent, with the *sicarios* carrying out Escobar's orders religiously (Strong 1995; Bowden 2002). Through a complexity lens, the removal of Gacha and Gustavo from the Medellín Cartel, combined with Escobar's ongoing violent strategy, continued to cause major rifts amongst the traffickers, especially those influenced by the Ochoa brothers who preferred negotiation to violence. As these rifts became chasms, it also enabled the Search Bloc to close in even closer on Escobar's inner circle and support network.

The Avianca bombing

In November 1989, as the Search Bloc was closing in on Escobar and the Medellín Cartel, an assassination attempt was made on the next presidential candidate, Cesar Gaviria Trujilo ('Gaviria'), Galán's successor and eventual President from 1990 to 1994. Whilst attempting to assassinate Gaviria, a domestic airplane, Avianca Flight 203, was blown-up during its flight from Bogota, killing 110 people, including two US citizens, with no survivors. Due to security concerns, Gaviria had been advised not to board the airplane at the last minute (Strong 1995; Bowden 2002). Following the graphic media images broadcast around the world, and the death of two US citizens, the US was finally put on a collision course with the Medellín Cartel and Escobar. Following the Avianca bombing, Escobar 'became what the US consider a clear and present danger' ('The True Story of Killing Pablo' 2009). As noted earlier in the contextual variables, following the election in 1988 of US President Bush, while Lara's assassination in 1984 had placed the Medellín Cartel and Escobar at war with Colombia, it was only now that they were becoming a target for the US (Bowden 2002). It was also during this time that the

US laws prohibiting assassination of foreign nationals were re-interpreted. The new interpretation was that if the US President determined a foreign national a threat to national security or the lives of US citizens, then a person could now be targeted for assassination, not just arrest (Strong 1995; Bowden 2002). In 1989, President Bush made his view on the drug cartels very clear in a live nationwide radio and televised speech (Bush 1989):

> And our message to the drug cartels is this: The rules have changed. We will help any government that wants our help. When requested, we will for the first time make available the appropriate resources of America's Armed Forces...And for the drug kingpins: the death penalty.

Fragment 65: US former President Bush

Through a complexity lens, this was another key turning point for the Medellín Cartel and Escobar, as one of its complex sets of actors just became substantially greater and hence a greater threat to its fitness landscape and ultimate survival.

The negotiations

In May 1990, the newly elected Colombian President Gaviria declared in a nationwide televised speech (*Sins of My Father* 2009):

> Colombia's number one enemy is the terrorist Pablo Escobar and his criminal organisation which murders, mercilessly and unceremoniously innocent children, women and men.

Fragment 66: Colombian former President Gaviria

What is important to note is President Gaviria's choice of words. Escobar was considered a terrorist first and foremost, not a trafficker or organised crime criminal, and his criminal organisation, *Los Extraditables,* a terrorist group. As explained in Chapter 2, the use of the word 'terrorist' is driven by one's perspective, including political leaders like President Gaviria, whose choice of words may be interpreted as a political strategy to illicit an emotional response from the public, especially those who still supported Escobar and the cartels. Shortly after President Gaviria's speech, *Los Extraditables* kidnapped a number of high-profile politicians and journalists, including the daughter of a former Colombian President, whilst continuing its onslaught of violence in Colombia's cities (Strong 1995). The high-profile hostages, combined with its ongoing violence and more importantly, the amplification of the public's fear of violence, proved to be a powerful bargaining chip for *Los Extraditables.* Previously, society had been largely indifferent to extradition, especially as in some respects, its national pride

had been at stake. As Strong (1995:140) points out:

> To enforce extradition was also to admit the inadequacies of its own criminal justice system. The act was politically humiliating, at home and overseas. Each extradition tempered the US's image as a bearer of justice and Colombia's as a country of criminals. To rub salt into the wound, it was the US that was the biggest consumer of cocaine.

Fragment 67: Investigative journalist

However, by targeting the public's fear and sense of insecurity, largely through its sustained random acts of terrorism, *Los Extraditables* succeeded in magnifying this fear and changing public opinion. Public opinion essentially changed from outrage, after the political assassinations of Lara and Galán, to acceptance, after the ongoing onslaught and fear of violence, to the traffickers demands (Clawson & Lee 1998). Even though it would not end the international 'war on drugs', a deal with the traffickers to end extradition and negotiate their terms of surrender in Colombia, would at least end the onslaught and fear of violence in Colombia's cities. The rationale for this deal is not dissimilar to the recent 2016 FARC deal with the Colombian government, where 'an imperfect peace' is considered better than 'a perfect war'. During the long drawn-out negotiation period, *Los Extraditables* held its captives and continued its reign of terror until Escobar's deal with the government was done (Strong 1995; Bowden 2002). It was also during this time, that the Ochoa brothers sought to further distance themselves from the violence of *Los Extraditables* and pursued a separate negotiation process from Escobar. As a result, by February 1991, all three Ochoa brothers had quietly surrendered to the government, entering into five-year reduced prison sentences to be served in a prison just bordering Medellín (Strong 1995). Paradoxically, if there had been no violence by the *Los Extraditables,* the government would not have been forced to negotiate with the traffickers in the first place; hence the Ochoa brothers would not have been in a position to negotiate their reduced prison terms. Following the surrender of the Ochoa brothers and mounting pressure on Escobar, as a sign of goodwill, *Los Extraditables* released its remaining captives in May 1991 (Strong 1995; Bowden 2002). Shortly after, in June 1991, following an acceptable deal with the government and on the same day that extradition laws were finally prohibited, Escobar and other associates of the Medellín Cartel finally handed themselves in. Similar to the Ochoa brothers, their sentences were lenient and short, with Escobar only needing to plead guilty to a single offence of one overseas drug deal (Strong 1995; Bowden 2002).

Through a complexity lens, the Medellín Cartel had evolved significantly over the last decade, yet its leaders and key associates had all paid a price for its success. Funding *Los Extraditables* had cost the Medellín Cartel and Escobar a small fortune, although it had successfully swayed public opinion in the ongoing repetition and onslaught of violence enhancing the public's fear in a never-ending feedback loop. Under increasing pressure between the war of the cartels and war on the state, the Medellín Cartel's fitness landscape and empire had started to collapse. Of its leaders, Gacha had been killed in December 1989, the Ochoa brothers imprisoned in February 1991 and now it was Escobar's turn to be imprisoned in June 1991. Other key associates such as Escobar's cousin Gustavo had been killed in August 1990, together with scores of others, who had either been killed, arrested or were on the run. Another key associate Lehder, was one of the few who had been successfully extradited to the US in 1987 (Strong 1995). In comparison, the Cali Cartel was thriving at the Medellín Cartel's expense (Bowden 2002; Chepesiuk 2007; 2013).

The prison - La Catedral

As part of the deal with the government, the state built Escobar and the Medellín Cartel a custom-built prison on the outskirts of Medellín (Strong 1995; Bowden 2002). The prison was called *La Catedral* (The Cathedral), except it was no ordinary prison. It was more like a resort than a prison, nicknamed 'Hotel Escobar', with its own jacuzzi, bar and discotheque, and frequent visitors, including family. According to Bowden (2002:111):

> It was not a normal prison in other ways. Pablo, for instance, did not feel obliged to actually stay. He rarely missed an important pro soccer game in Medellín – police would block off traffic to allow Pablo's motorcade easy access to and from the stadium he had built years before – and he was sighted shopping in a fashionable Bogota mall over the Christmas holidays. In June 1992 he celebrated the first anniversary of his imprisonment [outside of his prison] with his friends and family at an Envigado nightclub. Pablo considered such excursions minor…he did, after all, always come back. He had made his deal with the state and intended to honour it…

> *Fragment 68: Investigative journalist*

Also, as part of the deal, Escobar was to be guarded by his own men and Colonel Martinez and his Search Bloc were not allowed within 20 kilometres of the prison (Strong 1995; Bowden 2002). Although everyone knew *La Catedral* was a charade, the government turned a blind eye to keep the peace and violence out of the cities, and in the first year, it was peaceful in the cities. Society had started to live again

without fear. Most of Colombia were happy to live with the deal and it was only the US that kept pushing for the charade to end (Strong 1995; Bowden 2002). As Bowden (2002:116) points out:

> Few in the US embassy understood how hard it was to get things done…In Colombia, everything was a fight. On paper, the president had power over all his ministries, but in reality, as Gaviria and all Colombian presidents before him discovered to their frustration, his authority was hopelessly diffuse. The army and the police and the secret police and the Justice Ministry were all fiefs, each made up of a multitude of smaller fiefs, all of them feuding and conspiring and plotting against one another. In the case of Pablo, all were united in their unwillingness to get involved. The police, locked out by Pablo's deal, were eager to see the whole thing discredited. The judiciary wanted no part of prosecuting a man who had ordered the murder of every cop, judge and jailer who had ever crossed him. The army was even worse.

Fragment 69: Investigative journalist

Meanwhile, Escobar quietly went to work rebuilding his Medellín Cartel empire and continuing his drug trafficking from prison (Strong 1995; Bowden 2002). As time passed, Escobar had to increasingly rely on a few of his key associates outside the prison to run the day-to-day hands-on management of the business. Not long after his first year in prison, Escobar suspected a few of his trusted key associates, notably the Moncada and Galeano families, of skimming profits from the Medellín Cartel. To set an example to the rest of the Cartel, despite a lack of evidence, Escobar summoned the heads of these two families to *La Catedral* and had them tortured and murdered on-site (Strong 1995; Bowden 2002).

In complexity, any actor may influence, and is influenced by another actor or actors in a complex system. More importantly, each actor is ignorant of the system as a whole and only responds to its local interactions (Cilliers 1998). As such, through a complexity lens, Escobar's separation from the day-to-day hands-on management of the cartel's business, with his local interactions confined to those inside the prison, resulted in Escobar's reduced capacity as a leader and enforcer of his own associates outside the prison. Moreover, the word spread quickly of Escobar's torture and murder of his own people while inside the prison, which quickly influenced those outside the prison, leading to distrust amongst the Medellín Cartel. From a fitness landscape perspective, many strong and moderate ties within the Medellín Cartel became weakened as distrust set in. As the Medellín Cartel tried to self-organise to allow it to adapt and survive, other key associates would soon challenge Escobar for control of the cartel and other alternatives would bifurcate and open-up such as the stronger Cali Cartel.

The escape

Following the murder of his own men, in his own prison, the government decided Escobar had gone too far and that he needed to be removed and placed into a 'normal' prison, or at least normal by Colombian standards (Strong 1995; Bowden 2002). In July 1992, after a raid on the prison by state authorities, Escobar escaped. However, Escobar had bribed so many guards, that 'escape' is not the correct word, he had simply walked out ('The True Story of Killing Pablo' 2009). According to Joe Toft ('Toft'), former special agent in charge in Colombia at the time ('The True Story of Killing Pablo' 2009):

> He walked out of the prison. He controlled the guards. He controlled everything.

> *Fragment 70: US law enforcement*

In the words of President Gaviria ('Killing Pablo' 2003):

> He escaped in an incredible way. He just walked out. People were so intimidated because of him. That he was able to go to a military line of people that were very well armed and he was unarmed. And he was able to walk out.

> *Fragment 71: Former Colombian President*

This time, Escobar had pushed Colombia too far. Following his escape, and in defiance of Colombia's constitution, President Gaviria accepted President Bush's earlier offer and invited the full force of the US into Colombia ('The True Story of Killing Pablo' 2009). As a result, this became another key turning point for Escobar and what was left of the Medellín Cartel. Through a complexity lens, as mentioned earlier, the Medellín Cartel and the state military had a common enemy – the guerrillas. As pointed out by Mallory (2007:59), 'ties among the military, paramilitary groups, the police and drug traffickers [are] a routine part of the narco-political atmosphere'. According to numerous sources, the military had relied on the Medellín Cartel to provide arms, money and training to the paramilitaries who were assisting them to fight the guerrillas. It also happened to be this military group that was stationed outside Escobar's prison at the time of his escape (Strong 1995; Bowden 2002; 'The True Story of Killing Pablo' 2009). Essentially, Escobar and what was left of the Medellín Cartel had drawn upon their criminally exploitable ties, to simply walk out of prison.

6.5.5   The demise of the Medellín Cartel – early 1990s

On the run and Search Bloc 2

Within a week of Escobar's escape, the Search Bloc was resurrected, however this time, it was much stronger, with the full support and co-operation of the US, including full training and assistance led by Delta Force and Centra Spike ('The True Story of Killing Pablo' 2009). It was also a time when 'the George Bush administration became obsessed with Escobar, who they blamed for "industrializing the cocaine trade"' (Roth 2010:414). There was one clear choice for the commander of the new Search Bloc and that was Colonel Martinez. Colonel Martinez once again accepted the role, but this time, he also returned with his son, Hugo Martinez Jr ('Martinez Jr'), who had also accepted a role within the Search Bloc.   With the full backing of the US, the Search Bloc was now more organised and focused, and had better intelligence and equipment. Using a large body of intelligence facilitated through Centra Spike and on-the-ground informants, the Search Bloc systematically targeted and eliminated the Medellín Cartel's key support mechanisms and infrastructure ('The True Story of Killing Pablo' 2009). Centra Spike's state-of-the-art surveillance equipment used radio telemetry to locate targets based on telephone radio transmissions. As a US embassy official observes ('Killing Pablo' 2003):

> [Centra Spike was special as it allowed you] to be able to in a clandestine manner fly reconnaissance missions that would be able to pinpoint with extreme accuracy the location of Pablo himself…It is the difference between looking for a needle in a haystack and being able to walk into somebody's front door.

> *Fragment 72: US government official*

However, despite this surveillance equipment, Escobar initially vanished. Escobar knew he could not talk for more than three minutes without his location being detected. Over the next 16 months, the Search Bloc conducted 11,000 search warrants and mounted 4,000 roadblocks looking for Escobar ('The Godfather of Cocaine' 1997). At the same time, Escobar renewed his war against the state, with daily chaos and violence, and random acts of terrorism in Colombia's cities ('The Godfather of Cocaine' 1997). Once again, the public lived in fear.

Though a complexity lens, just six months after Escobar's escape, the state of Colombia is best summed up in a February 1993 declassified intelligence cable, between the US Embassy in Bogota and the US Secretary of State in Washington

(US Department of State 1993a):

> Colombian violence has grown so *complex* that it's been characterised as "everyone against everyone". Many of the perpetrators, victims, tactics and motives change from region to region. The violent in Colombia tend to prey on one another, making the country a dog-eat-dog world, and the violence tends to *grow exponentially* as the victims – including landowners, businessmen and wealthy traffickers – take up arms in self defense...A strong cause of the violence is the continuing historical weakness of the state, especially the justice system and the security forces...the state's inability to punish the perpetrators is a major problem. That historical impunity and the country's social ills are a deadly combination [*emphasis* added].

> *Fragment 73: US declassified government document*

The cable goes on (US Department of State 1993a):

> The above presents a truly frightening picture of the violence in this country. A simple reading could lead one to conclude that the country is *out of control*. That's far from true. Colombia is a prosperous, functioning democracy that tragically seems to have learned to live with a very high level of *mayhem*...A factor marking the *evolution* of Colombian violence since the 1950s is that it has become more multiple and *complex*...the violent and their victims have become so *intertwined*, the *alliances so shifting* [*emphasis* added].

> *Fragment 74: US declassified government document*

As described in the cable, many of the contextual variables and criminally exploitable ties of the Medellín Cartel are clearly depicted in this picture of Colombia. Meanwhile, the tables were about to be turned. In the same month this cable was written, alliances were certainly shifting, as a new group called *Los Pepes,* derived from the Spanish phrase *Perseguidos por Pablo Escobar* (Persecuted by Pablo Escobar), began to emerge (Bowden 2002).

Los Pepes

To many, *Los Pepes* signified the end of the Medellín Cartel. According to declassified intelligence (US Department of Defense 1993)*:*

> *Los Pepes* evolved as a result of Escobar's murder of the Moncada and Galeano brothers, his former partners. *Los Pepes* are best described as a joint effort by Escobar's rivals with a declared goal of his complete demise.

> *Fragment 75: US declassified government document*

The group primarily comprised Medellín Cartel defectors and was led by members of the Moncada and Galeano families and paramilitary brothers, Fidel and Carlos Castaño, also former associates of the Medellín Cartel. Sources also suggest that Escobar's key rival, the Cali Cartel, provided financial support to the group (US Department of Defense 1993). Moreover, in another declassified US government intelligence assessment (US Department of State 1994):

Castaño probably was a member of Escobar's *"Extraditables"* terrorist group… Castaño remained loyal to Escobar until a few months after Pablo Escobar's July 1992 escape from prison. By then it had become apparent that Escobar was growing increasingly weaker, largely owing to the defection from his camp of former Medellín colleagues who wanted revenge for Escobar's murder of their family members while he was in prison. Ever the opportunist, Castaño switched his allegiance to the increasingly powerful Cali Cartel. He became the principal leader of *Los Pepes*.

Fragment 76: US declassified government document

As described in a declassified cable from the US Embassy in Bogota to the US Secretary of State in Washington, *Los Pepes* publicly announced its existence to the media on 2 February 1993 (US States Department of State 1993b):

On January 30 [1993], Escobar detonated a 100-kiliogram bomb in a congested area of downtown Bogota, killing 21 people and wounding over 70. The following day, "La Cristalina" a hacienda owned by Escobar's mother, was burned to the ground. "Los Pepes" announced its existence on February 2, stating that it would conduct acts of violence against Pablo Escobar and his family, on a one-for-one bases, in retaliation for any further terrorist acts committed by Escobar. Throughout February, Los Pepes continued their spectacular attacks on Escobar properties. Their operations, including the burning of two properties which housed members of his immediate family, destruction of priceless art works, and torching a prized antique car collection, seemed designed to demonstrate that the group was capable of striking at Escobar's most vulnerable points.

Fragment 77: US declassified government document

Los Pepes also emerged at a time when Escobar's key associates were either on the run, being arrested or turning themselves in for fear of being killed by the Search Bloc. At the same time, Escobar's assets were dwindling and he was reduced to living in safe houses that only a handful of people knew about (Escobar R 2010; Escobar JP 2016). In declassified information released in 2008, officially, there had been no relationship between *Los Pepes* and the Search Bloc, yet unofficially, intelligence had been exchanged (US National Security Archive 2008; 'The True Story of Killing Pablo' 2009). In Carlos Castaño's own words ('The True Story of Killing Pablo' 2009):

Pablo Escobar killed most of his friends and allies and his pals. But there were relatives that survived that lunatic, and they joined us…I provided information to the police under the code name Alekos. They never knew I was Carlos Castaño, leader of the paramilitaries…Los Pepes worked with the tacit cooperation of the US Government. The Colombian authorities did not oppose us either.

Fragment 78: Los Pepes paramilitary leader

As Murphy, former DEA special agent based in Medellín, points out, 'we're not afforded the luxury of having informants who are priests' ('The True Story of Killing Pablo' 2009). Similarly, Colonel Martinez notes (interview in Streatfeild 2000), 'they weren't our friends. They were informants. And they had become

informants for revenge'. As *Los Pepes* gruesome murders soon mounted – of anyone still remotely loyal to Escobar, including his family and friends – in 'just a few weeks after surfacing, the vigilante group had spooked Pablo more than anything the government had been able to do' in the past decade (Bowden 2002:188). It was a controlled bloodbath. On reflection, given the complex set of actors involved, the moral dilemma was not good versus bad, but bad versus evil. And, in the case of *Los Pepes*, they played dirty just like Escobar, without any rules. *Los Pepes* was certainly bad, but it was Escobar who was being portrayed as evil.

Through a complexity lens, there were multiple complex systems interacting and contextual variables at play. More importantly, the Medellín Cartel's fitness landscape had been reduced almost to Escobar himself. The criminally exploitable ties had either been removed, weakened, diminished or simply defected to the other side. Escobar's remaining loyalties came from groups divided. For example, some *sicarios* and other criminal gangs in Medellín remained loyal to Escobar, while others followed *Los Pepes*. Similarly, some of the people in the *barrios,* especially where he had built homes, provided sanctuary while he was on the run, while others turned to become informants against him. As noted in Chapter 2, in 'attacking networks, it is also critical to target the boundaries, either from one network to another, or from the criminal world to the upper world' (Williams 2001:94). Of note, is the unofficial connection between *Los Pepes* (criminal world) and the Search Bloc (upper world). Moreover, as von Lampe (2016:138) argues, 'it is not uncommon to see individuals being involved in two or more illegal firms at the same time'. In the case of Los Pepes that was certainly the case.

Escobar shot and killed

As *Los Pepes* began closing in on Escobar, he became increasingly concerned for the safety of his family – his Achilles heel. According to Busby, US Ambassador to Colombia, 1991-1994 ('The True Story of Killing Pablo' 2009):

> I was always of the opinion that we should watch his family, track his family, because he had the reputation of being an absolutely ruthless, murderous man but a man who really had great regard for his family, for his wife and his two children.
>
> *Fragment 79: US government official*

After several failed attempts to get his family out of Colombia, as the state was effectively keeping them as bait, just a week before Escobar's death, his family were once again refused entry to another country at the state's request ('The True

Story of Killing Pablo' 2009; Escobar JP 2016). On return, they were placed in a state-owned hotel in Bogota, for the dual purpose of keeping them safe from *Los Pepes*, but more importantly, monitoring their calls by the Search Bloc ('The True Story of Killing Pablo' 2009). At this point, Escobar was getting desperate, as he regarded *Los Pepes* and the Search Bloc as one ('The True Story of Killing Pablo' 2009; Escobar R 2010; Escobar JP 2016). Escobar started making mistakes. He was also increasingly living under strained circumstances as most of his empire and support network had been taken apart, either by the Search Bloc, *Los Pepes*, Medellín traffickers moving in on his turf or his rivals, the Cali Cartel ('The True Story of Killing Pablo' 2009; Escobar R 2010). One of the few remaining links to Escobar was his son, Juan Pablo (Escobar JP 2016). On 3 December 1993, Escobar stayed on the telephone for more than three minutes talking to his son. As Escobar was talking, another son, Martinez Jr, was listening in and managed to fix his exact location with his mobile surveillance equipment. During the raid, Escobar was shot by the Search Bloc and killed on the rooftop attempting to escape. The rest is history ('The True Story of Killing Pablo' 2009). The location of his death was just another house, on just another street, in his beloved Medellín, his other Achilles heel. Despite the Search Bloc's ultimate success, in the words of Toft, former special agent in charge in Colombia at the time ('The True Story of Killing Pablo' 2009):

> In my opinion, the greatest damage caused to the Medellín Cartel and to Pablo Escobar and his organisation was done by the *Los Pepes.*

Fragment 80: US law enforcement

Moreover, when asked about the death of Escobar and the impact on Colombian trafficking, the commander of the Search Bloc, Colonel Martinez offered (interview in Streatfeild 2000):

> I've always said that the orders we got to finish of the Medellín Cartel were not going to stop drug trafficking in Medellín or anywhere. We knew that. Everyone knew that. The president knew it, the ministers knew it.   We weren't going after drug trafficking. We were going after a guy who went crazy, killing people.

Fragment 81: Colombian law enforcement

Ultimately, while the death of Escobar marked the end of the Medellín Cartel and extreme terror attacks, it did not mark the end of Colombian drug trafficking.

6.5.6 Summary of macro-level insights

In summary, as the new complexity model places emphasis on patterns and structures of analysis, it may be argued that the macro-level case study offers fresh insights into the multitude of factors that influenced and changed the order or patterns inherent in the Medellín Cartel's complex system, rather than the disorder of the system itself. In doing so, these insights offer a new and different way of seeing the Medellín Cartel.

Of particular note, the analysis places emphasis on the interconnections at and across the Medellín Cartel's system boundaries with other complex systems, in forming allegiances and alliances. As acknowledged earlier, while a key focus of the case study surrounds organised crime, the thread of terrorism and the crime-terror nexus throughout the formation and evolution of allegiances and alliances, plays a pivotal role in understanding the fitness landscape and evolution of the Medellín Cartel.

In short, based on the case study analysis, Table 6.2 below summarises the multitude of factors that helped shape the Medellín Cartel, including why and how it evolved. Table 6.2 also offers a comparison of the new complexity model to other models and/or approaches often used in the study of Escobar and the Medellín Cartel.

Table 6.2: Summary of factors shaping the Medellín Cartel

	Factors	Description
1.	Variables & perspectives	**New model** As demonstrated by the data sets and fractal fragments, a large number of intervening variables based on perspectives of 'others', together with the sum of contextual variables, including historical, geographical, social, economic, political and media, all contributed to the emergence and evolution of the Medellín Cartel. **Other models and/or approaches** Other studies of Escobar and the Medellín Cartel tend to focus on one or more aspects of the drug trade, or criminal structures and/or activities, rather than a holistic study of the conditions that allowed them to emerge in the first place and/or a broad range of perspectives.

	Factors	Description
2.	Nature & strength	**New model** The Medellín Cartel's fitness landscape suggests the nature and strength of the group was greatly influenced by a broader set of actors, i.e. six categories of criminally exploitable ties comprising 22 types of actors. As demonstrated by the analysis, over time, the nature and strength of the Medellín Cartel changed in response to this broader set of actors and factors impacting their interconnectivity strength (i.e. affinity to the Medellín Cartel), not just factors impacting the core set of actors, such as its leaders and key associates. Of note, as apparent in the visual representations of the Medellín Cartel, the contributory categories of actors, all of which were essential in enabling or facilitating the criminal conduct of the Medellín Cartel, played a significant role in its emergence and evolution. **Other models and/or approaches** In other studies of Escobar and the Medellín Cartel, this broader set of actors are commonly overlooked in more traditional analysis.
3.	Allegiances & alliances	**New model** Throughout the operational period of the Medellín Cartel, a number of allegiances and alliances emerged due to the changing goals and needs of the Medellín Cartel, including Escobar. These include guerrillas (of note M-19), paramilitaries, international criminal groups and individuals, the formation of two vigilante groups (MAS and *Los Pepes*) and one terrorist group (*Los Extraditables*). All these interconnections, involving organised crime and/or terrorism activities, played a pivotal role in the fitness landscape and evolution of the Medellín Cartel. **Other models and/or approaches** The importance of allegiances and alliances, and how they evolve, is often under-developed or overlooked in other studies of Escobar and the Medellín Cartel.

Source: Author's summary based on macro-level analysis and insights and literature review

On reflection, the strategies and measures that changed, influenced and/or disrupted the patterns inherent in the Medellín Cartel's complex system and fitness landscape are best summarised using the new landscape metaphor and visual imagery. As such, Figure 6.13 below depicts the Medellín Cartel's 'time-lapsed' fitness landscape. Given the Medellín Cartel's ultimate demise, it's 'closing' fitness landscape may be simply visualised as a derelict city, i.e. remnants of 'broken' buildings where actors within its fitness landscape once stood.

Figure 6.13: Visual imagery: Medellín Cartel's time-lapsed fitness landscape

Changing landscape	Visual imagery
1. Strong interconnections Over the period, the leaders, including Escobar, and the key associates were targeted and removed (either shot, imprisoned or defected) by state and other forces, notably due to changing goal-alignments of Escobar's desire for political power and terrorism, through the co-evolution of allegiances and alliances with other traffickers, notably *Los Extraditables.* **Metaphor**: The permanent removal of buildings weakened and de-stabilised the city.	
2. Moderate interconnections A number of key events impacted the strength of moderate ties, by weakening their ties, notably i) Escobar's political ambition and ensuing violence, including the war of cartels, and ii) the mistrust of Escobar, though torturing and murdering his own men. Some of these ties not only weakened but shifted allegiances to create new alliances such as *Los Pepes,* new traffickers in Medellín and the Cali Cartel*.* **Metaphor**: The weakening of buildings reduced the city's core strength and resulted in the co-evolution of other cities.	
3. Weak interconnections Galán's assassination and the ensuing violence of the state and Cali wars contributed to the moral collective consciousness and fear in society thus breaking and diminishing weaker ties, including contributory passive ties of Medellín. **Metaphor**: The temporary and sometimes permanent removal of buildings from the city prevented adaption, self-organisation and emergence of the city to cope with the changing events.	
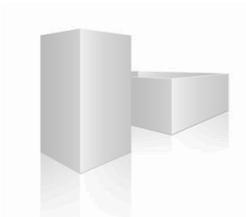
Source: Author's adapted imagery (using licensed images)

Overall, at a macro-level, what brought down Escobar, also brought down the Medellín Cartel; as depicted in Figure 6.13 above, there was no single factor involved. Of note, according to Blum, US Senate investigator 1987-89 ('The Godfather of Cocaine' 1997):

In the end, what brought Pablo Escobar down was a combination of forces arrayed against him. He had his own men, his own lieutenants who he had turned on while he was in jail, so they got together to get him. Then you have the government, which had faced a reign of terror and violence. And finally, you had the Cali cartel, which was the competition, saying, "This is our great chance to be rid of a formidable force which is competing with us…"

Fragment 82: US government official

While the combination of factors described by Blum certainly played a role in bringing Escobar down, as the nature and strength of the Medellín Cartel's fitness landscape tells us, there were other factors that contributed to these forces, such as contributory actor ties, allegiances and alliances, and underlying factors, such as contextual variables, all of which played a role.

In the next chapter, at the micro-level, the lens will shift to the behaviour of Escobar as an individual actor and the behaviour of the Medellín Cartel as the system itself. The new focus will aim to better understand Escobar's nature, his attitudes and behaviours, and ultimately his drivers and vulnerabilities that influenced and shaped the Medellín Cartel. A summary will also be presented in the next chapter of the overall new complexity model comprising both the macro and micro-level case study findings.

Chapter 7: Case study micro-level: Actor behaviour

'The only thing necessary for the triumph of evil is for good men [and women] to do nothing'

Edmund Burke, political theorist (1729-1797)

Chapter 7 sets out the micro-level findings of the application of the new complexity model as described in Chapter 5 to the in-depth case study of Escobar and the Medellín Cartel. It begins with an overview and compilation of Escobar's micro-level data sets. An analysis of Escobar's micro-level contextual variables, together with the construction of Escobar's attractor set and the Medellín Cartel's follows. Based on the data sets, contextual variables and resulting attractor sets, using complexity prompts, insights are drawn to better understand Escobar's behaviours, and ultimately his drivers and vulnerabilities, all of which influenced and shaped the behaviours of the Medellín Cartel. A summary of the overall new complexity model comprising the macro and micro-level case study findings is also presented.

7.1 Micro-level overview

In this chapter, the micro-level steps of the new complexity model as described in Chapter 5 will be applied to the behaviour of Escobar as an individual actor and the behaviour of the Medellín Cartel as the system itself. While other actors within the Medellín Cartel may also be analysed, as the creator and ultimate boss of the Medellín Cartel, Escobar is selected due to his pivotal role in influencing the Medellín Cartel. Furthermore, compared to Escobar, on review of available source data, limited information exists on other key actors, such as the leaders within the Medellín Cartel.

As explained earlier, an attractor is like a magnet, pulling the behaviour of the actors and the system towards it, producing an order within the disorder, and in doing so, creates patterns and structures. In a criminal group, such as the Medellín Cartel, identifying the attractor sets of individual actors such as Escobar and the

system itself, may ultimately help to better understand what shaped and influenced their behaviours, including drivers and vulnerabilities. To begin, the micro-level steps one to four are summarised below and applied in sections 7.2 to 7.5, followed by a summary of the overall new complexity model in section 7.6:

1. **Data sets**: generate the micro-level data sets of Escobar, as a subset of the Medellín Cartel's macro-level, using criminological frames of reference and complexity prompts, including fractal fragments.

2. **Contextual variables**: identify and analyse the micro-level contextual variables from the data sets of Escobar, as a subset of the Medellín Cartel's macro-level data sets, using complexity prompts.

3. **Attractor set**: construct the attractor sets of Escobar and the Medellín Cartel, based on an analysis of the data sets and contextual variables, using the mapping of Young's (1997b) concept of attractors to criminological study, together with complexity prompts, to organise, shape and structure the information.

4. **Insights:** based on the data sets, contextual variables and resulting attractor sets, using complexity prompts:

    • draw out and interpret the underlying qualitative patterns and structures to gain insights on what guided the behaviours of Escobar and the Medellín Cartel, and make inferences about the drivers and vulnerabilities of Escobar and the Medellín Cartel as a whole; and

    • on reflection, identify the strategies and measures that changed, influenced and/or disrupted their behaviours leading to their ultimate demise.

7.2   Step 1: Data sets – micro

Applying step one of the new complexity model, the micro-level data sets of Escobar, as a subset of the Medellín Cartel's macro-level data sets, are compiled using criminological frames of reference and complexity prompts, including fractal fragments.

7.2.1   Source data set – micro

As described in Chapter 5, the micro-level source data set is a subset of the macro-level source data set, comprising both primary and secondary sources as

summarised in Appendix 1.

7.2.2   Actor data set – micro

As presented in Table 7.1 below, from an analysis of the source data set at the micro-level of Escobar, the source data reveals 10 actor groups within the actor data set.

Table 7.1: Micro-level actor data set: Escobar

Actor groups
1. The Family
2. The Friends
3. The Business Associates
4. The Employees
5. The Locals
6. The Alliances
7. The Competitors
8. The Enemies
9. The State Authorities
10. The Media

Source: Source data in Appendix 1

As depicted in Table 7.1 above, the actor data set comprises a variety of 'others', from friends to enemies, and from locals to state officials, all with a variety of perspectives.   A selection of actors within each actor group is contained in Appendix 2.   As expected, each actor group contains multiple types of actors resulting in scores of perspectives to choose from. As also seen in Appendix 2, an actor may belong to more than one actor group. For example, the Castaño brothers (paramilitary leaders) initially formed an alliance with Escobar, then became friends and later enemies and sit in the actor groups 2, 6 and 8 in the Table 7.1 above.

As analysed below, there were many sides to Escobar.   In an interview with Wagner Moura ('Moura'), the actor who plays Escobar in the critically acclaimed 2015-2017 Netflix series *Narcos,* Moura undertook his own research to portray Escobar's character (Liebman 2015).   Following his research, Moura notes that '*everybody* wrote a book about him: the waiter, the guy who fixed his car. So it's

very interesting because you wind up having so many different points of view' (Liebman 2015). Further, in another interview, when asked 'does he think of Escobar as a wholly bad man?', Moura offers his own insights (Harvey 2015):

> "Oh, he was a bad man. He was a mean person, sure, I have no doubt – but if you ask his wife, who is still alive today, she would probably say something different. What I like about Pablo…". Moura goes on to compare the many first-hand accounts written about Escobar, including his brother, his son and lover. Moura notes, "in each one you are going to see a different Pablo, see how lovely he was, how charming. It is complex. My job is to portray the human being".

> *Fragment 83: Actor portraying Escobar*

As will be seen below, in constructing Escobar's attractor set, together with the Medellín Cartel's, his strengths and weaknesses will become readily apparent, together with his drivers and vulnerabilities, in shaping and influencing the Medellín Cartel.

7.2.3   Complex data set – micro

As described in Chapter 5, the micro-level complex data set is a subset of the macro-level complex data set comprising a selection of fractal fragments across a variety of actors as summarised in Appendix 3.

7.3   Step 2: Contextual variables – micro

Applying step two of the new complexity model, contextual variables are identified and analysed for Escobar, as a subset of the Medellín Cartel's macro-level, within a historical, geographical, social, economic, political and media setting, using complexity prompts.

7.3.1   A time and place – micro

Escobar was born on 1 December 1949 in Rionegro, a small town just outside Medellín. He initially grew up in the country, on the outskirts of Medellín, before moving to the inner city when he was eight years old (Escobar R 2010). Although Escobar often claimed he grew up poor, by Colombian standards, his family qualified as lower to middle class. His father was a farmer and his mother a school teacher. He had two brothers, including Roberto, and four sisters, including Alba Marina Escobar ('Alba Marina') (Strong 1995; Bowden 2002; Escobar R 2010; Escobar JP 2016). According to Roberto, Escobar's brother (Escobar R 2010:18):

> Colombia is a beautiful country and rich in the gifts of nature, but it is a place where corruption has always been an accepted part of our lives. Our country has always been ruled by a class of wealthy families that did very little to help the poor. There were very few social programs that assisted people in making their lives better. We have a system of laws in Colombia, but we lived by a different set of rules.

Fragment 84: Medellín Cartel associate & Escobar's brother

As history tells us, it was by a different set of rules that Escobar did in fact live his life and contributed to the conditions that enabled him to create the Medellín Cartel.

7.3.2 *La Violencia* – micro

La Violencia began a year before Escobar was born and had a deep impact on Escobar and his family. When Escobar was still a child, in the words of Escobar's brother, Roberto (Escobar R 2010:6-7):

> I will never forget the night the guerrillas came to our house…they came to our town in the middle of the night, dragging people out of their houses and killing them. When they reached our house they started banging on the doors with their machetes and screaming that they were going to kill us…I held on to Pablo and our sister…telling them not to cry, that we would be all right. I remember giving Pablo a baby bottle to calm him down…they sprayed [our house] with gasoline and set it on fire…our road was illuminated by our burning house. In that strange light I saw bodies lying in the gutters and hanging from the lampposts…so the killing in Colombia had started long before my brother. Colombia has always been a country of violence. It was part of our heritage.

Fragment 85: Medellín Cartel associate & Escobar's brother

As part of Colombia's heritage, Escobar inherited his penchant for violence, but it was no ordinary violence. As mentioned earlier in Chapter 6, Escobar had his own special brand of violence, which would later become his trademark.

7.3.3 Society and the economy – micro

As noted in Chapter 6, from an early age, Escobar wanted to be rich. What Escobar soon found out, was that in the absence of a Colombian moral compass, Colombian society and its economy essentially evolved around money. As Strong (1995:53) points out:

> Money was buying him everything. Already the centrifugal *social force* in Colombia, and particularly Antioquia, money was converted by Escobar and his fellow traffickers into an over-whelming *moral force*, too. It bought people as well as objects, beauty queens, priests, businessmen, lawyers and politicians as well as vintage cars, Ming vases, helicopters and rhinoceroses. The pillars of Colombian society were turning a blind eye to the rising number of killings in Medellín as well as nationally [*emphasis* added].

Fragment 86: Investigative journalists

Moreover, according to Escobar's brother, Roberto (Escobar R 2010:57):

> [Escobar] knew that the people of Colombia profited from the success of the drug traffickers. Many thousands of Colombians were employed in the business, from the workers in the jungle to the police. And many others benefited from the public works each of the traffickers did.

Fragment 87: Medellín Cartel associate & Escobar's brother

Essentially, these conditions enabled Escobar to emerge and flourish and in doing so, also enabled him to create the Medellín Cartel.

7.3.4   Politics – micro

As explained in Chapter 6, Escobar not only wanted to be rich, he wanted to be famous and have political power. In the recollections of Alba Marina, Escobar's sister, as translated and summarised by Pobutsky (2013:693):

> [Alba Marina] lays out the atmosphere of state *disorder* that had affected her family even before her brother rose to *power*…[she] implicitly and explicitly establishes a *pattern* of inverted value*s*, portraying law officials and the state in general as inefficient, obstructive, and frequently criminal [*emphasis* added].

Fragment 88: Escobar's sister

Essentially, Alba Marina highlights Colombia's history of state corruption, which existed well before Escobar's rise to power, and inverts Escobar as the good guy against the 'criminal' state. What she fails to mention, however, is that it is this very history of state corruption that contributed to Escobar's rise to 'criminal' power. Moreover, like all traffickers, Escobar feared extradition. In 1988, whilst Escobar was in hiding, Escobar granted journalist Yolanda Ruiz a rare recorded interview. At the time, the interview never made it to air, until its release 25 years later in 2013. In the interview, Escobar makes his position clear *(NTN24 News* 2013):

> My position is the same as the grand majority of the Colombian people, and that's to say I'm against extradition…I'm sometimes accused of drug trafficking. It's an activity that for the time being, historically, shall we say, has been declared illegal. It's illegal at the moment, but in the long run and in the future, we're going to show that it will head towards legalisation…Dirty money is in all economic sectors of the country. It's when the same state and the same government receive taxes paid by illicit drug traffickers…and so it's accepted what the press and sometimes the people would call 'dirty' money.

Fragment 89: Escobar

Despite Escobar's position, he greatly benefited economically from the illegal status of drugs, and the inadequate legislation to stymie the flow of 'dirty' money.

Together with state corruption, these conditions contributed to his rise to power.

7.3.5   Media – micro

Escobar's thirst for political power and social legitimacy catapulted him firmly into the media spotlight.   As Kirk (2003:97) points out, successful criminals 'do not announce themselves like cartoon villains, but are the ordinary faces that circulate in human society without arousing suspicion'.   Essentially, it was the media that helped fuel Escobar's social construction of villain versus hero.   As in most constructions, each relies on selective perspectives – the perspective of the 'other'. In particular, the US and foreign media painted Escobar as the villain and in the context of the war on drugs (Roth 2010:416):

> The human face on the formerly anonymous enemy.
>
> *Fragment 90: Historian & criminal justice scholar*

In contrast, in Colombia, in newspapers controlled by Escobar, Escobar cast himself as the hero, as Robin Hood. In a television media interview (*Sins Of My Father* 2009), when asked a question on whether Escobar sees himself as Robin Hood, Escobar responds:

> Not at all. But, it's a very interesting name. Those who know Robin Hood's story know perfectly well that he fought for and defended the poor.
>
> *Fragment 91: Escobar*

While Escobar initially plays down the Robin Hood label, later on in the interview he talks specifically about his generosity, effectively manipulating the interviewer. Despite Escobar's early attempts of manipulating certain news outlets, with images of him helping the poor, during the violent years, it was also the media's graphic images of his terrorist attacks that turned the people against him. As Escobar proved, crime and fame do not mix.

7.3.6   Summary of micro-level contextual variables

In summary, similar to the macro-level, it can be argued that in isolation each contextual variable provides favourable conditions for the emergence of Escobar and his influence on the Medellín Cartel. Taking each variable in turn:

- **Time and place:** Escobar initially grew up in the country, on the outskirts of Medellín, before moving as a child to the inner city of Medellín. Growing up in both the country and the city as lower to middle class taught

Escobar that corruption can be a way of life, contributing to Escobar's outlook and ability to create the Medellín Cartel.

- **Historical event:** *La Violencia* had a deep and personal impact on Escobar and his family, as they witnessed first-hand the atrocities of the time. As part of Colombia's heritage, Escobar also inherited his penchant for violence, which would later shape and influence the Medellín Cartel.

- **Society and the economy:** From an early age, Escobar wanted to be rich, and as he soon found out, in the absence of a Colombian moral compass, Colombian society and its economy essentially evolved around money, where people could be bought and society turned a blind eye to traffickers. These conditions allowed Escobar to emerge and flourish, enabling him to create the Medellín Cartel.

- **Politics**: Escobar also wanted to be famous and have political power. In the beginning, he benefited greatly from the illegal status of drugs and inadequate legislation to stymie the flow of 'dirty' money, together with the state's ongoing corruption, all of which contributed to his rise to power.

- **Media**: Escobar's thirst for political power and social legitimacy catapulted him firmly into the media spotlight. In the early days, media images of Escobar helping the poor greatly influenced his Robin Hood persona and acceptance by the people. However, during the violent years, it was also the media images of his terrorist attacks that later turned the people against him.

Similar to the macro-level, however, it can also be argued, that the sum of all variables provides more compelling evidence to support a complexity model of interconnected conditions influencing Escobar, and thereby enabling his creation of the Medellín Cartel.

7.4   Step 3: Attractor set – micro

Applying step three of the new complexity model, the attractor sets of Escobar and the Medellín Cartel are constructed based on an analysis of the data sets and contextual variables, using the criminological concept of Young's (1997b) attractors (economic, social, moral, physical), together with complexity prompts, to organise, shape and structure the information.

7.4.1 Attractor set overview

The ultimate aim of an attractor set is to gain insights on what guides the attitudes and behaviours of an actor, such as Escobar, and make inferences about the system as a whole, such as the Medellín Cartel. In looking for attractors, the aim is to identify the values, motivators and issues of concern that guide and shape actor behaviour.

As explained in Chapter 5, an attractor set can be constructed using Young's (1997b) argument that the life of any given individual or group can be mapped to one of four attractors and that each form of crime entails some combination of the four. As also explained in Chapter 5, to apply the new complexity model to the study of organised crime and terrorism, characteristics of a criminal group (Richards 1999) can also be mapped to Young's (1997b) four attractors as summarised in Table 7.2 below:

Table 7.2: Summary mapping: attractor set to criminal group characteristics

	Attractor set	Criminal group characteristics
1.	**Economic**	Corruption, Diversity, Infiltration, Insulation, Monopoly, Sophistication, Mobility, Motivation
2.	**Social**	Bonding, History, Motivation
3.	**Moral**	Subversion, Continuity, Bonding, History, Motivation
4.	**Physical**	Violence, Discipline

Source: Summary of Table 5.6

In a complexity informed world, Escobar's attitudes and behaviours were influenced by those around him, especially actors within the Medellín Cartel, as well as Escobar influencing them and the Medellín Cartel. Moreover, in determining attractors in a complex data set, it is important to note that attractors depend on the frequency, regularity, intensity and priority of an actor's exposure. In a criminal context, the more times an actor is exposed (frequency), the more consistently an actor is exposed (regularity), the earlier an actor is exposed (priority) and the stronger the factor (intensity), then the more likely a certain behaviour will occur. In the following sections, each of the four attractors is analysed in turn, using criminological frames of reference and complexity prompts.

7.4.2 Economic attractor

The economic attractor is based on economic power and arises from one's income and wealth. In a criminal group, the characteristics of corruption, diversity, infiltration, insulation, monopoly, sophistication, mobility and motivation may be mapped to economic power. Using the new complexity model, based on the characteristics of economic power, a summary of Escobar's and the Medellín Cartel's economic attractor, including references to supporting fractal fragments, is presented in Table 7.3 below.

Table 7.3: Economic attractor: Escobar and the Medellín Cartel

	Economic power characteristics		
	Individual & Group	**Escobar**	**Medellín Cartel**
1.	**Individual** **Income and wealth:** material gain through licit and illicit means.	• Escobar's childhood ambition was to be a millionaire. Despite the opportunity to go to school and college, he chose to drop out and followed the path of illicit wealth, first becoming a petty thief and later graduating to the 'king of cocaine' (Fragments 14, 86, 92-95, 132).	• Money was always the key incentive and ultimate goal of individuals within the Medellín Cartel, however, many did not have the opportunity to go to school and college, so their illicit path to material gain was more easily chosen (Fragments 23, 26-27, 130).
2.	**Criminal Group** **Corruption:** use of illicit influence, exploitation of weaknesses, and the blackmail of public and prominent figures.	• Escobar created the 'silver or lead' policy early on in his criminal career to exploit state officials and/or officers with a choice of a generous bribe or be killed (Fragments 43, 53).	• The Medellín Cartel adopted Escobar's 'silver or lead' policy and bribed state officials and/or officers at all levels, including the government, the judiciary, law enforcement and the military (Fragments 28-30, 38, 53, 118).
3.	**Criminal Group** **Diversity:** in illicit activities, to further insulate the organisation from dependence on one criminal activity.	• As well as the drug trade, Escobar always ran a protection racket throughout his criminal career (Fragment 32-33, 43-44, 52).	• Although the Medellín Cartel was dependent on one key activity – the drug trade – it developed multiple paths and diverse ways to achieve the same outcome, including outsourcing all, parts and none of its business (Fragments 19, 32-33).
4.	**Criminal Group** **Infiltration:** continued effort to gain a foothold in legitimate	• Escobar either owned directly or indirectly numerous legitimate businesses to launder money such as construction and real estate	• Leaders and key associates of the Medellín Cartel either owned directly or indirectly legitimate businesses to launder money such as cash

	Individual & Group	Escobar	Medellín Cartel
	institutions to further profit or gain a level of protection from detection.	businesses (Fragment 97).	intensive businesses and the Ochoa brothers even co-owned a bank (Fragments 40, 96).
5.	**Criminal Group** **Insulation**: protection of the organisation's leaders by separating them from the soldiers, cell from cell, and function from function.	• Escobar was protected by armed guards and surveillance systems and separated himself from certain areas of the business, but still gave orders (Fragment 22).	• Due to the need for secrecy and insulation, functions were kept separate from each other so that each function was unaware of the others business. As such, if one part of the business was discovered, the other parts would not be impacted (Fragments 22, 26, 42).
6.	**Criminal Group** **Monopoly**: control over certain criminal activities within a geographic area with no tolerance for competition.	• Escobar owned all the criminal activities in Medellín, not just cocaine, and nothing went in or out without his orders. He also became known as the 'king of cocaine' in Colombia (Fragments 43-44, 50).	• The Medellín Cartel monopolised the cocaine business in Medellín and other parts of Colombia, with an initial strategic alliance with its key competitor, the Cali Cartel (Fragments 49, 59).
7.	**Criminal Group** **Sophistication**: in the use of advanced communication systems, financial controls, and operations.	• Escobar pioneered the method of placing assassins on the back of motorcycles, which proved to be highly effective, including the assassination of Lara (Fragment 98).	• The Medellín Cartel were innovators in the use of advanced communications, concealing drugs and operations to facilitate their smuggling routes and hide the cocaine (Fragments 18, 37, 48, 99).
8.	**Criminal Group** **Mobility**: a disregard for national and jurisdictional boundaries.	• Escobar used his ability to exploit corrupt state officials and/or officers in surrounding countries to set-up production and smuggling routes into the US and other places (Fragment 41, 45, 48).	• The US was the Medellín Cartel's key market, but it later expanded into Europe and other places (Fragment 41-2).
9.	**Criminal Group** **Motivation**: power and influence resulting from the accumulation of wealth, political or social gains.	• While Escobar's childhood ambition was to be a millionaire, it was also to be Colombia's President. One of Escobar's political objectives was to prohibit extradition so he could protect and continue his illicit drug business (Fragment 14, 55, 89, 94, 113, 133).	• The ultimate motivation of the Medellín Cartel was the pursuit of material gain through illicit wealth (Fragments 23, 26-27, 130).

Source: Author's summary based on analyses of the data sets and contextual variables

As argued in Chapter 5, economic power is the key attractor in organised crime (Young 1997b). Through a complexity lens, the bifurcations between the desire for material gain, and the ability to achieve it through legitimate means, is the point where economic attractors such as criminal activities come into play. As depicted in Table 7.3 above, Escobar's economic attractor influenced and shaped the path of the Medellín Cartel, but as history tells us, it also led to his downfall. As noted in Chapter 6, Escobar's childhood ambition was to be a millionaire, but it was also to be the President of Colombia (Escobar R 2010). Unlike many Colombians, Escobar had the opportunity to go to school and college, but abandoned his studies several times to hang out with the 'wrong crowd' and eventually dropped out without graduating (Strong 1995; Bowden 2002). According to Juan Pablo, Escobar's son, Escobar had revealed to him in his later stages of life how his criminal career had actually begun (Escobar JP 2016:34):

> [It was] the day he figured out how to forge his school's high school diplomas…they stole blank diplomas, which at the time were issued with the school's seal, and had a copy of the seal made. They also learned to imitate the professors' handwriting so they could insert the final grades and the necessary signatures. And so dozens of young people graduated from the *Liceo de Antioquia* without ever having set foot inside its walls.

Fragment 92: Escobar's son

Essentially, Escobar chose his path early in life, the path of illicit wealth. As Mallory (2007:52) surmises:

> He chose the criminal life…began as a petty thief, became a gang member, excelled as a paid murderer, and rose to become boss of a major organisation.

Fragment 93: Legal scholar

Moreover, as summarised in a drug intelligence brief issued by the DEA (2002):

> He became one of the wealthiest and most feared men in the world. While on the surface, he was nothing more than a street thug who became successful by trafficking in cocaine, Escobar had political aspirations and strove to project the appearance of legitimacy, claiming his wealth was the result of real estate investments…Escobar was a drug trafficker who used drug-related violence and terrorism to further his own political, personal, and financial goals. Moreover, he funded his terrorist activities with the money obtained from his drug trafficking endeavours. He was the classic narco-terrorist; his cause was simply himself.

Fragment 94: US public government report

Thomas Cash, former DEA special agent in charge, Miami, best sums up Escobar in a single sentence ('The Godfather of Cocaine' 1997):

Escobar was to cocaine what Ford was to automobiles.

Fragment 95: US law enforcement

Of note, since Escobar, there has been no one like him in the drugs trafficking world or narco-terrorism for that matter. In today's world, one could similarly sum up 'bin Laden was to jihad what Escobar was to cocaine'. While narco-terrorism still exists, today's cause for concern is largely religious terrorism, or more specifically radical Islamic terrorism.

In terms of the business, hiding the money trail was key (Strong 1995:207):

> Businesses such as fast-food restaurant chains, hotels, night-clubs and petrol stations were commonly bought up by the drugs traffickers, through frontmen, because they were high-liquidity concerns that offered easy ways systematically to exaggerate their income or to understate costs – and thereby launder money through the hole in their accounts.

Fragment 96: Investigative journalist

Escobar's brother, Roberto notes (Escobar R 2010:25):

> Pablo asked me to manage [his] money…this was the time I first became the accountant…we eventually began investing the money in real estate, buying land and buildings and financing construction. This was something Pablo would do for the rest of his life…I used the real estate deals to protect Pablo's money…so I created a new set of books to prove he had earned his money from real estate. For example, if we sold an apartment for $50,000, in those books the sale was recorded as $90,000.

Fragment 97: Medellín Cartel associate & Escobar's brother

Accordingly, Escobar either owned directly or indirectly numerous legitimate businesses to launder money, such as construction and real estate businesses, to further profit or gain a level of protection from detection. As well as the money side, Escobar was also an innovator and pioneered the method of assassins on the back of motorcycles. According to Strong (1995:98):

> The [Medellín] Cartel was producing its own killers. Escobar was reported to have set up a school for assassins on a ranch outside the small town of Sabaneta, next to Envigado. Its students were taught to shoot from motorbikes, firing at their victims with machine-guns as if they were making the sign of the cross.

Fragment 98: Investigative journalist

As such, this method of placing assassins on the back of motorcycles proved to be highly effective, including the assassination of Lara. Moreover, it was Escobar's own brother, Roberto, who helped Escobar and the Medellín Cartel with some of the more sophisticated innovative methods, such as the use of electronics. According to Roberto (Escobar R 2010:12):

> I attended the Science and Electronics Academy in Medellín, where I became an electronics engineer. It was there I learned how to build and repair almost any electronic device. Later, I was able to use those skills to design sophisticated security systems and even created the electronics for our submarines that carried cocaine to the Bahamas.

Fragment 99: Medellín Cartel associate & Escobar's brother

As seen earlier, it was the use of innovative methods, such as advanced communications and security systems, that helped conceal the drugs from authorities and facilitate numerous smuggling routes.

In summary, as depicted in Table 7.3 above, as an economic attractor, the desire for material gain through illicit wealth may be seen as a core strength and motivating factor of the Medellín Cartel. For Escobar, however, as an economic attractor, his desire for material gain through illicit wealth, combined with his political ambition for power and his cause to prohibit extradition, may ultimately be seen as a weakness and vulnerability of Escobar, as will be seen in section 7.5 below.

7.4.3   Social attractor

The social attractor is based on social power and arises from social relationships, be it family, friends, colleagues, recreation or the community. In a criminal group, the characteristics of bonding, history and motivation may be mapped to social power. Using the new complexity model, based on the characteristics of social power, a summary of Escobar's and the Medellín Cartel's social attractor, including references to supporting fractal fragments, is presented in Table 7.4.

Table 7.4: Social attractor: Escobar and the Medellín Cartel

Social power characteristics		
Individual & Group	**Escobar**	**Medellín Cartel**
1. **Individual** **Social relationships**: family, friends, colleagues, recreation or the community.	• Escobar was a devoted family man, especially to his wife and children, and formed close relationships with his family, friends and associates. He also became a Robin Hood figure in the poor *barrios* of Medellín, due to his concern and generosity, including the building of houses and facilities (Fragments 17, 39, 91, 100, 103, 106, 138, 140).	• The Medellín Cartel was formed largely through close social relationships, based on trust and shared values, including recruitment overseas through Colombian immigrants in hub cities such as Miami, Los Angeles and New York (Fragments 35-36).

	Social power characteristics		
	Individual & Group	**Escobar**	**Medellín Cartel**
2.	**Criminal Group** **Bonding**: allows entrenchment and refinement of criminal activities and practices.	• Escobar often threw lavish parties inviting people from both licit and illicit worlds. (Fragments 111-112).	• The Medellín Cartel often socialised with each other as recruitment was primarily through family and friends, or other social connections. Of note, strong bonds formed between the *sicarios* as they felt a sense of belonging and significance and not just the money (Fragments 20-21, 105, 111-112).
3.	**Criminal Group** **History**: individual to individual, and individual to organisation, for solidarity and protection, often through complex initiation rites.	• As the boss, Escobar's relationship with his leaders and key associates influenced the history of the Medellín Cartel (Fragments 15-17).	• When it came to choosing allegiances, the relationships formed between individuals and the organisation ultimately shaped the history of the Medellín Cartel (Fragments 15-17).
4.	**Criminal Group** **Motivation**: power and influence resulting from ideological, political or social gains.	• From a social perspective, one of Escobar's motivating factors to enter politics was his desire to have social legitimacy and to be beloved by the people (Fragments 14, 39, 94, 103, 106-107, 113, 146).	• The Medellín Cartel did not share Escobar's desire for social legitimacy, as they preferred to remain in the shadows (Fragments 15, 113, 135).

Source: Author's summary based on analyses of the data sets and contextual variables

As depicted in Table 7.4 above, Escobar's social attractor influenced and shaped the path of the Medellín Cartel, but as history tells us, it also led to his downfall. His love for his family and Medellín were both his Achilles heel. Since Escobar's death, there have been numerous personal accounts and memoirs by members of his family, friends, key associates and even his lover. As seen in Appendix 1, these include books by his son, Juan Pablo (now called Sebastián Marroquín), his brother Roberto, his sister Alba Marina, his key assassin Popeye and his lover Virgina Vallejo García ('Vallejo').   The books tend to focus on their own personal relationship and perspective of Escobar, providing personal insight into his private life.   Escobar comes across as a devoted family man, doting father, charismatic boss and dashing lover.

According to Escobar's wife, Maria (interview in *Sins Of My Father* 2009):

> Everybody dreams of going to Disney. The father became a child in that park with Sebastian [Juan Pablo]. He went up in every roller coaster even if he was scared to death of them because he didn't like roller coasters. But he did everything he could to see Sebastian [Juan Pablo] happy.

Fragment 100: Escobar's wife

Moreover, in a letter written by Escobar's wife to Escobar whilst he was on the run (cited in Bowden 2002:208-209):

> I miss you so very much I feel weak. Sometimes I feel an immense loneliness takes over my heart. Why does life have to separate us like this? My heart is aching. How are you? How do you feel? I don't want to leave you my love. I need you so very much, I want to cry with you.

Fragment 101: Escobar's wife

Based on Escobar's wife's own words, there is no doubt that his wife Maria, felt Escobar's love in return for her own affection, and that he was devoted to both his wife and children. Furthermore, in his book, Escobar's son comments (Escobar JP 2016:1, 4):

> From the day I was born till the day he died, my father was my friend, my guide, my teacher, and my trusted adviser…in all of people's wide-ranging opinions about my father's life, everybody agrees on one thing: his unconditional love for this, his only family.

Fragment 102: Escobar's son

In his memoirs, Escobar's son Juan Pablo, reveals the close bond that existed between father and son and the utter devotion of Escobar to his family. And in a book written by Escobar's brother Roberto, he notes (Escobar R 2010:4):

> I think about my brother every day. Pablo Escobar was an extraordinarily simple man. He was brilliant and kind-hearted, passionate and violent. He was a man of both poetry and guns. To many he was a saint, to others he was a monster...I think about the good things he did with that money for so many people, the neighbourhoods he built, the many thousands of people he fed and educated. And, less often, I think about the terrible things for which he was responsible, the killings and the bombings, the deaths of the innocents as well as his enemies and the days of terror that shocked nations.

Fragment 103: Medellín Cartel associate & Escobar's brother

Roberto's recollections, while more balanced than most, still attempt to highlight Escobar's Robin Hood persona. In particular, despite Escobar's motivations, Roberto emphasises the building of houses and facilities, and the provision of education by Escobar in the poor *barrios* of Medellín. Shortly after Escobar's death, Escobar's mother, Hermilda Gaviria de Escobar, said in an interview ('The

Godfather of Cocaine' 1997):

> I think of the ingratitude of people. I think of the brutal persecution that was inflicted on him. He was just a man…I felt something I have never felt in my life. It was terrible. Since then, my soul has been destroyed because there will never be anyone like Pablo again.

Fragment 104: Escobar's family, his mother

While the angst of a grieving mother is evident in her comments, her comments were also directed to those who had once been loyal to Escobar, including some of his key associates and some of the people of Medellín to whom he had been generous to. According to Escobar's head *sicario* Popeye, his 2015 book *Sobreviviendo a Pablo Escobar (Surviving Pablo Escobar)* as translated and summarised by Pobutsky (2013:688-689):

> Attests to the allure of a criminal [Escobar] whose *limitless power* and charisma were *the glue* that held the organisation together…Popeye assuages his boss's criminality by blurring the difference between the mafia, corrupt Colombian politicians, and the shady police. In his version of events, good and evil are substituted by mere competitors for power, who mediate their influence via lawful and illegitimate measures alike…his account is a testimony of an unwavering admiration and loyalty for the *patron* [boss]…a man's man, a cool-headed and charismatic leader who mesmerised the multitudes with his infinite self-confidence…Popeye also romanticises the camaraderie within the gang highlighting the unbreakable bond between Escobar and his hitmen [*sicarios*], relationships allegedly stronger than the capo's connection with the real key players of the Medellín Cartel [*emphasis* added].

Fragment 105: Medellín Cartel associate

Unlike Escobar's brother Roberto, Popeye moderates Escobar's criminality by blurring the lines of state corruption and competitors for power. In Popeye's eyes, Escobar was the ultimate leader and boss with 'unbreakable' bonds. As Popeye puts it, Escobar was 'the glue' that held the Medellín Cartel together, and without Escobar, the Medellín Cartel subsequently became unstuck.

Today, in *Barrio Pablo Escobar,* Medellín, where Escobar built many homes for the poor, other bonds of loyalty still hold as Escobar's image and memory as a modern Robin Hood still lingers. In the words of one of its residents ('Killing Pablo' 2003):

> We sincerely cared a lot for him and his death hurt us. He was a person who would help poor communities on a daily basis. He didn't take notice of rich people, only of poverty…We lived in Moravia, the town's dump site. We had a hut, but then there was a fire. He was moved by the whole thing. Then several families were chosen and we were given homes.

Fragment 106: Medellín local from Barrio Pablo Escobar

To the poor, Escobar's generosity and compassion represented a symbol of justice against the government and rich elite, who they felt had abandoned them. It was

their social construction of Escobar the myth, rather than Escobar the man. To them, he represented the common people and simply took advantage of the wealthy drug addicted societies and corrupt state officials and/or officers to redistribute the wealth amongst the poor. One of those who helped Escobar cultivate his Robin Hood persona and present himself to the media, was his former lover Vallejo, a Colombian high class socialite, actress and television presenter. In 2006, after giving evidence against corrupt Colombian politicians, Vallejo left for the safety of the US and recorded a statement broadcast in Colombia shortly thereafter. She stated ('Pablo's ex spills beans on Colombia's corrupt' 2006):

> I fell in love with a philanthropist, a man loved by his people…he was the only rich man in Colombia who was generous with the people, in this country where the rich have never given a sandwich to the poor.

Fragment 107: Escobar's lover

In Vallejo's 2007 book *Amando a Pablo, odiando a Escobar (Loving Pablo, Hating Escobar)* and upcoming movie, Vallejo is one of the few who paints the two sides to Escobar. As translated and summarised by Pobutsky (2013:691):

> The private man she loved clashes with the public figure she abhors…she does not shy away from disclosing Escobar's good and bad qualities, his generosity and cruelty, his logic and arbitrariness…what becomes apparent in her personal insight into Escobar's mind is his megalomania combined with his subsequent disrespect for others, his utter lack of fear tied to a blind self-confidence, and his ruthlessness and an unquenchable thirst for *control* [*emphasis* added].

Fragment 108: Escobar's lover

In contrast to his family and friends, Escobar's enemies, notably the Cali Cartel, characterised Escobar as (Gilberto Rodríguez cited in Rempel 2011:80):

> [A] sick…psycho…lunatic.

Fragment 109: Cali Cartel, Gilberto Rodríguez

Moving on to Escobar's social scene and connections, even in Escobar's youth, he knew the importance of social connections. As Strong (1995:20) comments:

> Escobar had quickly won a reputation for keeping bad company. While still at school, he was known for hanging out at the Dos Tortugas bar in Medellín's Jesus de Nazareno district, a fashionable haunt of petty extortionists, car thieves and bank robbers.

Fragment 110: Investigative journalist

According to Kenney (2007:61-62), as the business grew, similar to legitimate businesses, 'communities of practice' emerged:

> Typically members from a trafficking group meet in casual settings such as restaurants, bars, and dance clubs to discuss business problems, impending activities, and local smuggling conditions…Birthday parties, baptisms, weddings, and other social gatherings provide additional opportunities for swapping stories and exchanging professional gossip…In this manner veterans socialise with their newer colleagues to the norms and practices of their enterprise and of drug trafficking more generally, creating "communities of practice".

Fragment 111: Political science & public policy scholar

Moreover, the nexus between the licit and illicit worlds continued to prosper. As one local Medellín artist, who benefited financially from the traffickers' expensive taste in décor, puts it (cited in Strong 1995:69):

> Art prices went mad. The mafia were mostly ignorant people and liked to leave it up to their decorators to advise them. They wanted anything that was big and extravagant…We all used to go to their parties. They were our friends, linked to us bohemians. And their women were upper class and beautiful. It all seemed so innocent.

Fragment 112: Local Medellín artist

Above all, despite the business and parties, what Escobar craved the most was respect, status and recognition. According to one of the leaders of the Medellín Cartel, Juan Ochoa (interview in *Frontline* 2000e):

> He was a person that was so ambitious. He wanted to dominate and have the *power* of all the business. Apart from the business, he wanted to be involved in politics and in managing political [and social] issues in the country [*emphasis* added].

Fragment 113: Medellín Cartel leader

As MacQuarrie (2015:28) puts it:

> Escobar possessed a fatal flaw in his suite of criminal characteristics that, until now, had lifted him from complete obscurity up into the very stratosphere of the criminal elite. A man whose very profession required anonymity and whose business by necessity had to be carried out in the shadows, gradually revealed that he lusted after not only great wealth and power, but also fame and renown.

Fragment 114: Anthropologist scholar

And in the words of Colonel Martinez (interview in MacQuarrie 2015:29):

> Escobar wanted it both ways. He wanted the criminal world to fear him and not dare cross him in any way, yet he wanted the public not to know anything about his criminal enterprises. He tried to pass himself off as a 'businessman'. Here was the biggest criminal in the world – and he was telling everyone that he had made his fortune in real estate. And many people believed him!

Fragment 115: Colombian law enforcement

Overall, Escobar's desire for social legitimacy and attempt to downplay and hide the source of his wealth, was certainly in conflict with his equal desire for fame

and renown.

In summary, as depicted in Table 7.4 above, as a social attractor, the close social ties of family and friends, and the unbreakable bond between the *sicarios* and the cartel, may be seen as a core strength and motivating factor of the Medellín Cartel. For Escobar, however, as a social attractor, his devotion to his family, especially his wife and children, combined with his desire for social legitimacy and to be beloved by the people as part of his political ambition, may ultimately be seen as a weakness and vulnerability of Escobar, as will be seen in section 7.5 below.

7.4.4 Moral attractor

The moral attractor is based on moral power and arises from shared values, such as ideology or religion, and integrity, such as professional or legal ethics. In a criminal group, the characteristics of subversion, continuity, bonding, history and motivation may be mapped to moral power. Using the new complexity model, based on the characteristics of moral power, a summary of Escobar's and the Medellín Cartel's moral attractor, including references to supporting fractal fragments, is presented in Table 7.5 below.

Table 7.5: Moral attractor: Escobar and the Medellín Cartel

	Moral power characteristics		
	Individual & Group	**Escobar**	**Medellín Cartel**
1.	**Individual** **Shared values**: such as ideology or religion, and integrity, such as professional or legal ethics.	• Escobar lacked a 'normal' moral compass creating the 'silver or lead' policy and lived without rules or remorse (Fragments 86, 118-120, 137).	• Most of the individuals shared similar values to Escobar and readily adopted his signature 'silver or lead' policy within the cartel (Fragment 53).
2.	**Criminal Group** **Subversion**: of society's institutions and legal and moral value systems.	• Escobar became so powerful, that he was able to dictate his own terms of imprisonment to the government and continue his business while in his so-called prison *La Catedral* (Fragments 68-71).	• The Medellín Cartel had no respect for the government or legal system and played by their own rules, including the use of M-19 to overthrow the judiciary (Fragments 49, 53).

	Individual & Group	Escobar	Medellín Cartel
3.	**Criminal Group** **Continuity**: like a corporation, the organisation survives the individuals who created and run it.	• While it was well-known that Escobar lacked a 'normal' moral compass, the torture and murder of his own men while in prison, resulted in a deep divide within the cartel (Fragments 75-76).	• Sparked by Escobar's killing while in prison, allegiances shifted and a range of new groups emerged, as his death signalled the end of the Medellín Cartel (Fragments 75, 76, 82).
4.	**Criminal Group** **Bonding**: allows entrenchment and refinement of criminal activities and practices.	• Escobar formed a closer bond with Gacha than with the Ochoa brothers and also with the *sicarios*, due to their closer aligned values and violent practices (Fragments 15-17, 20-21, 138).	• Recruitment was primarily through family and friends, or connections, such as those met in prison or from the same neighbourhood, all with similar values (Fragments 15-17).
5.	**Criminal Group** **History**: individual to individual, and individual to organisation, for solidarity and protection, often through complex initiation rites.	• As the boss, Escobar's values ultimately defined and destroyed the Medellín Cartel (Fragments 82, 146).	• Most recruits were hired based on trust, through a system where several people vouched for you and if you did not follow through, then you would not only pay with your own life, but with the lives of those who vouched for you (Fragments 17, 124).
6.	**Criminal Group** **Motivation**: power and influence resulting from ideological, political or social gains.	• From a moral perspective, Escobar's motivation to prohibit extradition, lay in his total disregard for political or legal justice (Fragments 55, 58, 89, 116).	• While the Medellín Cartel all shared Escobar's motivation to prohibit extradition, they did not all agree with his violent methods (Fragments 54-56).

Source: Author's summary based on analyses of the data sets and contextual variables

As depicted in Table 7.5 above, it is apparent that Escobar's moral attractor influenced and shaped the path of the Medellín Cartel, specifically his silver or lead policy. According to a note found by the police in one of Escobar's hideouts and believed to be written by Escobar, Escobar attempts to justify his moral philosophy of enforcing his own justice and calls the state "morally timid" (cited in Bowden 2002:48):

> If you are robbed, what do you do? Who do you turn to? The police? If someone crashes your car, do you expect the traffic police to solve your problem and to compensate you for your damages by forcing your aggressor…to pay damages? If you are not paid what you are owed, do you believe that Colombian tribunals will force your creditor…to pay the debt? If members of the police and armed forces assault and abuse you, whom do you go to? I don't think one single person has mentally considered the above questionnaire

anything other than a useless exercise of hope, which we all lost many years ago, faced with the criminal ineptitude of our police and judicial systems.

Fragment 116: Escobar

Essentially, Escobar was suggesting that his philosophy was the only alternative to the state's lawlessness. Of note, is the extent of Escobar's moral influence in academia and scholars alike. As one former law student from the University of Medellín notes (cited in Strong 1995:54):

> The faculty was famed for its speciality in penal law. There were no classes in ethics: the most talented and applauded lawyers were those who succeeded in freeing delinquents from prison. Most lecturers were practising lawyers and we knew which were bribeable and that many were close to the smugglers.

Fragment 117: Local Medellín former law student

According to Strong (1995:55), the University of Medellín later acted as Escobar's springboard into politics, with the person who Escobar successfully won an alternate seat for in congress, also being the university's former dean of the law faculty. Moreover, despite the saying, 'honour amongst thieves', Escobar was not generally known for his honour or keeping his word. For example, as pointed out by General Maza, former Chief of Colombia's Intelligence Agency ('The Godfather of Cocaine' 1997):

> Pablo Escobar was a paranoid with delusions of grandeur. He was a man without scruples. He fought just as hard against friends and enemies. Pablo Escobar sent a message to [Colonel] Jaime Ramirez that he'd cancelled the contract on his life because he said Jaime was no longer in anti-narcotics and he knew he was only doing his job. Jaime thought he'd keep his word.

Fragment 118: Colombian law enforcement

Not surprisingly, Escobar did not keep his word and the Colonel was killed in front of his family. It had been Colonel Ramirez who had led numerous raids against the Medellín Cartel, including the Tranquilandia laboratory as mentioned in Chapter 6. Essentially Escobar had no integrity. Further, General Maza ('The True Story of Killing Pablo' 2009) observes:

> You could not negotiate with Pablo Escobar. Pablo Escobar was a psychopath, a mentally sick individual. And he proved it.

Fragment 119: Colombia law enforcement

In contrast, in the award-winning documentary *The Two Escobars* 2010, which chronicles the unprecedented rise and fall of Colombian football, as a result of narco-dollars by the likes of the Medellín and Cali Cartels, the story focuses on

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Andres (Colombian footballer) and Pablo, two people with the same surname, but unrelated. Although the documentary depicts their separate, but often interconnected paths, one thing binds them and another keeps them apart. Both had a deep passion for football, but Andreas had moral integrity, Pablo did not. In Andrea's own words (*The Two Escobars* 2010):

> It's our choice.
>
> *Fragment 120: Colombian football player*

In summary, as depicted in Table 7.5 above, as a moral attractor, the shared values of both the Medellín Cartel and Escobar, including the adoption of Escobar's 'silver or lead' policy, may be seen a core strength and motivating factor of both Escobar and the Medellín Cartel, as will be seen in section 7.5 below.

7.4.5 Physical attractor

The physical attractor is based on physical power and arises from the use or threat of violence. In a criminal group, the characteristics of violence and discipline may be mapped to physical power. Using the new complexity model, based on the characteristics of physical power, a summary of Escobar's and the Medellín Cartel's physical attractor, including references to supporting fractal fragments, is presented in Table 7.6 below.

Table 7.6: Physical attractor: Escobar and the Medellín Cartel

	Physical power characteristics		
	Individual & Group	**Escobar**	**Medellín Cartel**
1.	**Individual** **Violence**: use or threat of violence.	• Escobar was trained as a gunman, and cultivated a fear of violence, to protect himself, his family and his criminal lifestyle (Fragments 77, 121, 125,126, 128).	• In conducting its operations, individuals of the Medellín Cartel regularly used violence and the threat of violence (Fragments 60, 123, 124).
2.	**Criminal Group** **Violence**: used without hesitation to further the criminal aims of the organisation.	• Escobar had a penchant for violence and being excessively ruthless and cruel (Fragments 57, 77-79, 122, 136).	• The Medellín Cartel had the reputation of being one of the most violent criminal groups in the world (Fragments 50, 60).
3.	**Criminal Group** **Discipline**: the enforcement of	• Escobar attained an elevated status amongst his peers by promoting a violent and ruthless	• Violence was the primary tool for dealing with discord in the Medellín Cartel to enforce

Physical power characteristics		
Individual & Group	**Escobar**	**Medellín Cartel**
obedience to the organisation through fear and violence.	reputation (Fragments 78-79, 121, 123).	obedience and loyalties (Fragments 50, 122-124).

Source: Author's summary based on analyses of the data sets and contextual variables

As depicted in Table 7.6 above, it is readily apparent that Escobar's physical attractor influenced and shaped the path of the Medellín Cartel, as not all of its individuals shared his penchant for extreme violence. Escobar's physical attractor may also be seen as a catalyst in forming and shaping *Los Extraditables,* the terrorist group purposely formed and led by Escobar and Gacha to serve the interests of the cartels and traffickers, including the Medellín Cartel. According to Jorge Ochoa, one of the leaders of the Medellín Cartel (interview in *Frontline* 2000d):

> Pablo was a very violent man. Pablo was a rebel, and Pablo did what he wanted to do…Everybody knows that the violence in Colombia was Pablo Escobar. He was the violence in the business. When he died, the violence in the business was finished…He would intimidate you. He killed a lot of his friends. He killed everyone, even the ones that helped him…You couldn't confront Pablo Escobar, because you knew what would happen: you would die.

Fragment 121: Medellín Cartel leader

Similarly, Jung, a key associate of the Medellín Cartel reflected on his first-hand experience with Escobar (interview in *Frontline* 2000c):

> Over the few days that I was there, an individual was brought to the ranch in a Chevy Blazer and he was taken out by two of Pablo's bodyguards and we were sitting at a table on the patio in the back and he simply said, "Excuse me." He walked over and executed the man and then he came back to the table. He simply looked at me and he said. "He betrayed me." They took him away and then he asked me what I'd like for dinner that night.

Fragment 122: Medellín Cartel associate

Jung further reflected, 'I knew one thing for sure, that I was never going to betray him'. Moreover, in another interview, Colonel Martinez offered his opinion (Streatfeild 2000):

> Escobar became important, not because he was the richest or the most powerful, but because he had the army of *sicarios* and he used them to intimidate everyone…and the fact that he was willing to use so much violence.

Fragment 123: Colombian law enforcement

As Escobar's brother, Roberto points out (Escobar R 2010:127):

> The *sicarios* originally were formed to be the police of the cartel. Much of the power of the cartel came from the threat of violence as much as actual violence. People heard stories about what happened to men who cheated or betrayed the drug traffickers, and so they took great care for themselves.

Fragment 124: Medellín Cartel associate & Escobar's brother

Accordingly, it was as a result of the *sicarios* reputation that the Medellín Cartel itself had the reputation of being one of the most violent criminal groups in the world. Essentially, what set Escobar apart from the other traffickers was his strategic use of violence, and more importantly, his use of intimidation and fear to get what he wanted. In the words of Colonel Martinez's son ('Killing Pablo' 2003):

> He didn't know specifically that I was listening, but he knew my father was. So, once Pablo said, Colonel, if you're listening I'll even do away with your family's third generation. If your grandmother is dead, I will dig her up, kill her and bury her again.

Fragment 125: Colombian law enforcement

As Kirk (2003:177) points out:

> Escobar erased *limits* on violence [*emphasis* added].

Fragment 126: Human rights advocate

As one of the leaders of *Los Extraditables,* it was the erasing of these limits, that earned Escobar the reputation of being a terrorist first and a criminal second (*Sins of My Father* 2009). At the same time, as analysed earlier, he was a devoted family man, and would even interrupt his violent behaviour if his family demanded his attention. According to Murphy, former DEA special agent based in Medellín ('The Godfather of Cocaine' 1997):

> An intercepted conversation was obtained by the Colombian national police between Pablo Escobar, and I believe it was his wife. And in the background, while he was talking to his wife about family matters and things like that, everyday living type-matters, screaming could be heard in the background. And during this conversation, Pablo put his hand over the receiver and turned around and asked whoever was committing this torture to please keep the guy quiet, that he was trying to talk to his family on the phone.

Fragment 127: US law enforcement

As Escobar's brother, Roberto attempts to justify (Escobar R 2010:56-57):

> …the violence for which Pablo was blamed…I won't say Pablo was right in the things that he did, but he believed he was protecting himself and his family and his business.

Fragment 128: Medellín Cartel associate & Escobar's brother

This justification, whilst obviously biased, is supported in part by Escobar's own actions, especially in relation to the protection of his family as described earlier in

Chapter 6.

In summary, as depicted in Table 7.6 above, as a physical attractor, the threat and use of violence, including Escobar's penchant for violence, may be seen as a core strength and motivating factor of both Escobar and the Medellín Cartel, as will be seen in section 7.5 below.

7.4.6   Summary of attractor sets

A high-level summary of Escobar's and the Medellín Cartel's attractor set is presented in Table 7.7 below:

Table 7.7: Attractor set: Escobar and the Medellín Cartel

	Attractor	Escobar	Medellín Cartel
1.	Economic	• Desire for material gain through illicit wealth and a political ambition for power and to prohibit extradition.	• Desire for material gain through illicit wealth.
2.	Social	• Devoted family man with close ties to family, friends and associates. Desire for social legitimacy and to be beloved by the people was also part of his political ambition.	• Close ties, including family and friends, and a close bond between the *sicarios* as they felt a sense of belonging and significance to the cartel.
3.	Moral	• Lacked a 'normal' moral compass creating the 'silver or lead' policy and lived without rules or remorse.	• Shared similar values and adopted Escobar's 'silver or lead' policy.
4.	Physical	• Penchant for violence, excessively ruthless and cruel.	• Reputation of being one of the most violent criminal group in the world.

Source: Author's summary of Tables 7.3 to 7.6

In summary, from a criminal perspective, Escobar's key strengths were guided by his moral and physical attractors, and his key weaknesses and vulnerabilities by his economic and social attractors. In contrast, while being influenced and shaped by Escobar, the Medellín Cartel's attractor set relates to their core strength. Based on this analysis and resulting attractor sets, the final step of the new complexity model is next applied.

7.5   Step 4: Insights – micro

Applying step four of the new complexity model, using complexity prompts, insights are drawn from the data sets, contextual variables and attractor sets of Escobar and the Medellín Cartel, to better understand what shaped their behaviours, and make inferences about the drivers and vulnerabilities of Escobar and the Medellín Cartel as a whole. On reflection, strategies and measures are also identified that changed, influenced and/or disrupted their behaviours resulting in their ultimate demise.

7.5.1   Insights micro-level overview

In the words of Escobar's son, Juan Pablo (interview in Doherty et al 2010):

> [It is] the joint responsibility of many sectors of society, which created a suitable atmosphere for someone like my father to be able to go so far. Without the corruption and complicity of so many states, my father would not have progressed an inch.

> *Fragment 129: Escobar's son*

As explained in Chapter 5, as attractors gain momentum, they provide structure and coherence to a system, drawing people into it and influencing their behaviours (Uhl-Bien & Marion 2009).   Moreover, social histories play a key role in 'differing sets of attractors, for differing sectors of a given society' (Young 1997c). As such, interpreting the attractor sets within the contextual variables of Escobar and the Medellín Cartel is critically important to understanding Escobar's nature, attitudes and behaviours, and ultimately his drivers and vulnerabilities that influenced and shaped the Medellín Cartel.   In examining the attractor sets, the same four chronological time periods at the macro-level will also be considered in sections 7.5.2 to 7.5.5 below.

- The rise of the Medellín Cartel – late 1970s to early 1980s
- The height of the Medellín Cartel – 1980s
- The fall of the Medellín Cartel – late 1980s to early 1990s
- The demise of the Medellín Cartel – early 1990s

Of note, as also explained earlier, through a complexity lens, the basic argument for an actor's actions is that 'when power inequalities increase beyond given limits, entirely new forms of social behaviour may emerge' (Young 1998b).   In other words, beyond given limits, actors make mistakes.

7.5.2   The rise of the Medellín Cartel – late 1970s to early 1980s

In the early days, during the rise of the Medellín Cartel, Escobar's economic attractor and desire for material gain through illicit wealth were closely aligned with the Medellín Cartel's ultimate goal. As noted earlier, the Medellín Cartel was not a cartel in the economic sense (Escobar R 2010:50):

> The Medellín Cartel was actually many independent drug dealers who got close together for their mutual profit and protection, but each of them continued to run his own operation…often they would use each other's manufacturing, supply, and distribution capabilities…but the person at the top of this loose structure was Pablo, because he had started the business and had the best way of shipping the drugs and the most people loyal to him. The others have said that they were afraid of him. But they all made a lot of money with him.

Fragment 130: Medellín Cartel associate & Escobar's brother

According to his brother Roberto, while Escobar was not addicted to the use of cocaine, he was certainly addicted to its economic power. In a conversation between Roberto and Escobar during the late 1970s, his brother questioned Pablo (Escobar R 2010:40):

> "You have enough money now," I said. "You can buy what you need. Why don't you just focus on the real estate business?" [Pablo] smiled to himself. As we were to learn, there are different ways to be addicted to drugs. Once Pablo was in the middle of the business, once he had tasted the *power* and the money and the renown, there was no way he could ever get out of it [*emphasis* added].

Fragment 131: Medellín Cartel associate & Escobar's brother

Essentially, Escobar became addicted to power and not just economic power. As depicted in Table 7.6 above, it is readily apparent that Escobar's physical attractor significantly influenced and shaped the path of the Medellín Cartel to become one of the most violent criminal groups in the world. In contrast, despite being leaders of the Medellín Cartel, the Ochoa brothers were not of a violent nature. As noted in Chapter 2, it is important to understand that the study of terrorism with the key characteristic of violence is first and foremost a study of human behaviour (Martin 2016). In the context of Escobar's early childhood experience of *La Violencia*, combined with his early apprenticeship of being a gunman, Escobar's early and consistent exposure to violence, combined with its frequency and intensity, contributed to his penchant for violence, and increasingly so over the years. However, it is important to recognise that given a similar set of circumstances, why one person chooses the path of violence, and another does not, is also due to a range of other factors, such as psychotic tendencies. For example, Escobar has

been described, amongst other things, as a psychopath, mentally sick, a lunatic, crazy and paranoid, and compared to the likes of Adolf Hitler (see Fragments 57, 81, 109, 118, 119). Moreover, as also depicted in Table 7.6 above, Escobar's moral attractor also influenced the 'silver or lead' policy of the Medellín Cartel, becoming a trademark of the criminal group. As Escobar also found out, in the light of the contextual variables, it was not just himself that lacked a 'normal' moral compass, but Colombia itself, through state corruption and a society and economy corrupt by money. Through a complexity lens, as argued in Chapter 6 (see Fragments 43, 44), Escobar himself became an attractor as he formed a sense of order, amongst the chaos, with his protection rackets. He essentially organised the local neighbourhoods and traffickers with his protection and through Escobar, they self-organised into much stronger actors. Providing protection became a repeating pattern of Escobar, much like his 'silver or lead' trademark, all of which contributed to the rise of the Medellín Cartel.

7.5.3   The height of the Medellín Cartel – 1980s

At the height of the Medellín Cartel, Escobar, its leaders and key associates had fulfilled their ultimate goal of illicit wealth. According to Escobar's brother, Roberto (Escobar R 2010:81):

> The question I am asked most often is how much money did Pablo have. The answer is billions…He owned property all over the world, he owned as many as four hundred farms in Colombia and buildings in Medellín, he owned an $8 million apartment complex in Florida, he owned property in Spain, he owned famous paintings and a very valuable collection of antique cars.
>
> Fragment 132: *Medellín Cartel associate & Escobar's brother*

However, as explained in Chapter 6, Escobar was not content with just economic power, he wanted political power and social legitimacy through the respect of the people. As Escobar himself puts it, according to his son, Juan Pablo (Escobar JP 2016:111):

> By late 1981, my father had become the world's top cocaine trafficker. But he wasn't willing to be just another drug trafficker. That became clear to Gustavo when he went to my father one day, smiling, to tell him that three cocaine-laden planes had made its safely to their destination. "Pablo, the three shipments made it with no problem." "Excellent, so we have *economic power*," my father said. "Now we're going to go after *political power*" [*emphasis* added].
>
> *Fragment 133: Escobar*

As mentioned in Chapter 6, what Escobar wanted contributed to the beginning of the end of the Medellín Cartel, as well as himself. His thirst for power and social legitimacy proved to be a huge miscalculation on his part and part of his undoing. Escobar's crucial mistake, was not that he went after political power, but that he went after it so openly. He was not content to remain in the shadows and control the political purse strings, he wanted to be famous and to be adored by the people. Of note, as mentioned earlier in the context of the US and foreign media, he became 'the human face on the formerly anonymous enemy' (see Fragment 90). He became a known figure and as described earlier, following several high-profile events, including terrorist attacks in the name of *Los Extraditables*, was placed firmly on both the Colombian and US radar. To illustrate this point, in response to how the cocaine business is different today, Juan Ochoa, one of the Medellín Cartel leaders highlights (interview in *Frontline* 2000e):

> It is a lot more complex…it is more difficult to detect who traffics, because nowadays, the people that are involved in this they don't have a profile. They are not known by anyone, so it's more difficult to know who is involved or not than before.

Fragment 134: Medellín Cartel leader

As depicted in Figure 7.6 above, driven by his economic and social attractors, Escobar's high profile and political ambition was not shared by the Medellín Cartel. Due to his ambition, Escobar became visible, and today, traffickers, like most ordinary criminals prefer to remain in the shadows, like the Ochoa brothers. As Arenas, a former Medellín Cartel pilot, points out (interview in *Frontline* 2000b):

> The people who were more exposed to the public became the people that were feared by the society in general. But let me give you an example. The Ochoas were not that open as Pablo in politics. The Ochoas were very settled. A nice family, very gentle people. They are very family-orientated. So they were not as feared as the others…Fabio Senior is the clear image of a grandfather that is very good person, an excellent talker, very kind, very gentle. So this kind of image is the one that we [get] from the Ochoas, [but] they could be as dangerous as anybody.

Fragment 135: Medellín Cartel associate

In other words, is despite their public image and distancing themselves from Escobar's overt violence, the Ochoas could equally be as dangerous behind closed doors.

7.5.4   The fall of the Medellín Cartel – late 1980s to early 1990s

Over time, Escobar's behaviour became increasingly violent, especially as some of the aims of the Medellín Cartel were being furthered through the formation and

subsequent activities of the terrorist group *Los Extraditables.* Although violence was the primary tool for dealing with discord by the Medellín Cartel, much of the violence was engineered by Escobar, in particular the acts of terrorism carried out by *Los Extraditables.* As Kirk (2003:97) points out:

> He made extreme violence a Colombian dialect.

Fragment 136: Human rights advocate

At the same time, Escobar made Colonel Martinez his trademark 'silver or lead' offer. According to Colonel Martinez, Escobar's messenger, a former police officer and colleague, informed him (interview in MacQuarrie 2015:6):

> Escobar's sent me to offer you six million dollars. The only thing he asks is that you keep on working, that you continue your job, that you keep carrying out operations. But, if you're sending an operation to capture him – then you must first make a phone call. To let us know. If you agree, then the money will be delivered to any account you want.

Fragment 137: Medellín Cartel, corrupt Colombian law enforcement officer

Colonel Martinez further notes that he interpreted the timing of the offer as a sign of Escobar's growing weakness, and not his strength, and flatly refused the offer (interview in MacQuarrie 2015:6). Furthermore, as Escobar continued to fight two wars, one with the state and one with the Cali Cartel, while all traffickers benefited from Escobar's war with the state in fighting extradition, not all benefited from his war with the Cali Cartel. As mentioned earlier, this led to mixed loyalties within the Medellín Cartel, notably the Ochoa brothers, whose attractors were more closely aligned with the Rodríguez brothers than Escobar. The rift in the Medellín Cartel was further heightened following Gacha's death and Escobar's eventual 'imprisonment' in *La Catedral.* According to Escobar's son, Juan Pablo (Escobar JP 2016:185):

> My father deeply mourned the loss of the Mexican [Gacha]. He considered his ally a warrior who'd been there for him in good times and bad. My father was even the godfather of one of the Mexican's children.

Fragment 138: Escobar's son

As Escobar's attractor set started to diverge from the Medellín Cartel's, as depicted in Table 7.5 above, the continuity of the Medellín Cartel became intertwined with the fate of Escobar himself. Sparked by Escobar's murder and torture of his own people while in prison, allegiances shifted and a range of new groups soon emerged, including *Los Pepes.*

7.5.5 The demise of the Medellín Cartel – early 1990s

Following Escobar's escape from *La Catedral* and the resurrected Search Bloc team, as described in Chapter 6, the emergence of *Los Pepes* certainly contributed to Escobar's growing weakness. In the context of the ethical issues surrounding *Los Pepes*, Bowden questions ('The True Story of Killing Pablo' 2009):

> How far are you willing to go to succeed? When you make the decision to go to war, you've essentially decided that the situation is beyond the bounds of normal law and order. You're facing an enemy who's trying to kill you. In those circumstances, the ultimate goal is to succeed, is to win, not to necessarily play by the rules. In fact, sometimes circumstances will force you to play by the same kinds of tactics that your enemy is using in order to prevail.

Fragment 139: Investigative journalist

As pointed out in Chapter 3, Young (1997b:82) argues that in all complex systems, some people, even well regarded citizens, will 'skirt the borders of criminal behaviour now and again' as a way to accomplish their goals. It can be argued that in order to accomplish their goal and succeed, *Los Pepes* and its links to the Search Bloc, adopted the same rules and moral attractor as Escobar, i.e. there were no rules. Although the Search Bloc ultimately found and killed Escobar, as offered earlier by Toft (see Fragment 80), if it had not been for *Los Pepes*, Escobar would probably not have been as vulnerable. As clearly depicted from the analysis of Escobar's social attractor, Escobar had a fatal weakness and blind spot – his love for his family. According to Escobar's brother, Roberto (Escobar R 2010:41):

> …there was not one day that he stopped loving his wife, his children, and his family…it was this love for his family and his fear for their safety that caused him to *change his usual behaviour* and allow himself to be found and killed [*emphasis* added].

Fragment 140: Medellín Cartel associate & Escobar's brother

In fearing for the safety of his family, due to the escalating violence of *Los Pepes*, Escobar changed his usual behaviour and started to make mistakes. As Escobar's son points out, his father used to say to him (*Sins of My Father* 2009):

> Don't stay on the phone, the phone is death.

Fragment 141: Escobar

As described in Chapter 6, Escobar made a mistake and broke his golden rule and stayed on the telephone for more than three minutes talking to his son. As Escobar was talking, another son, Martinez Jr, was listening in and managed to fix his exact location with his mobile surveillance equipment. Soon after, Escobar was located

and shot by the Search Bloc attempting to escape. In the above analysis, parallels may be drawn between Escobar and Colonel Martinez. Alike in some respects, their division was a crucial one. They were divided by a moral attractor. While both Escobar and Colonel Martinez were close to their sons and grew up in lower to middle class families, in contrast, Escobar's grandfather was a well-known bootlegger, while Colonel Martinez's family had a long military history (MacQuarrie 2015). Also, while Escobar dropped-out of school and turned to crime, Colonel Martinez became a police cadet and completed a law degree. He also received a scholarship to study criminology in Spain (MacQuarrie 2015). The eventual struggle against Escobar become a personal one. Of note, according to MacQuarrie (2015:50), the real legend of Colombia was not Escobar, but Colonel Martinez who:

> Remained untarnished and incorruptible…a man who could not be neither bought nor sold, who was motivated by neither *plata o plomo*, but by principle.

> *Fragment 142: Anthropologist scholar*

Even today, how many would turn down a six million dollar bribe? Following Escobar's death, in Colonel Martinez's own words (interview in Streatfeild 2000):

> The first feeling was one of relief – that he hadn't escaped again…we had suffered so much because we had failed so much. It was like having a piano lifted off you. I'm not very expressive. I didn't shout for joy or laugh out loud. I just got a video camera, called the police director, gave him the news. [Finally] I began to feel what I hadn't originally. Emotion. I wanted to get there fast to embrace my son and to congratulate the team.

> *Fragment 143: Colombian law enforcement*

At the end, while one son embraced his father, the other son lost his. Following his father's death, Escobar's son concludes (*Sins of My Father* 2009):

> There were only *two paths*; one of them was *repeating* history, the other peace [*emphasis* added].

> *Fragment 144: Escobar's son*

As history tells us, Escobar's son did not follow in his father's footsteps or attractor set, and to date, he still chooses peace. In contrast, it can be said that it was the 'ferocity' of Escobar's physical attractor and penchant for violence that defined his legacy and labelling as both a terrorist and a criminal, similar to the 'ferocity' of the French Revolution that defined its place in history. As foreshadowed shortly before Escobar's demise, in a declassified US document (US Department of State 1993a):

Escobar's particular violence, however horrific, will pass with his passing from the scene, and in any event, tends to be focused in Medellín and Bogota and intended to make the Government of Colombia reduce its pressure on him and his organisation. Other types of violence will remain.

Fragment 145: US declassified government document

Since Escobar's death, his particular brand of violence and narco-terrorism has passed, but other types of violence and narco-terrorism remain.

7.5.6 Summary of micro-level insights

In summary, as the new complexity model places emphasis on patterns and structures of analysis, it may be argued that the micro-level case study offers fresh insights into Escobar's nature, his attitudes and behaviours, and ultimately his drivers and vulnerabilities, as driven by his attractor set (summarised in Table 7.7 above) and in turn, his influence on the Medellín Cartel. In doing so, a new and different way of seeing Escobar's behaviours, including departures from such behaviours, is offered to further understand certain phenomena or events surrounding Escobar and the Medellín Cartel.

On reflection, given Escobar's ultimate demise, together with the Medellín Cartel's, over the period of its rise and fall, the strategies and measures that changed, influenced and/or disrupted Escobar and the Medellín Cartel's behaviours are best summarised by the time-lapsed attractor set as depicted in Figure 7.1 below:

Figure 7.1: Visual imagery: Escobar and the Medellín Cartel time-lapsed attractor set

Attractor	Influencing factors
1. Economic	• Over the period, the changing goal-alignment of Escobar, compared to the Medellín Cartel for political power was the beginning of the end for many and proved to be a miscalculation on Escobar's part.
2. Social	• Escobar's devotion to his family and desire for social legitimacy, through his political ambition and to be loved by the people also proved to be his downfall. Being visible and adored by the people was not in alignment with the Medellín Cartel.

Attractor	Influencing factors
3. Moral	• While Escobar and the Medellín Cartel shared similar values, it was Escobar's torture and murder of his own men that turned his men against him and shifted allegiances and alliances to *Los Pepes,* who ultimately played by the same rules as Escobar striking at his vulnerabilities.
4. Physical	• Escobar's special brand of violence, including *Los Extraditables,* resulted in *Los Pepes* and the Cali Cartel fighting 'like with like', instigating fear into Escobar himself for the safety of his family, which ultimately led to his mistake.
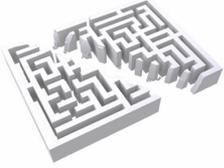
Source: Author's summary

Overall, as depicted in Figure 7.1 above, at a micro-level, what brought down Escobar, also brought down the Medellín Cartel. According to Bowden (2002:15):

> [Escobar]…was a creature of his time and place. He was a complex, contradictory, and ultimately very dangerous man, in large part because of his genius for manipulating public opinion. But this same crowd-pleasing quality was also his weakness, the thing that eventually brought him down. A man of lesser ambition might still be alive, rich, powerful, and living well and openly in Medellín. But Pablo wasn't content to be just rich and powerful. He wanted to be admired. He wanted to be respected. He wanted to be loved.

Fragment 146: Investigative journalist

While Escobar was certainly a creature of his time and place, as his attractor set tells us, he had more than one weakness and vulnerability, all of which played a role in bringing him down, i.e. there was no single factor.

Of note, of the remaining Medellín Cartel leaders, in 1996, Jorge and Juan Ochoa completed their five-year reduced sentences in Colombia, while in 2003, their younger brother Fabio was eventually extradited to the US and is currently serving a 30 year sentence. In 2013, while living in Medellín, Juan died of natural causes. To date, Jorge continues to live well and openly in Medellín (Yardley 2013).

7.6   Overall case study model

Overall, using the new complexity model, it may be argued that the micro and macro-level findings of the case study of Escobar and the Medellín Cartel provide fresh and novel insights, based on a different way of seeing things, and perhaps a more sophisticated and nuanced reading of the events, against a backdrop of

contextual variables, a fitness landscape of criminally exploitable ties and attractor sets.

With the new complexity model, it is important to note that the focus is on the interactions, not the analysis, of the actors involved. In other words, emphasis is placed on why and how the actors interconnect and influence each other, including the formation of allegiances and alliances, within their given environments, rather than isolated analysis of the actors themselves. Moreover, the new complexity model also places emphasis on the order or patterns inherent in the system. To illustrate this point, following Escobar's death, in the words of Jaime Gaviria Gomez, Escobar's first cousin (interview in *The Two Escobars* 2010):

> When Pablo died, the city spun *out of control*. The boss was dead, so everyone became their own boss. He ran the underworld with complete *order*. Anything illegal, you asked for Pablo's permission [*emphasis* added].

> *Fragment 147: Escobar's cousin*

Where Escobar, as an individual actor, had created order or patterns in the city of Medellín, on his death, the broader interactions of the Medellín Cartel's complex system dissolved. Moreover, on reflection of the broader armed conflict in Colombia, between the guerrillas, the paramilitaries and the corrupt state, the allegiances and alliances formed between the drug trade of the Medellín Cartel and these actors certainly added fuel to the fire of this broader conflict.

Emerging from the Medellín Cartel and driven largely by Escobar and his violent tendencies, *Los Extraditables* was essentially a narco-terrorist group, a form of criminal terrorism, but different from most groups, as it was created as a separate group supporting more than one cartel, including the Cali Cartel, and traffickers more broadly. When asked today about violent tendencies in Colombia, a local notes 'genes…we were conquered by murderers, our ancestors were thieves and barbarians. Violence is in our genes' (local cited in MacQuarrie 2015:18). Another local notes, 'inequality…a few people have everything, a lot of people have nothing. That's the root cause' (local cited in MacQuarrie 2015:19).

In relation to why and how Escobar and the Medellín Cartel came to be, together with the war on drugs, according to Jung, a key associate of the Medellín Cartel (interview in *Frontline* 2000c):

> The war on drugs was an ideology the government came up with, and there never really was a war on drugs. I mean, to stop the importation of drugs into the US of America is an impossibility…we have to come to the pool of self-reflection and therein lies the monster of reason and we ask ourselves: was it the fact that Carlos [Lehder] and I [had] the courage to be bad or why did millions of Americans not have the courage to be good?

> *Fragment 148: Medellín Cartel associate*

This argument supports the contributory actor role of the Medellín Cartel's fitness landscape and the US end-users of cocaine. On the other hand, in relation to the trajectory of Escobar and the Medellín Cartel, perhaps the answer is the courage of individuals like Colonel Martinez to be good and not accept six million dollar bribes. As Bowden (2002:69) points out:

> Sometimes the fate of an entire nation can hinge on the integrity of one man.

> *Fragment 149: Investigative journalist*

If this is true, then this argument supports chaos theory. So do the words of the chapter's opening quote. Whatever the reason, it appears to be a 'losing war' in the ongoing war against drugs (Rosen 2014). Moreover, according to Thoumi (2014:190-191), the war on drugs was not due to a number of causes, it was due to a number of factors that evolved:

> Illegal economic activities are not Newtonian phenomena that have a cause such that "if X then Y". They are the result of evolutionary processes in which factors such as social exclusion, poverty, inequality, unemployment, economic crisis, and corruption contribute to their development. None of those factors, however, are causes: there are innumerable examples of the existence of all of those factors in countries where there is no organised crime or large criminal economic…the challenge of Colombia is not to legalise drugs, but to "legalise Colombia", that is, to build a nation under the rule of law.

> *Fragment 150: Economics scholar*

In reality, the answer to why and how Escobar and the Medellín Cartel came to be is not causal, it is evolutionary, and there is no one simple answer. As the new complexity model reveals, the answer is complex.

PART 4: DISCUSSION

Chapter 8: Can complexity be successfully applied?

'What we see depends mainly on what we look for'

John Lubbock, polymath (1834-1913)

Chapter 8 discusses the findings and considers the thesis question: can complexity be successfully applied with criminological frames of reference to analyse organised crime, terrorism and the crime-terror nexus? It considers whether the findings shed light on furthering our understanding and knowledge of these complex phenomena, including practical and policy implications. It also considers the contribution of the new complexity model and whether this adds a new tool to the criminologist's toolbox.

8.1 Understanding complex phenomena

This thesis comprised an over-arching yet simple hypothesis relating to complex phenomena: that complexity can be successfully applied with criminological frames of reference to analyse organised crime, terrorism and the crime-terror nexus. To operationalise this hypothesis, a new complexity model was developed in Chapter 5, using the approach in Chapter 4, and two research questions, where the phenomena under study are organised crime, terrorism and the crime-terror nexus:

i)   On application of the new model, are the themes arising from the analysis of the phenomena consistent with the concepts and constructs of complexity?

ii)   Can complexity help to improve our understanding of the phenomena, including their nature and strength, why and how they evolve, and what shapes actor behaviour?

In consideration of these questions, the new complexity model was developed, tested and applied in Chapters 6 and 7 using the case study method, to the in-depth case study of Escobar and the Medellín Cartel. Based on the case study findings, answers to these questions are considered in turn.

i) on application of the new model, are the themes arising from the analysis of the phenomena consistent with the concepts and constructs of complexity?

As discussed in Chapter 4, this question refers to the success of developing a new model 'to apply' in the first place, complexity with criminological frames of reference to the phenomena under study, where success may be measured on the extent of the fit of the application. Of note, it is important to recognise that this question considers the construct and fit of the new model 'to apply' complexity, not complexity in and of itself, i.e. while it is acknowledged that concepts and constructs of complexity were used in the design of the model, it is the design of the complexity tools (i.e. fitness landscape and attractor set) within the model that give rise to the analysis, not complexity in and of itself. Moreover, the themes arising may not necessarily be consistent with a concept or construct of complexity; where the word consistent means logical, i.e. the themes do not contain any logical contradictions. If most of the themes are not consistent, especially important themes, the design and application of the new model would not be considered a sufficient or satisfactory fit.

Based on the case study analysis in Chapters 6 and 7, a number of themes emerge that are consistent with the concepts and constructs of complexity. To better reflect and discuss these themes, Table 8.1 below compares and contrasts each theme to a concept or construct of complexity:

Table 8.1: Case study findings: comparison of themes to complexity

	Theme	Complexity
1.	*Licit and illicit worlds*	*Integrated whole*
	For the Medellín Cartel to flourish, it needed enablers from the outside world to provide or facilitate certain services in the licit environment and also needed roles that were similar to the legitimate business world. At the micro-level, Escobar owned all the criminal activities in Medellín, not just the cocaine trade, and nothing went in or out without his orders.	Instead of conceptualising micro and macro-levels, and upper and underworlds as mutually exclusive objects of study, in the world of complexity, they co-exist and viewing them together produces a more complementary and integrated view.

	Theme	Complexity
2.	*History and context*	*Contextual variables*
	In Colombia, the deep roots and divide of its urban and rural communities, its history as a weak state, armed conflict and undeclared civil war, and long history of corruption and smuggling across its porous borders, all play deciding factors in its problems contributing to the emergence of Escobar and the Medellín Cartel.	In complexity, history matters, as social conditions, the economic system, political players and state and legal regimes are a product of a country's history. Geography is also a factor in complexity, a factor often overlooked in more traditional studies.
3.	*Beginning of the end*	*Fitness landscape*
	The Medellín Cartel was initially formed to accomplish a specific goal and shared needs, and evolved and developed in line with the achievement of this goal and setting of new goals, as well as its ongoing requisite shared needs. When goals shifted and shared needs were not felt, largely due to Escobar's political ambition and desire to be beloved by the people, this led to the beginning of the end of Escobar and the Medellín Cartel.	A fitness landscape is a complexity tool to better understand the nature and strength of the complex system under study, based on goal alignment and shared needs, including drivers and vulnerabilities, and why and how the system evolved or evolves, together with the role of individual actors in forming, shaping and influencing the system's fitness.
4.	*Strength of a group*	*Edge of chaos*
	At the height of the Medellín Cartel, its operations were extensive, with multiple methods and channels for completing the same activity or task, allowing it to absorb operational shocks and setbacks, and more importantly, staying one step ahead of the authorities. The group also became less directed and more enabled, due to the extent of its operations and its core strength of dependable, yet diverse and fluid actors.	Optimal fitness exists on the 'edge of chaos' where complex systems are moderately interconnected with some weak and strongly interconnected actors. The system is sufficiently ordered to serve the interest of conformity, regularity, dependability and planning, but also sufficiently disordered to harness the interest in change and renewal, through variability, creativity and innovation.
5.	*Multiple factors*	*Attractor sets*
	Escobar was driven and influenced by multiple factors, with some factors not necessarily relating to his criminal endeavours, such as his devotion to his family and his desire to be beloved by the people as part of his political ambition. It was Escobar's expected behaviour in ensuring the safety of his family that led to *Los Pepes* concerted efforts on attacking his family and the Search Bloc monitoring his calls. Ultimately, concerned for the safety of his family, Escobar broke one of his golden rules and made a mistake in staying on the telephone too long.	Complexity places emphasis on the order or patterns inherent in the system, not on the disorder of the system. Identification of such patterns and structures may lead to insights into the nature, drivers and vulnerabilities of actor behaviour, including strengths and weaknesses, and departures from such behaviour, such as mistakes.

	Theme	Complexity
6.	*A slight change*	*Sensitivity to initial conditions*
	In the case study analysis, a slight change in the legalisation of cocaine, extradition laws and money laundering, may have greatly influenced the emergence and outcome of the Medellín Cartel. In relation to extradition laws, the cyclical change in the status of these laws did in fact impact the actions undertaken by Escobar and the Medellín Cartel.	One slight change in a variable can give rise to a significantly different outcome and draws attention to the history of a system. It provides insights on how to detect and either encourage or prevent these changes depending on the nature of the system.
7.	*A choice of two paths*	*Bifurcation*
	There are numerous examples in the case study of choices made. The case study reveals that Escobar chose his criminal path early in life, despite having the opportunity of choosing another. Moreover, Colonel Martinez flatly refused Escobar's six million dollar bribe, which could have led to a very different outcome of the Search Bloc's eventual locating of Escobar's hiding place, capture and demise.	Considered metaphorically as a choice of two paths or a fork in the evolution of a system. In the world of complexity, free will and determinism not only coexist, but complement one another; determinism plays a role in the evolution of criminal behaviour, but there are points where free will chooses behaviour.
8.	*Trademark violence*	*Fractals*
	Escobar's trademark 'silver or lead' policy was readily adopted by the Medellín Cartel. While Escobar may have been socially dangerous, the Medellín Cartel benefited from its greater reputation, as well as economies of scale, creating a cumulatively greater social threat. Moreover, Escobar's penchant for violence and excessive cruelty, certainly shaped and influenced the nature of the Medellín Cartel, leading to its reputation of being one of the most violent criminal groups in the world.	Fractals allow the patterns and structures that are easy to see at one scale, but not at another, for example at the micro and macro-levels in the study of individual actors within a group. Moreover, fractal fragments of self-similarity over the life and history of individuals, also allows the generalisation of certain events and behaviours of the group itself.
9.	*Contributory actors*	*Interconnectivity*
	A key theme emerging from the case study analysis is the role played by contributory actors of criminally exploitable ties in a criminal group. Of note, the passive local neighbourhood supporters and consumers of the Medellín Cartel's illicit goods and services, including the US end-users of cocaine. In simple terms, without demand, there is no supply. Although the Medellín Cartel may still have emerged, its shape and form would certainly have been different.	Actors interact to accomplish a shared need such as a task, goal, objective or vision. The identification of actor ties, strengths, drivers and conditions that promote actors to interact may provide insights on what enriches these interactions and thus information on how to change these ties depending on the system under study.
10.	*Fear of violence*	*Feedback*
	Colombian society had been indifferent to extradition, yet with the never-ending repetition	Feedback is repetition or iteration, and can be direct or indirect. It can

	Theme	Complexity
	and onslaught of violence, through sustained random acts of terrorism, the public's fear and sense of insecurity changed its opinion, ultimately leading to the government's negotiation with the traffickers.	also be positive (enhancing, stimulating) or negative (detracting, inhibiting) either amplifying or constraining criminal behaviour. Feedback may provide useful insights on where and how to break the cycles.
11.	*Order within the disorder*	*Self-organisation*
	Escobar offered the Medellín traffickers insurance on their drug shipments, and also offered the safety of the Medellín people through his protection rackets. Essentially, Escobar was organising the security of both the Medellín traffickers' and local neighbourhoods, resulting in both the traffickers and the local neighbourhoods self-organising into stronger actors.	A system spontaneously self-organises from a disordered to an ordered and much stronger system, in responding to the changes in the environment and to cope with those changes.
12.	*Lessons learned*	*Dissipation*
	In the formation of *Los Extraditables,* the Medellín Cartel learnt from the co-evolution and dissipation of MAS. Unlike MAS, *Los Extraditables* had clear leadership from the start, rather than assumed, was fully funded compared to the voluntary contribution of MAS, and more organised and disciplined, with only its key leaders making decisions.	Structures that form momentarily and appear stable, but are quick to dissipate at the slightest perturbation may provide useful insights into why and how these structures dissipate, together with lessons learned from such phenomenon.
13.	*Innovation*	*Emergence*
	The Medellín Cartel were innovators in the use of advanced communications, concealing drugs and operations to facilitate their smuggling routes and hide the cocaine. Escobar also pioneered the method of placing assassins on the back of motorcycles, which proved to be highly effective for the Medellín Cartel.	The whole is greater than the sum of its parts, and may provide useful insights into why and how a system evolves, and the outcomes of certain phenomenon such as learning, creativity and innovation.
14.	*Crime-terror nexus and alliances*	*Co-evolution*
	While MAS was short-lived, it brought together a range of autonomous complex actors, through their joint vulnerability to extortion, and shared need of ceasing the kidnappings and releasing the captives. It also led to the co-evolution of broader co-operation between traffickers, realising that at certain times, it is better to work in cooperation, rather than in competition with each other, such as the formation of the narco-terrorist group *Los Extraditables*.	The outcome when two or more complex systems reciprocally affect each other's evolution may be useful for identifying dependencies on how a system evolves and operates at its boundaries. Co-evolution may also help to determine alliance formation where the complex systems must be sensitised to one another and feel some sense of common identity or purpose to form the alliance.

Source: Findings in Chapters 6 and 7 based on the application of the new model in Chapter 5

As depicted in Table 8.1 above, in response to the first question, on application of the new complexity model, several important themes emerge from the case study findings, all of which are consistent with the concepts and constructs of complexity. Accordingly, it may be argued that the development of a new model 'to apply' complexity with criminological frames of reference to the phenomena under study has been sufficiently and satisfactorily achieved.

ii) can complexity help to improve our understanding of the phenomena, including their nature and strength, why and how they evolve, and what shapes actor behaviour?

The second question, as also discussed in Chapter 4, refers to the success of using the new model 'to analyse' the phenomena under study, and in doing so improve our understanding, where success may be measured on the extent of the improvement of our knowledge. As explained earlier, a fundamental aspect of complexity is that it provides a holistic view and integrated approach, including points of view by 'others', and locates the subject of study within a contextual setting. More importantly, it also relocates the subject of study into a new conceptual space, helping us to think differently.

At times, criminological research focuses on the lives of actors (e.g. Escobar), almost biographical accounts, where the proper due care and attention to the contextual variables that gave rise to these actors in the first place or group structures and dynamics involved may be overlooked. This limited perspective reduces the capacity to understand how these actors evolve or evolved and the nature and strength of a group's dynamics within its environment. Conversely, in the studies that focus on contextual variables, group structures and dynamics (e.g. Medellín Cartel), a deeper analysis of actors may also be overlooked, resulting in a lack of understanding of actor behaviours, strengths and vulnerabilities, impacting both the actor and the group itself. Moreover, where criminological research does embrace these perspectives, the micro and macro-analysis of the problem, as an integrated whole, can sometimes fall short.

Based on the case study findings in Chapters 6 and 7, it may be argued that our understanding of Escobar and the Medellín Cartel has improved, and consequently our understanding of the complex phenomena of organised crime, terrorism and the crime-terror nexus, due to the ability of the new complexity

model to offer an approach that *collectively*:

i) allows a more holistic and broader set of actors and intervening variables, comprising perspectives of 'others' and distinct categories of contextual variables, including historical, geographical, society, the economy, political and the media, to be considered within its data sets and individual and group dynamics;

ii) offers a new complexity tool with criminological frames of reference to identify the nature and strength of a criminal group, based on goal alignment and shared needs, including insights into the drivers and conditions that promote actors to interact, thus providing information on how to change these interactions depending on the system under study;

iii) introduces and extends the criminological concept of criminally exploitable ties to ensure a more complete set of broader actors are considered in determining a group's nature and strength;

iv) attempts to better conceptualise and, more importantly, visualise the shape, form and dynamics of a criminal group, using graphical representations and new imagery, promoting a patterned style of thinking and a better understanding of the opportunities to change, influence and/or disrupt the criminal group;

v) encompasses the analysis of allegiances and alliances, between individuals and/or criminal groups, based on co-evolution, with enhanced reasoning of why and how these nexuses evolve within a given fitness landscape;

vi) offers a new complexity tool with criminological frames of reference to identify patterns and structures within the data sets and provide insights into the nature, drivers and vulnerabilities of actor behaviour, including strengths and weaknesses, and departures from such behaviour, to help understand certain phenomena or events; and

vii) comprises two distinct yet complementary components at the micro and macro-levels, allowing the study of a criminological phenomenon, within a new conceptual space, as an integrated whole.

While other models and/or approaches may offer elements of the above, none of them offer the complete set. Moreover, by promoting a novel and innovative way of thinking about the problem, the complexity tools (i.e. fitness landscape and attractor set) offer something new and different to existing models. However, it is important to recognise, that the complexity model does not aim to replace, but merely supplement and complement existing models and/or approaches in organised crime and terrorism, including the nexus. For example, other models and/or approaches may provide a deeper analysis and insight into certain aspects, such as networks, environmental factors or preventive measures.

In summary, based on the above analysis, in response to the second question, it may be argued that the new complexity model helps to further our understanding and knowledge of the complex phenomena under study, by offering an approach that collectively combines a number of elements of existing models and/or approaches into a single model, including new tools of complexity (i.e. fitness landscapes and attractor set) with a different way of seeing things and novel explanatory power, that other models do not offer. As demonstrated in Chapters 6 and 7, the new model achieves an improvement in understanding by offering a different, and perhaps a more sophisticated and nuanced reading of the events, actors and variables involved in the case study, leading to a more complete understanding and explanation of the phenomena under study.

8.2   Practical application

The practical significance of this thesis, is that the new complexity model offers a novel and innovative way of thinking about organised crime, terrorism and the crime-terror nexus, which in turn may contribute to a novel and innovative way of dealing with them. Perhaps more importantly, the new complexity model offers the ability to reflect and learn from the past, interpret and respond to the present and predict and prepare for the future. In preparing for the future, the new complexity tools offer practical insights into the attitudes and behaviours of actors, and the drivers and conditions that promote actors to interact, thus are able to provide information and knowledge on how to change, influence and/or disrupt these behaviours and interactions to change future events. One must recognise, however, that this knowledge is only a mere guide to the future, it does not fix the future.

Multi-dimensional and comprehensive

Practically, the new model offers a multifaceted understanding and response strategy based on the model's collective ability to analyse and offer insights and enhanced reasoning into group dynamics and individuals, within their given environments. As Smith (2014:8) argues, organised crime as 'a multifaceted, complex phenomenon…requires a multifaceted response strategy' and 'initiatives need to be flexible and dynamic…to meet changes in the nature of organised crime'. As a dynamic theory capturing movement and change, it may also be argued that the new complexity model offers a more useful approach than some of the more traditional ones. Moreover, offering the ability to reshape existing data, rather than necessarily bringing in new data, is also of great practical value in terms of accessibility, timeliness and cost savings.

In relation to other models and/or approaches, including some of the more traditional ones, specifically to organised crime, terrorism and the crime-terror nexus, as a multi-dimensional model, the new model may also be of practical assistance, either as a supplement and/or a complement to these. More specifically, it may help to:

i)   enhance the management of disparate data into structured data sets; and/or

ii)   pinpoint specific actors and enhance intelligence based on behaviours and interconnectivity strengths to change, influence and/or disrupt.

To illustrate this point, as discussed in Chapter 2, watch points and reference lists in prevention and detection are offered by leading scholars, including: i) Levi and Maguire (2004) in organised crime; ii) Schmid (2013a) in terrorism; and iii) Shelley et al (2005) in the crime-terror nexus. Of relevance to the case study findings, Levi and Maguire's (2004) list includes community approaches, such as passive citizen participation in the provision of information about harms and risks and hotlines for reporting. Also of relevance is addressing underlying conflict issues and maintaining the moral high ground, such as matching deeds with words, in Schmid's (2013a) terrorism list. Furthermore, Shelley et al's (2005) watch points of the nexus include shifting goals, common causes and shared activities of power, also of relevance. Based on the case study findings, while the new model manages disparate data into structured data sets and, in hindsight, pinpoints specific actors

and groups of actors in the Medellín Cartel's fitness landscape and enhanced intelligence for change or disruption, based on their behaviours and interconnectivity strengths, the new model does not offer an array of prevention and detection techniques to change or disrupt the behaviour, such as passive citizen participation in hotlines for reporting. Hence practically, as a supplement and/or a complement to an existing array of prevention and detection techniques, in the case of a particular criminal group, the new model may help to manage the disparate data of the criminal group and/or pinpoint specific actors and enhance intelligence for change or disruption, and vice-versa, where prevention and detection techniques may supplement and/or complement a case being analysed using the new model.

Problem visualisation

Also of practical value is the offering of a new fitness landscape metaphor in the way of urban geographies and visual imagery, to better grasp some of the underlying concepts of complexity. The graphical and visual depiction of complex phenomena, such as a criminal group, in why and how it evolves or evolved, including its nature and strength, may aid practitioners in sense-making. Moreover, in determining strategies and measures offered by the new metaphor to change, influence and/or disrupt the criminal group or actor behaviours, the new visual imagery may improve conceptual understanding of the shape, form and dynamics of the criminal group involved. To illustrate this point, in Chapter 2, in attempting to conceptualise the shape, form and dynamics of organised crime, Edwards (1999:80) argues:

> Illicit firearms trafficking is not conducted in parallel to licit firearms trafficking but is enabled by the *complex* network of relationships between firearms producers, distributors, wholesalers and users. The structure of relationships provides opportunities for the establishment and reproduction of criminal enterprise. Through a focus on such structures of *interdependent* relations it is also possible to discern both the opportunities for organised crime and the opportunities for disturbing its reproduction [*emphasis* added].

Based on Edward's argument, it is apparent that illicit firearms trafficking might benefit from the new complexity model, by attempting to better conceptualise and, more importantly, visualise the shape, form and dynamics of the illicit firearms industry, either generically or more specifically for a criminal group under study. In particular, the new fitness landscape complexity tool, encompassing the concept

of criminally exploitable ties, may aid actor completeness and understanding of the nature and strength of the illicit firearms industry or a specific criminal group. Combined with enhanced intelligence and reasoning on why and how illicit firearms trafficking or a specific criminal group evolves or evolved, together with strategies and measures to change, influence and/or disrupt specific actors, the new model may be of great practical value. Moreover, as the acquisition of firearms is often seen as a nexus point between criminality and terrorism (Shelley et al 2005; Grobosky & Stohl 2010), in identifying allegiances and alliances of broader criminal activities, the new model may also provide practical value in broadening the scope of the problem.

Broadening the scope

Practically, complexity studies the interrelatedness and interdependence of actors, as well as their freedom to interact, align and organise. The more actors and more ways to interact, align and organise, the higher the complexity, such as the increasing nexus of criminality and terrorism. As Chris Dawson, Chief Executive Officer of the Australian Criminal Intelligence Commission ('ACIC') notes (interview in Hickey 2016):

> We are increasingly seeing a nexus between criminality and terrorism…whether that be through financing or through acquiring weapons…it's not to say all criminals become terrorists and all terrorists have a criminal history, but there is definitely a strong connection there that we just need to continually better understand.

Moreover, Andrew Parker, Director General of the UK M15 intelligence agency observes (interview in Wheatstone 2016):

> The link we see between terrorism and criminals is in the local communities which they come from, often in low level organised crime activity. We have got those who are vulnerable people who just get hooked on an ideology…there are those who fully subscribe and are determined to act…others are just angry and are criminals and are given a way to express that through the streets or in prison. It's a complex picture.

In the disruption of a criminal group, while understanding network structures and operations through traditional network analysis is critically important, exploring a group's wider criminally exploitable ties, such as contributory and potential actors in its fitness landscape, may further help concentrate efforts on less obvious, and perhaps in some cases more important or easier, targets to disrupt. For example, in Smith's (2014) recent work, potential interventions to recruitment

pathways in organised crime are considered, including convergence settings such as prison. As noted earlier, recruitment pools of criminals and terrorists are also often from the same marginalised sectors of society. In today's new world of extreme terrorism, addressing potential and contributory actor groups such as new recruits, passive supporters and sympathisers is not becoming optional, it is becoming essential. Practically, the new model assists in identifying allegiances and alliances between individuals and/or criminal groups, together with enhanced reasoning of why and how the nexus evolved or evolves.

Managing financial intelligence

Equally important in today's world, are the new ways of policing in following the money trail. The increased scrutiny and pressure on the financial sector to monitor and report suspicious activity of money laundering and terrorism financing is apparent in the billion dollar fines levied by regulators, notably in the US, where banks have either failed to act or comply. At their best, criminal financiers are becoming more sophisticated, ranging from the most basic (e.g. physical movement of cash across borders) to the most sophisticated (e.g. multi-jurisdictional complex company structures, accounts and transactions) (Lilley 2006). As also pointed out by Lilley (2006:199):

> Yes the final truth is the most unacceptable one: for every terrorist outrage that kills and maims innocent victims, for each woman and child trafficked to be sexually exploited, for any victim of organised criminal activity somewhere in the process that led to these outcomes, dirty money was washed clean.

In a changing world, the author Julie Beesley, also the former Chief Financial Crime Officer of a major Australian bank, observes, that following the money trail and 'data, and more importantly that related to financial intelligence, is simply becoming the weapon of choice for law enforcement' (interview in Olding 2015). Supporting this observation, the Chief Executive Officer, Paul Jevtovic, of the Australian Transaction Reports and Analysis Centre ('AUSTRAC'), Australia's anti-money laundering and counter-terrorism financing regulator, notes in *AUSTRAC's annual report* 2015-16 (AUSTRAC 2016:7):

> Our intelligence has played an important role in identifying new suspects in Australia and overseas, and has improved Australia's understanding of high-risk funds flows to Syria, Iraq and surrounding countries…We are also working closely with the financial sector to study and understand the movement of suspicious funds that are indicators of a range of financial

crimes.

Moreover, from a practical application, the increasing complexity of data and intelligence more broadly, lends itself well to the new complexity model and conceptual way of thinking.

Lessons learned

Also of practical significance, is dealing with the multitude of actors and localities in criminal and terrorist endeavours. While organised crime and/or terrorist groups come in all shapes and sizes, with different types of networks and levels of sophistication, one factor remains, their use and threat of violence. In a broader conflict, as noted in Chapter 2, there are two factors that are closely associated with terrorist activity: i) political violence committed by the state; and ii) the existence of a broader armed conflict (IEP 2015). As noted earlier, Johnson (2007:160) suggests, 'the way in which wars evolve has less to do with their original causes and more to do with the way in which humans act in groups'. Furthermore, Johnson (2007:160) also suggests that it is often reported 'that many of the people doing the fighting do not actually know why the war started in the first place…they simply want to "beat the others"'. Practically, the 'war on drugs' is very much like the 'war on terror', and in reality, these wars actually benefit the 'others', i.e. organised crime and terrorist organisations, as well as the multitude of actors, including arms dealers, private military firms, state agencies and organisations that exist to respond to the war industry. If one compares bin Laden with Escobar, there are certainly differences, but also similarities, in that both were terrorists and the 'human face' on their former anonymous crimes. These similarities also led to the culpability being placed almost solely onto each man's head, without unpacking the complex web of contextual variables and multitude of actors that created the circumstances for each man to rise and act in the first place. In the words of former Colombian President Gaviria, '[Escobar was] a kind of bin Laden of those times. Only that was in relation to narco-trafficking, not of religion or fundamentalism, but narco-terrorism' ('The Two Escobars' 2010). As argued earlier, none of the factors that make terrorism 'can be discussed in isolation from one another' (Martin 2016:xix).

To date, latest figures from the *Internal Displacement Monitoring Centre's ('IDMC') Global Annual Report* show that Colombia has over 6 million people internally

displaced by ongoing armed conflict and violence (IDMC 2016). This equates to 12% of its total population. Until recently, Colombia had consistently held the top spot for the highest number of displaced people in the world, largely due to its five decades of conflict (IDMC 2016). In 2015, Colombia was replaced by Syria for the top spot when Syria's tally exceeded 7 million people displaced world-wide (IDMC 2016). While the world focuses on Syria and ISIS, there are practical lessons to be learned from Colombia. For example, IDMC's (2016:13) report suggests, there are 'growing numbers of people trapped in protracted and chronic patterns of displacement' and a need 'to address the underlying issues that create and sustain this phenomenon'. As Jonathan Marcus (2016), a diplomatic correspondent points out, 'Syria is an appallingly complex problem, and no single party can be blamed for the continuation of the war'.

ISIS

In one of the first serious attempts to analyse ISIS, Stern and Berger (2015:13) argue, 'the world awakened to the threat of ISIS in the summer of 2014, but that is not where the story begins…many diverse factors contributed to the rise of ISIS'. Moreover, in another attempt, Bennis (2016:9) points out:

> When ISIS swept across northern Syria and northwestern Iraq in June 2014, occupying cities and towns and imposing its draconian version of Islam on terrified populations, to many around the world it looked like something that had popped up out of nowhere. This was not the case, but the complicated interweaving of players, places, and alliances make understanding ISIS seem almost impossible. Yet ISIS has a traceable past, a history and a political trajectory grounded in movements, organisations, governments, and political moments that form a long story in the Middle East…It's a mess.

The specific origins of ISIS may be traced through Al-Qaeda, and more specifically, through Al-Qaeda in Iraq ('AQI'), which subsequently changed its name to the Islamic State of Iraq ('ISI'), and then finally to ISIS (Stern & Berger 2015; Bennis 2016). A major difference between ISIS and Al-Qaeda, and also between other militias in history, is that a key goal of ISIS was (and still is) to seize territory to govern (Stern & Berger 2015; Bennis 2016). The rational being that in doing so, 'it was not only asserting the theoretical goal of creating a future "caliphate", it was actually doing so by occupying, holding, and governing' land, and thereby establishing its control (Bennis 2016:19). Although earlier Islamic groups, including Al-Qaeda had advocated the idea of a caliphate – a term used for

territory ruled by an Islamic leader – unlike earlier groups, ISIS actually went ahead with it. Another point of note, is that once ISIS had actually captured large areas of Iraq and Syria, including cities with millions of people, it had to figure out how to actually govern it and bring its own religious law and order to the land. More importantly, it needed to figure out how to keep the people under control, especially ordinary people caught up in its holy war, with no desire for ISIS to be there. Equally, ISIS needed (and needs) money to govern, including the basic requirements of life, i.e. water, food, electricity, hospitals, schools and jobs (Stern & Berger 2015; Bennis 2016). Unlike its predecessors and other types of terrorists, while funding is still important, it may be argued that ISIS 'represents a new form of terrorist organisation where funding is central and critical to its activities' (FATF 2015:5). As such, this also represents a major vulnerability. Although ISIS's primary source of funding is derived from its illegal occupation of territory, including bank looting and control of oil fields and refineries, other sources include kidnapping and extortion payments and donations transacted through the global banking system (FATF 2015). Accordingly, cutting of ISIS's funding is 'both a challenge and opportunity for the global community' (2015:5). Of equal note, is ISIS's reported connections with organised crime groups, individuals and/or activities, given the history of crime-terror connections of its Al-Qaeda predecessors, notably AQI (Congressional Research Report 2013; FATF 2015; Stern & Berger 2015; Bennis 2016).

In short, without any in-depth analysis, including the i) long history of wars and conflicts in the region; ii) history of Islam; and iii) key social, economic and political events, especially with broader actors in the Middle East, notably the US, through a complexity lens, patterns and structures already begin to emerge. For example, the importance of territorial control and the criticality of funding, which respectively contain patterns and structures of operational control and funding flows, both of which may be changed or disrupted. Practically, applying the new complexity model to a case study of ISIS may contribute to a better understanding and knowledge of ISIS and in turn, the practical ways we deal with it; for example, a better understanding of its origins, nature and strength, why and how it evolved and continues to evolve, including the behaviour, strengths and vulnerabilities of individual actors, and more importantly, the nature and strength of its allegiances and alliances.

8.3   Policy implications

To date, application of complexity and non-linear dynamics in policy studies is limited, however, examples include US environmental policy, international arms races and urban growth (Elliot & Kiel 1997). In the example of urban growth, Peter Allen developed a complexity model, albeit mathematical in nature, that 'no longer searches for the one correct answer, but instead presents multiple possible outcomes that change with each iteration of the model' (cited in Elliot & Kiel 1997:69). In other words, Allen presents a raft of multiple choices and possibilities for policymakers to consider. Of relevance, in crime prevention, Young (1991) argues:

> The point of policy is not to eliminate the parameters, but rather to decide at what level one wishes those parameters set in order to retain a given configuration of crime or a given configuration of prosocial behaviour. In this paradigm, both crime and prosocial behaviour are located in the way the whole system is organised.

Examples of such parameters, as discussed in Chapter 3, include a slight change in legislation, such as criminalisation levels in the quantity of drugs to deem a dealing level; and in the thesis case study, the legalisation of drugs themselves. From a policy point of view, determining these parameters and how to evaluate their impact is the real challenge.

In exploring policy implications of the new complexity model, similar to other perspectives, the findings suggest that success in crime prevention and detection, notably in the 'war on drugs' and 'war on terror', depends less on fighting and more on addressing the multitude of factors and actors, rather than causes, that evolve over time. A central question in policy studies is the extent we are capable of both prediction and control (Casti 1990). Moreover, as Elliot and Kiel (1997a:68) suggest:

> Complexity teach[es] us that social evolution is produced by both deterministic historical factors and chance events that may push social phenomena to new regimes of behaviour. By better understanding the confluence of chance and determinism in social systems evolution, we may better learn when and how to direct policy response.

Although this thesis is not suggesting prediction and control in social systems is by any means easy to assess, especially in organised crime and terrorism, the recognition and appreciation of contextual variables and the consideration of a

broader range of actors, such as potential and contributory actors, may better inform and prepare policymakers. Of note, a variable which is often overlooked is geography. As Farah (2012:67) points out, 'however expansive in global terms, a strategy based on geopolitics – the fundamental understanding of how human behaviour relates to geographic space – must always be rooted in the local'.

In summary, despite the acknowledged challenges, policy implications of the new complexity model may help to better prepare policymakers for a multifaceted approach and response to policy making in a complexity informed world.

8.4   New tool for criminologists

In a world that is constantly changing and increasingly complex, the new complexity model is perhaps a timely offering to criminologists of an alternative tool, or set of lenses, to view the world we now live in, and the whole interconnected 'eco-system' of crime. Essentially, as explained below, the new set of lenses also contributes to a new way of knowing and sense of reality in criminological study.

Nature of reality

According to Williams and Arrigo (2006:9), 'historically, philosophers have written very little about the subject of crime. Similarly, criminologists have written very little about the subject of philosophy'. Given the fact that the model relocates the subject of study into a new conceptual space and reality – by seeing the world in terms of complex systems and offering new definitions (or more accurately ways of knowing) to understand the subject of study – the new model may also be described through the philosophical lens of ontology and epistemology.

As noted earlier, complexity may also be described as 'an ontological frame of reference' (Byrne & Callaghan 2014:57). As such, it offers the criminologist a new prism to explore and define the very nature and social reality of crime and perhaps contribute to the broader 'questions that philosophy more directly confronts' (Williams & Arrigo 2006:19). Specifically, if we want to understand a criminological phenomenon or problem through the new model, we need to understand it in complexity terms, i.e. through complex systems. In other words, ontologically, the new model understands the nature of a problem as a complex system, i.e. as a construction of reality. However, this does not mean the

construction of the problem has no link to reality – it is just how we perceive the reality. The new model commits us to believing in a certain kind of reality, where we can interpret and make sense of criminological phenomena, through the nature of complex systems. In other words, it is the very nature of a complex system, with its patterns and structures of relationships and interactions that brings an ontological depth and explanatory power to the new model. Put simply, complexity at its core is research on pattern formation. It basically offers a way of discerning and understanding patterns that are not predictable by traditional methods, which, in turn, leads us to new ontological thought and enhanced reasoning.

For example, the new model lends itself to criminological phenomena that are not easily measured or observed using traditional definitions, which tend to want to categorise and construct ontological truths, and hence by their very nature may limit the framing of the subject of study. From an ontological and epistemological perspective, the model rejects traditional definitions in favour of new ones, that re-specify and re-imagine the nature and reality of a phenomenon as a number of interacting, self-organising, dynamic and emergent properties, in any given environment, all of which are mutually influencing. By engaging the new vocabulary of complex systems, the model also engages new thought processes, and in doing so, may contribute to a different way of framing research questions in criminological study. For example, using concepts such as: i) 'fractals' that identify patterns that are easy to see at one scale, but not at another, such as micro and macro-levels, or in one portion of a study, but not in another; ii) 'attractors' that produce an order within the disorder of a system, creating patterns and structures that may lead to insights into actor behaviour; and iii) 'co-evolution' when two or more complex systems reciprocally affect each other's evolution, leading to co-dependencies and alliance formations, such as nexus points. In engaging this new vocabulary, it is important to recognise that much of the new model is based on concepts and metaphors derived from mathematics. However, as noted earlier, Byrne and Callaghan (2014:6) argue, 'metaphors are what we live by' and that 'a model is a metaphor' and 'any description of reality is metaphorical'.

As the new complexity model is also theory-driven, with criminological frames of reference relevant to the objects of study, this design feature lends itself well to

broader criminological phenomena that are implicated by the nature of complexity and how studying these might provide fresh insights. As an analytical tool, it also offers criminologists the ability to organise, shape and structure information and make conceptual distinctions to capture something that is easy to understand. Moreover, the model also emphasises patterned thinking, a key to understanding the nature of complexity. Essentially, it balances the need for complexity with the need for simplicity, i.e. the need to improve the conceptualisation of the complex problem, with the need for simplicity in understanding the problem. Overall, perhaps it is this balance of complexity with simplicity, i.e. in the way it goes about knowing and understanding a problem, that ultimately sets the new model apart from others.

Multi-dimensional and comprehensive

Within criminology, the application of a model which reconciles polar-opposites (order and disorder) may also provide criminologists with a useful tool to reconcile and integrate several long-standing opposites such as the classical-positivist view (free will versus determinism) and the micro-macro view (individuals versus wider social influences). In the world of complexity, free will and determinism not only coexist, but complement one another; determinism plays a role in the evolution of criminal behaviour, but there are points where free will chooses behaviour. In relation to the micro-macro view, instead of conceptualising them as mutually exclusive objects of study, in the world of complexity, viewing them together as an integrated whole produces a more complementary perspective. Moreover, without any in-depth analysis, it appears that criminological theories and perspectives have a place within the new complexity model, such as strain theory, control theory, techniques of neutralisation and labelling perspectives, to name a few. Supporting this assertion, Byrne & Callaghan (2014:79) argue that 'a considerable body of social theory has dealt with the problems that complexity seeks to deal with in ways that would be recognisable to it'. They further argue, 'indeed the very language of systems, structures context, mechanism, and process transformation, regularities, conflicts and continuities suggest this common ground' (Byrne & Callaghan 2014:79). For an in-depth analysis on how 'key axes of discussion in social theory' fit in with complexity, including prominent and influential scholarly work such as Émile Durkheim and Robert Merton, refer to 'complexity theory meets social

science' in Byrne & Callaghan (2014:79). In addition, as noted earlier, the new complexity model does not aim to replace, but merely supplement and/or complement existing theories, perspectives and approaches, and vice-versa, some of which lend themselves well to the notion of 'common ground'.

To illustrate this point within the context of criminology, brief examples of criminological theories and perspectives based on the new complexity model and thesis case study are offered below; where the examples are from a selection of mainstream (strain theory, control theory, techniques of neutralisation and labelling perspectives) and relatively new (environmental criminology) criminological theories and perspectives. As a short recap, in relation to fitness landscapes, a fundamental element of the new model is determining interconnectivity strength and goal alignment or in other words, 'what's in it for me question'. In terms of attractor sets, a fundamental element of the new model is determining what influences and shapes actor behaviour, including attitudes, values and issues of concern. Taking each example in turn:

i)   strain theory: using the basic proposition of strain theory, where strains are social in nature, rather than individual, and located in 'social structures and/or value systems' where individuals have 'inadequate or inappropriate means of opportunities to achieve certain goals relative to other people in society' (White et al 2012:71), it appears strain theory lends itself to a deeper analysis behind specific goals of actors in the new model and vice-versa by assisting in understanding how these goals impact group dynamics and the affinity to a particular group. In the thesis case study for example, refer to Fragments 20 and 21 supporting the analysis of the goals of the *sicarios* where most of them came from marginal sectors limiting viable alternatives to achieving their goals;

ii)   control theory: as control theory centres its concern on conformity based social 'ties' or 'bonds' and an individual's ability (learnt or otherwise) of self-control (Rankin & Kern 2013), it appears control theory provides common ground with the new model in determining the nature and strength of ties and bonds of actors in a particular complex system, together with social influences. In the thesis case study for example, refer to Fragment 106 supporting the analysis of Escobar's social attractor and the bonds of loyalty of the poor *barrios* to Escobar, whose generosity

represented a symbol of social justice against the government and rich elite, who they felt had abandoned them;

iii) techniques of neutralisation: using the distinctive set of justifications that enable an individual to 'justify' their delinquent behaviour (Tierney 2006), it appears these techniques fit in well with the moral attractor of actor behaviour. In the thesis case study for example, refer to Fragment 116 supporting the analysis of Escobar's moral attractor, where Escobar considers 'the criminal ineptitude' of the police and judicial systems as a justification for his actions;

iv) labelling perspectives: as an approach based on how people come to be categorised and defined and implications thereof, the very nature of this labelling by 'social action and reaction' (White et al 2012:97) provides common ground with the new model in the 'relationship' between a labelled individual and a set of actors within a complex system with the power to label. In the thesis case study for example, refer to Fragment 90 supporting the analysis of the US and foreign media labelling Escobar as 'the villain' in the context of the war on drugs compared with Fragment 91 supporting the local media labelling Escobar as 'the hero' and implications thereof; and

v) environmental criminology: as a relatively new theory compared to the above selection, 'environmental criminologists look for crime patterns and seek to explain them in terms of environmental influences' (Wortley & Mazerolle (2008:1). It appears that the detection of environmental influences through environmental design lends itself well to the concept of an 'environmental' attractor, a useful addition to the existing attractor set. Equally, the complexity model's attractor set may also play a supplementary and/or complementary role in the studies of environmental design by detecting broader crime patterns and behaviours of the actors involved. In the thesis case study for example, refer to Fragments 32 and 33 where operational control of certain environments (e.g. to grow crops) played a key role in the formation of a nexus between the guerrillas (often labelled terrorists) and the drug traffickers.

Problem visualisation

Complexity also offers several descriptive metaphors – the butterfly effect, attractors, fractal fragments, edge of chaos, landscapes – which are easily accessible by criminologists as meaningful descriptors of patterns that emerge in criminological research. In particular, the graphical and visual depiction of such metaphors and complex phenomena allows the reader to better visualise and grasp the complexity concepts being used to frame the new approach and model. As Wheeldon and Harris (2015:141) observe, there is much potential 'for visual criminology to better present complex research findings'. To date, however, 'although data visualisation has thrived in many areas of social inquiry, criminology has been comparatively slow to adopt these techniques' (Wheeldon & Harris 2015:143). As such, perhaps the new complexity model may contribute more broadly in criminology to an increase in appetite of the use of these techniques.

Broadening the scope

On a review of recent criminological work, criminologists are increasingly looking to better understand their problem by broadening the scope. To provide an example, in the opening argument of the recent 2016 book *Tackling Correctional Corruption*, Goldsmith et al (2016:2) argue:

> A focus on corruption alone was too narrow in scope. Many of the key drivers that explain how corruption arises and how it is sustained are to be found within the missions given to correctional institutions, in the ways in which these institutions are resourced and managed overall, in the kinds of *settings* in which they occur, and in the sets of *dynamic relationships* in which correctional officers are enmeshed, including with managers, prisoners and other clientele, families of clients, the media, the public and politicians. In order to tackle correctional corruption, we argue, we must first understand it properly by examining it in *context* [*emphasis* added].

Based on this argument, it appears the new complexity model might lend itself well to tackling correctional corruption, and perhaps help in conceptualising and visualising the shape, form and dynamics of the broader problem.

Finally, as discussed in Chapter 1, in criminology there is a multitude of theories, each with a different perspective or approach, and each theory may be categorised as locating its key explanation for criminal behaviour or criminality at one of three broad levels of analysis: the individual, the situational and the social structural

(White et al 2012). On occasion, a theory may combine more than one of these levels to provide a broader and more comprehensive, and perhaps a more sophisticated, perspective of crime and criminal behaviour. In Agnew's 2011 book *Towards a Unified Criminology: Integrating Assumptions about Crime, People, and Society*, Agnew (2011) sets out a critical examination of the underlying assumptions of theories criminologists use. Agnew then proposes a new set of underlying assumptions to lay the foundation for a unified criminology, that is better able to explain a broader range of crimes. Included in Agnew's new set of underlying assumptions are: the nature of crime, determinism and agency, human nature, consensus and conflict and the nature of reality. Moreover, in the context of new assumptions, according to Milovanovic (2015:49), 'much of critical criminology (and social sciences generally) often rests on core assumptions that need to be re-assessed'.

As demonstrated in this thesis, the new complexity model embraces both the need for new assumptions and re-assessments in our increasingly complex and changing world, and in doing so, may contribute to furthering a unified criminology and a more integrated and holistic approach, including the broadening of the scope of criminological problems.

Chapter 9: Conclusion

'Every new beginning comes from some other beginning's end'

Seneca, Roman philosopher (4BC- 65AD)

Chapter 9 sets out the conclusion to the thesis and resultant contribution, including key outcomes of the research in i) furthering our understanding and knowledge of organised crime, terrorism and the crime-terror nexus; and ii) developing a new complexity model and knowledge with criminological frames of reference to apply complexity in criminology.

9.1   Thesis overview

This thesis commenced with the real-world problem and challenges of organised crime, terrorism and the crime-terror nexus, followed by a premise that these phenomena are complex, multi-layered and driven by a multitude of factors. Given the complex nature of these phenomena, one may infer that complexity science, which studies complex phenomena, may lend itself to furthering our understanding and knowledge of these phenomena. Based on a literature review, with the knowledge that the application of complexity in criminology is marginal, and the application to organised crime and terrorism is sparse, this revealed an academic gap, which this thesis attempted to address. Drawing on both the natural and social sciences, the thesis brought together complexity and the case study method to explore new ways of studying criminological problems. The thesis comprised an over-arching yet simple hypothesis relating to complex phenomena: that complexity can be successfully applied with criminological frames of reference to analyse organised crime, terrorism and the crime-terror nexus. A literature review was performed of organised crime, terrorism and the crime-terror nexus, together with a review of the science of complexity and its core concepts and principles. In considering the research approach, a new complexity model, with criminological frames of reference, was developed, tested and applied, using the case study method. The case study selected was an in-depth case study of Escobar and the Medellín Cartel. Based on the case study findings,

themes arising were found to be consistent with the concepts and constructs of complexity. In turn, the resulting analysis led to a more complete understanding and explanation of the case study. The thesis also considered whether the findings shed light on furthering our understanding and knowledge of organised crime, terrorism and the crime-terror nexus, including practical and policy implications. It also considered the contribution of the new complexity model as a new tool for criminologists.

9.2   Contribution

The primary objective of this thesis was to provide a meaningful contribution to our understanding and knowledge of organised crime, terrorism and the crime-terror nexus. The research is significant as it not only advances our understanding of these real-world problems (Millennium Project 2017), but also uses borrowed science to open-up new ways of thinking within the broader areas of criminological research. Expected outcomes of the research were major original contributions to:

i)   furthering our understanding and knowledge of organised crime, terrorism and the crime-terror nexus; and

ii)   developing a new complexity model and knowledge with criminological frames of reference to apply complexity in criminology.

Taking each objective in turn, this thesis offers a novel, more complete and perhaps a more sophisticated analysis of criminal groups, including structures and activities, as well as behaviour of individuals, all within a contextual setting; and as a result, it furthers our understanding and knowledge of organised crime, terrorism and the crime-terror nexus. The practical significance of this thesis, is that the new complexity model offers a new way of thinking about these complex phenomena, and in turn, may contribute to the practical ways we deal with them. Moreover, adopting the new complexity model leads us to a more integrated and complementary view of the world. As a new tool in criminology, it offers an intellectual toolkit, including the ability to reflect and learn from the past, interpret and respond to the present and predict and prepare for the future. Although prediction is not always easy, difficulty in prediction does not necessarily mean unintelligible or inaccessible to knowledge and understanding. In doing so, it offers a suitably sophisticated framework of complex differentiation and

understanding to study complex criminological phenomena which are unpredictable, yet patterned, random, yet governed. Importantly, the new complexity model does not aim to overthrow existing theories, perspectives or knowledge in criminology, it merely aims to supplement and complement. Moreover, given the ongoing challenges in understanding complex phenomena in criminology, the new complexity model may add to the contribution of a more integrated, unified and holistic approach. Ultimately, the new complexity model offers a new tool in the criminologist's toolbox, to provide fresh and novel insights into complex problems, and in doing so, perhaps shine light on some old ones. Overall, the value and significance of these contributions are based on the difficulties in combating organised crime and terrorism to date, and the increasing nexus between the two. Moreover, the value and significance of the new complexity model may also stimulate a much-needed interest, discussion and debate by criminologists on how to better conceptualise complex problems using the new science of complexity.

9.3   Future research

As discussed in Chapter 8, future research may benefit by conducting in-depth case studies in the areas of:

i)   Organised crime, terrorism, and the crime-terror nexus. Of note, given the acute real-world problem, a case study of ISIS may benefit from the insights offered by the new complexity model; and

ii)   Criminology more generally, where criminologists are increasingly looking to better understand problems by broadening the scope of the problem under study.

9.4   Summary

In conclusion, this thesis argues that complexity can be successfully applied with criminological frames of reference to analyse organised crime, terrorism and the crime-terror nexus. In short, the complexity model promotes a patterned style of thinking and offers a means of discerning and identifying underlying patterns of order, that extends our understanding and knowledge from the known to the unknown. It essentially balances the need for complexity, with the need for simplicity, i.e. the need to improve the conceptualisation of the complex problem, with the need for simplicity in understanding the problem.

Reflecting the opening quote of this thesis (Ki-moon 2015), it may be argued that it is the complexities of our time that 'we must adapt to'. Given the changing and increasingly complex world we live in, perhaps a shift in mind-set and thinking to more closely match the complexities of our time and the very nature of our reality, is a step that more scholars will need to take.

Appendices

Appendix 1: Case study - source data set

Table 1: Primary sources

Source	Content	Reference
A. The US National Security Archive		
1. 1990: Department of State, *Cable from US Embassy Bogota to US Secretary of State*	Escobar & Medellín Cartel, declassified US government intelligence	US Department of State 1990
2. 1991: Department of Defense, *Intelligence Report: Colombian Narco-Trafficker Profiles*	Escobar & Medellín Cartel, declassified US government intelligence	US Department of Defense 1991
3. 1992: CIA, *Intelligence memorandum: Narco-Insurgent Links in the Andes*	Escobar & Medellín Cartel, declassified US government intelligence	CIA 1992
4. 1993: Department of Defense, *Intelligence Paper on "Los Pepes"*	Escobar & Medellín Cartel, declassified US government intelligence	US Department of Defense 1993
5. 1993a: Department of State, *Cable from US Embassy Bogota to US Secretary of State*	Escobar & Medellín Cartel, declassified US government intelligence	US Department of State 1993a
6. 1993b: Department of State, *Cable from US Embassy Bogota to US Secretary of State*	Escobar & Medellín Cartel, declassified US government intelligence	US Department of State 1993b
7. 1994: DEA, *Drug Intelligence report: Insurgent Involvement in the Colombian Drug Trade*	Escobar & Medellín Cartel, declassified US government intelligence	DEA 1994
8. 1994: Department of State, *Intelligence Assessment: Profile of Fidel Castaño*	Escobar & Medellín Cartel, declassified US government intelligence	US Department of State 1994
9. 2008: National Security Archive: *Government Information Electronic Briefing Book No. 243: Colombian Paramilitaries and the United States: "Unravelling the Pepes Tangled Web*	Escobar & Medellín Cartel, declassified US government intelligence	US National Security Archive 2008

	Source	Content	Reference
	B. Other government documents		
1.	1999: US Office of National Drug Control Policy	US public report: *America's Drug Use Profile*	US Office of National Drug Control Policy 1999
2.	2002: US DEA Drug, *Intelligence Brief: Drugs and Terrorism: A New Perspective*	US public information on drugs and terrorism	DEA 2002
	C. Speeches (*with transcript)		
1.	1989: US President Bush*	US President public speech with transcript	Bush 1989
2.	1990: Colombian President Gaviria	Colombian President public speech recorded	*Sins of My Father* 2009

Table 2: Secondary sources

	Source	Content	Reference
	A. Interviews: First-hand accounts (*with transcript)		
1.	1988: Recorded interview with Escobar by Yolanda Ruiz	Escobar, recorded interview, televised with sub-titles	*NTN24 News* 2013
2.	2000: Interview with Colonel Hugo Martinez by Streatfeild*	Colonel Martinez, Head of Search Bloc, written interview with transcript	Streatfeild 2000
3.	2000: Televised interview with Carlos Toro by *Frontline**	Medellín Cartel, professional public relations officer, televised interview with transcript	*Frontline* 2000a
4.	2000: Televised interview with Fernando Arenas by *Frontline**	Medellín Cartel, professional pilot, televised interview with transcript	*Frontline* 2000b
5.	2000: Televised interview with George Jung by *Frontline**	Medellín Cartel, key associate, televised interview with transcript	*Frontline* 2000c
6.	2000: Televised interview with Jorge Ochoa by *Frontline**	Medellín Cartel, leader, televised interview with transcript	*Frontline* 2000d

	Source	Content	Reference
7.	2000: Televised interview with Juan Ochoa by *Frontline**	Medellín Cartel, leader, televised interview with transcript	*Frontline* 2000e
8.	2010**:** Interview with Escobar's son by Doherty et al*	Escobar's son, Juan Pablo, written interview with transcript	Doherty et al 2010

B. Documentaries: Televised first-hand accounts (*with transcript)

	Source	Content	Reference
1.	1997: The Godfather of Cocaine*	Frontline documentary chronicling the rise and fall of Escobar and the Medellín Cartel, including interviews with US and Colombian state officials/officers, Escobar's brother Roberto and Escobar's mother	*The Godfather of Cocaine* 1997 'The Godfather of Cocaine' 1997
2.	2002*: The True Story of Killing Pablo**	History Channel documentary chronicling the true story of the hunt for and killing of Escobar based on Bowden's critically acclaimed book, including televised interviews with US and Colombian state officials/officers and Bowden himself	*The True Story of Killing Pablo* 2002 'The True Story of Killing Pablo' 2009
3.	2003: *Killing Pablo**	CNN version of the true story of the hunt for and killing of Escobar based on Bowden's book including televised interviews with other US and Colombian state officials/officers from those interviewed in *The True Story of Killing Pablo* 2002 version	*Killing Pablo* 2003 'Killing Pablo' 2003
4.	2006: *Cocaine Cowboys*	Chronicles the drug influx into Miami of the 1970s and 1980s and the resulting gang wars and violence, including televised interviews with former drug dealers/smugglers and state officials/law enforcement	*Cocaine Cowboys* 2006
5.	2009: *Sins of My Father*	Chronicles childhood of Juan Pablo, Escobar's son and his memories of his father, including a reconciliation with the sons of Galán and Lara, Escobar's victims, and televised interviews with them, including Escobar's son, Escobar's wife and archived recording of a televised interview with Escobar himself	*Sins of My father* 2009

	Source	Content	Reference
6.	2010: *The Two Escobars**	Award winning documentary chronicling the lives of Pablo Escobar and Andreas Escobar (unrelated) and the unprecedented rise and fall of Colombian football, as a result of narco-dollars by the likes of the Medellín and Cali Cartels, including televised interviews with Andreas Escobar and Escobar's cousin Jaime Gaviria Gomez	*The Two Escobars* 2010 'The Two Escobars' 2010
7.	2014: *Cocaine Cowboys Reloaded*	Revised and extended version of *Cocaine Cowboys* 2006	*Cocaine Cowboys Reloaded* 2014

C. Books: First-hand accounts and/or autobiographies

1	2007: *Amando a Pablo odiando a Escobar* (*Loving Pablo Hating Escobar*)	Escobar's lover, Virginia Vallejo, personal account (published in Spanish)	Vallejo 2007
2.	2009: *The Infiltrator*	DEA undercover agent personal account	Mazur 2009
3.	2010: *Escobar Drugs, Guns, Money, Power*	Escobar's brother and Medellín Cartel key associate, Roberto, personal account	Escobar R 2010
4.	2011: *At the Devils' Table*	Cali Cartel Security Chief, Jorge Salcedo, personal account	Rempel 2011
5.	2014: *Yo soy el hijo del cartel de Cali* (*I am the Son of the Cali Cartel*)	Son of Miguel Rodríguez, Cali Cartel, William Rodríguez, autobiography (published in Spanish)	Rodríguez 2014
6.	2015: *Blow*	Medellín Cartel key associate, George Jung, autobiography	Porter 2015
7.	2015: *Sobreviviendo a Pablo Escobar* (*Surviving Pablo Escobar*)	Medellín Cartel head *sicario*, John Jairo Velásquez, aka Popeye, personal account (published in Spanish)	Velásquez 2015
8.	2016: *Pablo Escobar My Father*	Escobar's son, Juan Pablo, personal account	Escobar JP 2016

	Source	Content	Reference
	D. Books: Investigative journalists based on extensive research and accounts		
1.	1988: *The Cocaine Wars*	Escobar & the Medellín Cartel, based on extensive sources, including first-hand personal accounts	Eddy et al 1988
2.	1989: *Kings of Cocaine: Inside the Medellín Cartel – An Astonishing True Story of Murder, Money, And International Corruption*	Escobar & the Medellín Cartel, based on extensive sources, including first-hand personal accounts	Gugliotta & Leen 1989
3.	1995: *Whitewash: Pablo Escobar and the Cocaine Wars*	Escobar & the Medellín Cartel, based on extensive sources, including first-hand personal accounts and c. 350 interviews	Strong 1995
4.	2002: *Killing Pablo: The Hunt for the World's Greatest Outlaw*	Escobar & the Medellín Cartel, based on extensive sources, including classified documents and first-hand personal accounts of US & Colombian state officials/officers, Medellín locals, letter written by Escobar's wife and note written by Escobar	Bowden 2002
5.	2003: *Drug Lords: The rise and fall of the Cali Cartel*	Cali Cartel, based on numerous sources	Chepesiuk 2003
6.	2013: *Escobar vs Cali: The War of the Cartels*	Escobar v Cali cartel war based on numerous sources	Chepesiuk 2013
	E. Books: Scholars with expertise in the drug trade and/or Colombia		
1.	1998: *The Andean Cocaine Industry*	Economic & political examination of the Andean cocaine industry based on extensive research and sources by an economist and political scholar	Clawson & Lee 1998
2.	2003: *More Terrible Than Death: Violence, Drugs, and America's War in Colombia*	Human rights perspective of US/Colombian relationship based on personal accounts and experience working in Colombia in human rights	Kirk 2003
3.	2003: *Illegal Drugs, Economy and Society in the Andes*	In-depth examination of multiple factors impacting the illegal drugs economy and society in the Andes, based on extensive research and sources by an economist	Thoumi 2003

	Source	Content	Reference
4.	2006: *Rethinking the Roots of Terrorism*	Examination of terrorism seeking to explain *why* terrorism occurs by a peace and conflict scholar	Franks 2006
5.	2007: *Understanding Organised crime*	Examination of organised crime, including a chapter on Colombian Drug Cartels, by a legal scholar	Mallory 2007
6.	2007: *From Pablo to Osama: Trafficking and Terrorist Networks, Government Bureaucracies, and Competitive Adaptation*	Examination of Escobar & the Medellín Cartel using organisational learning theory & network analysis, based on extensive research in Colombia and sources by a political science and public policy scholar	Kenney 2007
7.	2010: *Organized Crime*	Examination of organised crime, including a chapter on Latin America, including Colombian Drug Cartels, by a trained historian and criminal justice scholar	Roth 2010
8.	2011: *The FARC: The longest insurgency*	Examination of the FARC and nexus with the drug trade	Leech 2011
9.	2012: *Transnational Organised Crime, Terrorism, and Criminalised States in Latin America: An Emerging Tier One National Security Priority*	Examination of crime-nexus in Latin America and emerging trends	Farah 2012
10.	2014*: The Losing War: Plan Colombia and Beyond*	Examination of Colombia's war and Plan Colombia	Rosen 2014
11.	2015: *Life and Death in the Andes: On the Trail of Bandits, Heroes, and Revolutionaries*	Examination of the history and evolution of the Andean culture, based on extensive research and sources travelling through the Andes, including interview with Colonel Martinez, by an anthropologist	MacQuarrie 2015

F. Chapter/Paper: Scholars with expertise in the drug trade and/or Colombia

	Source	Content	Reference
1.	2003: 'The War on Drugs and the Military: The Case of Colombia' in *Critical Reflections on Transnational Organized Crime, Money Laundering and Corruption*	Book Chapter: Examination of the war on drugs in Colombia by legal expert and former law enforcement officer in Colombia	Ronderos 2003

	Source	Content	Reference
2.	2011: 'The evolution of the international drugs trade: The case of Colombia, 1930-2000' in *Routledge Handbook of Transnational Organized Crime*	Book Chapter: Examination of the drugs trade in Colombia by a political science and public policy scholar	Kenney 2011
3.	2013: 'Peddling Pablo: Escobar's Cultural Renaissance', *Hispania*, vol. 96, no. 4, pp. 684-99	Journal Paper: Examination of the resurgence and significance of interest in Escobar in Colombia. Contains English summarised extracts from Spanish personal accounts of Popeye (2015 book), Escobar's lover, Vallejo (2007 book) and his sister, Alba Marina	Pobutsky 2013
4.	2014: 'Drug Markets and Organised Crime' in, *The Oxford Handbook of Organized Crime*	Book Chapter: Examination of the drug markets in organised crime, including Colombia by a criminologist	Reuter 2014
5.	2014: 'Organised Crime in Colombia: The Actors Running the Illegal Drug Industry' in *The Oxford Handbook of Organised Crime*	Book Chapter: Examination of actors impacting the illegal drug industry in Colombia by an economist	Thoumi 2014

G. Scholarly databases

	Source	Content	Reference
1.	2016: Terrorism Research & Analysis Consortium database	Public research terrorism database for scholars and researchers	TRAC 2016
2.	2016: Encyclopedia Britannica online	Colombia country profile, including extensive history, culture, population statistics, geography, society and the economy	Encyclopedia Britannica 2016
3.	2016: Encyclopedia online	Colombia country profile, including extensive history, culture, population statistics, geography, society and the economy	Encyclopedia 2016
4.	2016: Encyclopedia of the Nations	Colombia country demographics and penal system population statistics	Encyclopedia of the Nations 2016
5.	2016: Mongabay	Public research information including Colombia country and cities demographics	Mongabay 2016

Source	Content	Reference
H. Media articles		
1. 1977: *Newsweek* magazine	News magazine article describing the early cocaine scene and social trend in the US	Cited in MacQuarrie 2015
2. 2006: 'Pablo's ex spills beans on Colombia's corrupt' 2006, *The Age*	Newspaper article containing English translated extracts of the Spanish 2006 recorded televised statement broadcast in Colombia by Escobar's lover, Virginia Vallejo	'Pablo's ex spills beans on Colombia's corrupt' 2006
3. 2014: 'Son of Cali Cartel' exposes world's biggest cocaine ring', *Tampa Bay Times*	Newspaper article containing English translated extracts from the Spanish 2014 autobiography by William Rodríguez, son of Miguel Rodríguez, Cali Cartel	Silva-Warren 2014
4. 2015: 'Narcos's Wagner Moura on Playing Pablo Escobar and Why He Learned Spanish Before He Got the Part', *Vulture*	Media article containing an interview with Wagner Moura, actor who plays Escobar in 2015-2017 Netflix series *Narcos*	Liebman 2015
5. 2015: 'The terrible reign of cocaine king Pablo Escobar', *The Telegraph UK*	Newspaper article containing an interview with Wagner Moura, actor who plays Escobar in 2015-2017 Netflix series *Narcos*	Harvey 2015
6. 2015: *The Economist* magazine	Magazine article: 'Special Report Colombia: The promise of peace'	Reid 2015
7. n.d. *Forbes* magazine	Online media magazine summary: *Pablo Escobar in Forbes' Billionaires issues*	Forbes n.d.

Appendix 2: Case study - actor data set

Table 1: Macro-level: actor data set

Medellín Cartel: Selection of actors within each actor group	
1.	**The Boss** • Pablo Escobar
2.	**The Leaders** • Ochoa brothers (Juan, Jorge & Fabio) • Jose Gacha
3.	**The Key Associates** *Selection of actors* • Gustavo Gaviria • Roberto Escobar • Fernando Galeano • Kiko Moncado • John Velásquez (aka 'Popeye') • Carlos Lehder • George Jung
4.	**The Professionals** • Pilots • Military advisers • Chemists • Accountants • Financial and tax advisors • Lawyers • Bankers • Forgers • Brokers • Realtors • Other 'legitimate' businesses
5.	**The Semi-Professionals** • Assassins (*sicarios)* • Security operators • Surveillance operators • Radio operators • Bodyguards (for cartel leaders and key associates) • Guards (for kidnapped)
6.	**The Unskilled** • Runners (messengers) • Mules (individuals who transport drugs)

Medellín Cartel: Selection of actors within each actor group

	• Smurfs (individuals who deposit cash in banks below reporting limits) • Couriers • Labourers
7.	**The Growers** • Farmers (coca growers) • Labour (auxiliary agricultural workers)
8.	**The Movers** • Drivers (cars, trucks, boats, submarines) • Heavy equipment operators
9.	**The Dealers** • Wholesale dealers • Mid-level dealers • Retail/street dealers
10.	**The Consumers** • US cocaine users - celebrity parties • US cocaine users - student culture and street-level • Consumers of illicit goods and services
11.	**The Locals** • Medellín society • Colombian society
12.	**The Enablers** • Transport & shipping companies • Chemical suppliers • Financial institutions
13.	**The Guerrillas** • FARC (Revolutionary Armed Forces of Colombia) – 1964 to present • ELN (The National Liberation Army) – 1964 to present • EPL (Popular Liberation Army) – 1965 - present • M-19 (The 19 April Movement) – 1970 to 1990
14.	**The Paramilitaries and Vigilantes** • MAS (Death to Kidnappers) – 1981 to 1983 • *Los Pepes* (People Persecuted by Pablo Escobar) – 1993
15.	**The Terrorists** • *Los Extraditables* (The Extraditables) – 1984 to 1993
16.	**The International Criminals** • ETA (Basque Fatherland and Liberty)

Medellín Cartel: Selection of actors within each actor group

17.	**The Competitors**
	• The Cali Cartel

18.	**The Colombian State Authorities**
	• Colombian Government and Politicians
	• Colombian Law Enforcement
	• Colombian Military
	• Colombian Search Bloc
	• Other Colombian Agencies (e.g. Customs, Coast Guard)

19.	**The US State Authorities**
	• US Government and Politicians
	• US Law Enforcement
	• US Army: Delta Force
	• US Army: Centra Spike
	• US Drug Enforcement Administration (DEA)
	• US Central Intelligence Agency (CIA))
	• Other US Agencies (e.g. Customs, Coast Guard)

20.	**The Media**
	• Colombian journalists, newspapers and news programs
	• US journalists, newspapers and news programs
	• International journalists, newspapers and news programs

Source: Analysis of source data set in Appendix 1

Table 2: Micro-level: actor data set

Escobar: Selection of actors within each actor group

1.	**The Family**
	• Hermilda Gaviria de Escobar, mother
	• Roberto Escobar, brother
	• Alba Marina Escobar, sister
	• Maria Victoria Henao Vellejo, wife
	• Juan Pablo Escobar, son
	• Gustavo Gaviria, cousin

2.	**The Friends**
	• Gustavo Gaviria
	• Jose Gacha
	• Paramilitary leaders: Castaño bothers

3.	**The Business Associates**
	• Ochoa brothers (Juan, Fabio & Jorge)
	• Jose Gacha
	• Gustavo Gaviria
	• Roberto Escobar

	• Carlos Lehder • George Jung • John Velásquez (aka Popeye) • Kiko Moncado • Fernando Galeano
4.	**The Employees** • Barry Seal, professional pilot • Fernando Arenas, professional pilot
5.	**The Locals** • *Barrio* Pablo Escobar
6.	**The Alliances** • Vigilante group: MAS (Death to Kidnappers) • Paramilitary groups: led by Castaño bothers • Guerrilla groups: M-19 • Terrorist groups: *Los Extraditables* • International groups: ETA (Basque Fatherland and Liberty)
7.	**The Competitors** • Cali Cartel Rodríguez brothers
8.	**The Enemies** • Guerrilla groups: M-19 • Competitors: Cali Cartel • Paramilitary leaders: Castaño bothers • Vigilante group*: Los Pepes*
9.	**The State Authorities** *Colombian* • Colonel Hugo Martinez, Colombian National Police & Head of Search Bloc • Hugo Martinez Jr, Search Bloc surveillance operator and son of Colonel Martinez • General Miguel Mazu, Chief of Colombia's Intelligence Agency 1984-1991 *US* • Joe Toft, DEA special agent in charge, Colombia • Thomas Cash, DEA special agent in charge, Miami • Steve Murphy, DEA special agent, Medellín 1991-1994 • Lewis Tambs, US Ambassador to Colombia, 1983-1985 • Morris Busby, US Ambassador to Colombia 1991-1994 • Jack Blum, US Senate investigator 1987-1989
10.	**The Media** • Colombian journalists, newspapers and news programs • US journalists, newspapers and news programs • International journalists, newspapers and news programs

Source: Analysis of source data set in Appendix 1

Appendix 3: Case Study - complex data set composition

Table: Composition of the complex data set

		Number of fractal fragments		
	Actor type	Macro-level	Micro-level	Total
1.	**Medellín Cartel**			
	Leaders	7	3	10
	Associates	7	5	12
	Associate & Escobar's brother*	8	12	20
		22	**20**	**42**
2.	**Enemies of Medellín Cartel**			
	Cali Cartel	1	1	2
	Los Pepes paramilitary leader	1	-	1
		2	**1**	**3**
3.	**Escobar & family**			
	Escobar	-	5	5
	Family (*brother counted in Associates)	-	10	10
	Lover	-	2	2
		-	**17**	**17**
4.	**Colombia**			
	Government officials	3	-	3
	Law enforcement	9	6	15
	Locals	1	4	5
		13	**10**	**23**
5.	**US**			
	Government officials	9	-	9
	Law enforcement	4	2	6
	Government declassified documents	12	1	13
	Government public document	-	1	1
		25	**4**	**29**
6.	**Others**			
	Scholars & scholarly databases	7	9	16
	Investigative journalists	12	6	18
	Consumers (in a media report)	1	-	1
	Actor portraying Escobar	-	1	1
		20	**16**	**36**
	Total	**82**	**68**	**150**

Source: Analysis of fractal fragments by actor based on information in Appendices 1 and 2

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